Officers direct referral report (s87F) for the notified resource consent application submitted to Greater Wellington Regional Council for the proposed runway extension at Wellington International Airport

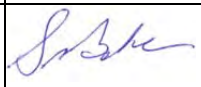
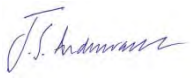
Summary of resource consents sought from Greater Wellington Regional Council and Wellington City Council for the proposed runway extension at Wellington International Airport

Proposal	The construction, operation and maintenance of a 355 metre extension to the take-off runway area available (TORA) at Wellington International Airport. This will largely involve the construction of a reclamation at the southern end of the existing airport runway into the coastal marine area at Lyall Bay. The total length of the runway extension (including the toe) from the existing land boundary into the CMA will be approximately 363m. The runway extension reclamation area is approximately 11ha. The construction footprint of the runway extension is approximately 13ha. The project construction works also include an extension to the existing tunnel underpass on Moa Point Road, the construction and maintenance of a submerged Submerged Wave Focussing Structure in Lyall Bay approximately 400 metres offshore, temporary moorings within the construction exclusion area, the construction of a protection structure over the Moa Point Wastewater Treatment Plant main outfall pipeline and other landscape/amenity improvement works. The applicant is seeking a 15 year lapse period for all resource consents.
Applicant	Wellington International Airport Limited
Location	Wellington International Airport, land at the south end of the existing runway and Moa Point Beach and parts of the Coastal Marine Area within Lyall Bay as described in the application.
Map Reference	At or about map references: NZTM: 1751135mE 5421917mN (southern extent of proposed runway extension) NZTM: 1750574mE 5422763mN (middle of Lyall Bay approximately 450m from shore)

	NZTM: 1751400mE 5422263mN (eastern extent of proposed remediation at Moa Point Beach) NZTM: 1751487mE 5422575mN (hillock area and construction and stockpile compound) NZTM: 1751238mE 5421784mN and 1750821mE 5421882mN and 1750822mE 5422163mN (boundary of temporary mooring buoys)
Consents applied for from GWRC (WGN160274)	[34044] Reclamation (unlimited duration sought) Coastal permit to reclaim and use approximately 11 hectares of the coastal marine area to the south of the Wellington Airport runway in Lyall Bay, including any: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the reclamation; • disturbance of the foreshore and seabed associated with the mooring of vessels during construction of the reclamation; • diversion and dewatering during construction of the reclamation; • generation of construction related noise. Discretionary Activity under the Operative Regional Coastal Plan and Proposed Natural Resources Plan.
	[34045] Construction of permanent structures (10 year duration sought) Coastal permit to construct permanent structures associated with the proposed runway extension and related project works including a submerged Submerged Wave Focussing Structure in Lyall Bay, a protection structure over part of the Moa Point wastewater outfall pipeline and all other ancillary structures, including: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the structures; • disturbance of the foreshore and seabed associated with the mooring of vessels during construction; • diversion and dewatering during construction of the structures; • generation of construction related noise. Discretionary Activity under the Operative Regional Coastal Plan and Proposed Natural Resources Plan.
	[34046] Occupation of the coastal marine area (35 year duration sought) Coastal permit to occupy the coastal marine area for construction purposes, temporary and permanent structures, and ongoing maintenance works associated with the proposed runway extension and related project works including the toe of the reclamation below mean high water mark, a submerged Submerged Wave Focussing Structure in Lyall Bay and a protection structure over part of the Moa Point wastewater outfall pipeline

	including: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air from the maintenance of these structures; • generation of noise from maintenance activities. Discretionary Activity under the Operative Regional Coastal Plan and Proposed Natural Resources Plan.
	[34047] Temporary structures (10 year duration sought) Coastal permit to construct, use and maintain temporary structures including moorings for construction related purposes, lighting structures, site establishment facilities, machinery and equipment in the coastal marine area associated with the construction of the proposed runway extension and associated project works, including any: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the structures; • disturbance of the foreshore and seabed associated with the mooring of vessels during construction; • diversion and dewatering during construction of the structures; • generation of construction related noise. Discretionary Activity under the Operative Regional Coastal Plan and Proposed Natural Resources Plan.
	[34048] Earthworks (10 year duration sought) Land use consent and discharge permit to undertake earthworks associated with the construction of the proposed runway extension and associated project works including the removal of a hillock to develop a construction compound site and any associated discharges of sediment laden water to land where it may enter water. Discretionary Activity under the Operative Regional Discharges to Land Plan and Proposed Natural Resources Plan.
	[34049] Discharges to air during construction (10 year duration sought) Discharge permit to discharge dust to air from earthworks activities associated with the construction of the proposed runway extension and associated project works including the removal of a hillock, stockpiling and handling of fill and construction materials. Discretionary Activity under the Operative Regional Air Quality Management Plan and Proposed Natural Resources Plan.
	[34050] Beach nourishment (10 year duration sought) Coastal permit to deposit natural materials onto the Moa Point Beach foreshore for the purpose of beach and amenity enhancement. Controlled Activity under the Operative Regional Coastal Plan and

	Discretionary Activity under the Proposed Natural Resources Plan.
	[34051] Stormwater discharges post construction (35 year duration sought) Coastal permit to discharge stormwater from the extended Wellington Airport runway directly to the coastal marine area (CMA) and to land adjacent to the CMA where it may enter the waters of the CMA. Permitted Activity under the Operative Regional Coastal Plan and Discretionary Activity under the Proposed Natural Resources Plan.
Consents applied for from WCC (SR357837)	Land-use activities (unlimited duration sought) Land-use consent for the construction, operation and maintenance of the proposed runway extension and associated project works on land and road reserve including: • temporary site offices and associated facilities; • laydown and stockpiling areas; • construction, modification, upgrading and use of internal site access ways; • construction, alteration and upgrading of existing network utilities to provide for construction related activities and the long term use of the runway and taxiway; • earthworks, including associated transport, and vegetation clearance; • modification and upgrading of the Moa Point Road underpass and other associated roading upgrades; • generation of construction related noise; • construction and use of runway infrastructure and structures on land including (but not limited to) ancillary structures, fencing and navigational aids, beach remediation and landscape/amenity improvements; • the continued use of reclaimed land for airport purposes. Discretionary Activity under the Wellington City District Plan 2000.

Report prepared by:	Jude Chittock	Senior Resource Advisor, Environmental Regulation		07/10/16
	Kirsty van Reenen	Resource Advisor, Environmental Regulation		07/10/16
Report peer reviewed by:	Sonia Baker	Team Leader, Environmental Regulation		07/10/16
Report peer reviewed by:	Shaun Andrewartha	Acting Manager, Environmental Regulation		07/10/16
Report approved for release by:	Nigel Corry	General Manager, Environmental Management		07/10/16

Qualifications of reporting officers

This report has been co-authored by Jude Chittock and Kirsty van Reenen.

Jude Chittock

I am a Senior Resource Advisor and have been working in the Environmental Regulation Department of Greater Wellington Regional Council for over five years. Prior to this I worked for CPG NZ Ltd (formally Duffill Watts Ltd) for five years as an Environmental Consultant. I have a Bachelor in Applied Science (Honours) in Environmental Management from University of Otago. I have been an associate member of the New Zealand Planning Institute for seven years.

Kirsty van Reenen

I have been working as a Resource Advisor in the Environmental Regulation Department at Greater Wellington Regional Council since January 2014. I hold a Master of Planning from the University of Otago. I have previously worked for MWH NZ Ltd and the Ministry for the Environment. I am an intermediate member of the New Zealand Planning Institute.

Contents

Appendix 13: Provisions of relevant planning documents

Wellington International Airport proposed runway extension

Purpose of this report

1. This report has been completed as required under section 87F(4) of the Resource Management Act (the Act) and focuses principally on the assessment of the resource consent applications within the jurisdiction of Greater Wellington Regional Council (GWRC). A separate s87F(4) report has been prepared by Mr Peter Daly on behalf of Wellington City Council (WCC) in respect of the resource consent applications within its jurisdiction.

2. In preparing this report, we have relied on the expert advice (attached as Annexure 1 to 9 to this report) from the following advisors:

   - Dr Derek Goring – Coastal processes (**Appendix 1**)
   - Dr Don Morrisey – Marine ecology (**Appendix 2**)
   - Gregor Mclean – Erosion and sediment control (**Appendix 3**)
   - Nigel Lloyd – Noise and vibration (**Appendix 4**)
   - Louise Wickham – Air quality (**Appendix 5**)
   - Dr Michael Steven – Landscape, natural character, amenity and recreation (**Appendix 6**)
   - Dr Philippa Crisp – Bird habitat (**Appendix 7**)
   - Greg Akehurst – Cost benefit analysis and economic impact (**Appendix 8**)
   - Vanessa Tanner – Heritage and Archaeology (**Appendix 9**)

3. We have also sought written advice from GWRC staff on the following topics (attached as **Appendix 10**):

   - Dr Claire Conwell – Operational stormwater discharges and contaminant levels in harbour bed material
   - Captain Mike Pryce – Navigational safety

Background

4. On Friday 29 April 2016 GWRC and WCC received an application for various resource consents from Wellington International Airport Limited (WIAL; the applicant) for the proposed runway extension. This resource consent application included a request for the application to go directly to the Environment Court for determination.

5. Between May and July 2016 GWRC and WCC made four requests to the applicant for further information under s92(1) of the Resource Management Act (the Act). These requests and the applicant's response are available on the GWRC website http://www.gw.govt.nz/wellington-airport-runway-extension. Clarification memorandums and further information submitted by the applicant between August and September 2016 is also available on the GWRC website.

6. On Friday 1 July 2016, 1419 affected/interested parties were served notice of the application. The application was publicly notified in the Dominion Post on

Saturday 2 July 2016 and in The Wellingtonian and Cook Strait News on Thursday 7 July 2016. Signs advertising the consent application were erected at Moa Point Beachfront and within the carpark adjacent to the Corner surf break on Thursday 7 July 2016. The sign at the Corner surf break was damaged by a storm event and removed on 7 August 2016 as it was obstructing vehicle movements within the carpark.

7. A total of 776 submissions were received which included 34 late submissions. One late submission could not be accepted as it was received on 30 September 2016 (submission period closed 12 August 2016). Of the submissions received, 227 are in support of the application (either in full or in part), 527 are in opposition, 18 submissions are neutral and 4 are with conditional support.

8. On 22 July 2016 the requests for direct referral were granted by GWRC and WCC to allow the publicly notified resource consent applications relating to the runway extension to be determined by the Environment Court.

9. On 9 September 2016 the applicant requested that WCC and GWRC cease processing the consent application under section 91A of the RMA. The applicant requested consent processing resume on 30 September 2016.

Location

10. The Wellington International Airport (the Airport) is located on a 110ha site on the Miramar Peninsula approximately 8km from the centre of Wellington City (see figure 1 below). The airport runway lies between Lyall Bay to the south and Evans Bay to the north. The Miramar Golf Course is located directly east of the airport. Moa Point Beach and the Moa Point wastewater treatment plant (WWTP), including a coastal outfall, are located south-east of the southern extent of the airport runway. The residential suburbs of Miramar, Rongotai, Kilbirnie and Strathmore Park surround the airport.

11. The proposed extension will extend the existing runway out further into the Lyall Bay Coastal Marine Area (CMA).

Figure 1: Aerial image showing the location of Wellington International Airport

12. The proposed runway extension and associated activities will affect the CMA as well as land owned by WIAL and WCC as set out in table 1 below:

Table 1: Land Ownership

Area of work/activity	Land owner	Legal Description
Runway extension	The Crown	Coastal marine area
	WIAL	Lot 1 DP 78304 and Section 1, 5 Survey Office Plan 342914
	WCC	Lot 3 DP 78304
	WCC	Road Reserve
Temporary construction activities	WIAL	• Part Lot 1 DP 78304 • Part Section 1 Survey Office Plan 37422 • Section 2-3 Survey Office Plan 37422 • Section 3 Survey Office Plan 38205 • Lots 24, 26 – 28 and 32 – 34 Deposited Plan 21360
	The Crown	Coastal marine area
Activities associated	WCC	• Lot 4 DP 78304

with amenity enhancements		• Lot 6 DP 75384 • Lot 7 DP 75384 • Lot 3 DP 2456 • Road reserve
	The Crown	Coastal marine area

Existing environment

Wellington International Airport

History and development

13. The Wellington International Airport began as the Rongotai Aerodrome in 1920. The aerodrome had a grass runway aligned east to west. In 1935 the airfield was developed into a functional airport which was later closed in 1947 due to safety concerns.

14. In 1953 a proposal to construct a new Airport at Rongotai was confirmed. A reconfiguration of the Rongotai air field to its current north-south configuration commenced in 1953 and the Wellington Airport officially opened in 1959.

15. 1972 saw the last major extension to the airport runway which involved land reclamation to the south to extend the runway by 306m requiring the construction of a seawall to protect the runway from coastal exposure.

16. The Wellington Airport Act 1990 provided for the incorporation of WIAL and the vesting of airport assets and liabilities of the Crown and Wellington City Council in the company.

17. Since 1999 there have been a number of developments and upgrades at the airport including the construction of the new main terminal building, the southern runway end safety area, the Moa Point Road Tunnel, construction of and expansion to the international terminal, runway resurfacing, jet hanger development, expansions of the terminal car parking facilities and most recently the expansion of the domestic terminal.

Current airport operation

18. The Airport operates on a 110ha site (see Figure 2 below). The Eastern Apron accommodates international and domestic passenger operations, including aircraft parking stands, terminal facilities and associated car parking. The Western Apron comprises hangars and administration buildings and also accommodates the airports general aviation activities.

19. The airport has a single 1945m long runway (TORA; take off runway available). The runway has a 45m wide central paved section and 7.5m wide paved shoulders each side. At each end of the runway are 150m protection areas. The airport also features 11 stub taxiway links on the eastern side of the runway.

20. The airport property also includes the airport retail park which is located further west and accommodates large format retail tenancies contained in single-storey commercial buildings, and access and car parking.

21. Aircraft noise at Wellington Airport is controlled by rules within the WCC District Plan. Noise from aircraft operations is monitored continuously by noise loggers. Operations at the airport are also restricted by a partial night time curfew for scheduled flights.

22. The airport currently caters for more than 897,000 international passengers annually. There are up to 70 short haul international return flights every week.

Figure 2: Current configuration of Wellington International Airport, Source: *Assessment of Environmental Effects*, Mitchell Partnerships, 28 April 2016, P.27

Coastal environment

23. Lyall Bay is a semi-circular, open bay located on Wellington's south coast and is located between the headlands of Te Raekaihau to the west and Hue te Taka (Moa Point) to the east. The headlands at either end of Lyall Bay are owned by WCC and comprise a mixture of regenerating native vegetation and exotic vegetation.

24. Lyall Bay has been modified by the historic construction of the Airport, sea wall, road, residential, commercial and recreational developments. This development has also affected the bay's geomorphic setting and associated hydrodynamic processes.

25. Lyall Bay comprises surface sediments of fine sand or rocky platforms along the periphery of the outer bay. Around the end of the existing runway spur and breakwater, the seabed is dominated by the submerged extension of the former rocky reef and gravelly deposits. Moa Point Beach comprises a rock platform covered with a shallow sand cover and a coarse surface veneer of pebbles.

26. There are a number of surf breaks within Lyall Bay which provide for a range of surfing abilities. The area to the north of the breakwater along the Airport runway has accreted since the reclamations which forms a shoal that provides good-quality surfing waves known as "The Corner". The surf break known as "Airport Rights" is located directly south of the runway. Airport Rights is an exposed reef which only breaks in very large swell and is safe for expert level surfers only. The rest of the bay is made up of surf breaks which can be good for surfers of all levels during certain conditions.

27. Coastal water quality in Lyall Bay is very good, with low levels of contaminants in the sand and water column. There are a number of coastal stormwater outfalls located at Lyall Bay Beach, Moa Point Beach and near the breakwater at the south end of the existing runway. The Moa Point WWTP also discharges treated wastewater at the outer bay via a coastal outfall pipeline.

28. The fauna and flora in the area potentially affected by the proposed runway extension are typical of that in adjacent habitats in Lyall Bay, which in turn are typical of those along Wellington's south coast.

29. Commercial fishers that undertake rock lobster potting and set netting for butterfish operate near Lyall Bay at the headlands at Moa Point on the east and Te Raekaihau Point on the west of the bay.

Surrounding land uses

30. Figure 3 below illustrates the location of the airport and the surrounding residential suburbs of Rongotai, Lyall Bay, Kilbirne, Miramar, Strathmore Park and Moa Point.

31. The Airport, including its buildings, infrastructure, runways, and car parking occupy most of the Rongotai area. The Airport Retail Park, comprising big box retail outlets, is located to the south west of the airport runway. The north western part of Rongotai is occupied by residential activities and Rongotai College.

Figure 3: Suburbs surrounding Wellington International Airport, Source: *Assessment of Environmental Effects*, Mitchell Partnerships, 28 April 2016, P.61

32. The suburbs of Lyall Bay and Kilbirnie are located to the west of the airport. Lyall bay is predominately residential with community facilities such as schools and kindergartens. Lyall Bay beach is popular for recreational activities. There are a number of retail outlets (surf shops) and eateries located along Lyall Bay Parade. Kilbirnie has a large shopping area and a number of recreational facilities including the ASB sports centre, Kilbirnie Park, and Wellington Regional Aquatic Centre. There are a number of education facilities located within Kilbirnie. GO Wellington, the hub of the city's public bus and trolley network is also located in Kilbirnie.

33. Houghton Bay is located adjacent to the southern part of Lyall Bay. Residential properties in Houghton Bay look out over Lyall Bay and across to the Miramar Peninsular.

34. The suburbs of Miramar and Strathmore Park are located to the east of the airport. Strathmore Park is a residential area overlooking Lyall Bay. The Miramar Golf Club is within the suburb of Strathmore Park and is located directly adjacent to the airport. Land use in Miramar is predominately residential with retail outlets and community facilities such as supermarkets, garden centre and recreational clubs.

35. Moa Point is located on the headland to the south east of the airport. The Moa Point WWTP is located on the escarpment immediately to the east of the airport. Nineteen residential properties (17 with dwellings and 2 without) are located immediately to the south east of the airport at the toe of the Moa Point Escarpment.

Recreational use

36. Lyall Bay is a popular area for recreational uses including:

- Sightseeing, scenic drives, visiting cafes, walking and running and using the playground near the surf lifesaving clubrooms
- The dog walking exercise area
- Cycling along the bays of the Wellington south coast
- Plane spotting
- Swimming and diving
- Fishing and collection of seafood
- Surfing
- Kayaking and paddle boarding
- Surf lifesaving. The Maranui and Lyall Bay Surf Lifesaving Clubs are located along Lyall Bay Parade
- Kite surfing
- Wind surfing.
- Boating

37. Moa Point Beach is also a popular recreation area, particularly for diving and spearfishing, walking and cycling.

Road network

38. The main access route through Wellington City to the Airport is via State Highway 1 (SH1). SH1 from Ngauranga to Cobham Drive and Calabar Road follows the western side of Wellington Harbour and then traverses through Wellington City, around the Basin Reserve, through the Mt Victoria Tunnel to Cobham Drive and terminates at the Wellington Airport.

39. Both SH1 and SH2 support a large volume of commuter traffic travelling to and from the city and suburbs. The weekday peak transport periods on the state highways occur at about 7am and 4pm.

Proposal/description of activities

Background

40. The applicant has identified that larger wide bodied aircraft such as Boeing's B787 and Airbus's A350 have the potential to directly link Wellington with east Asia and western North America, but cannot currently do so because of the current runway constraints at the airport.

41. The current runway length at Wellington Airport does not provide for the operational requirements of many modern aircraft. Larger Code E aircraft are limited as to range due to the current runway length. Some specific Code E aircraft types such as the Boeing 777 300ER variants are also unable to land at their maximum landing weight. These restrictions limit the growth capacity of the Airport and the ability of airlines to provide long haul services direct to Wellington.

Overview of proposal

42. It is proposed to extend the Airport's existing runway to achieve a minimum Take Off Runway Area Available (TORA) distance of 2,300m retaining the 150m protection areas at each end of the runway. This equates to a 355m extension to the runway (TORA) and a total length of the runway extension (including the toe) from the existing land boundary into the CMA of 363m.

43. To construct the extension to the runway, it is proposed that a full section rock dyke will be built around the perimeter of the runway extension. The rock dyke will be progressively armoured in layers of increasingly large rock and pre-cast concrete interlocking units. Materials for the rock dyke will likely be sourced from existing quarries in the greater Wellington area. Some larger rock may need to be sourced from quarries in the Nelson/Golden Bay area.

44. If detailed investigations reveal areas of weakness in the ground conditions under the reclamation area, it is proposed to strengthen the area using a ground improvement method such as stone columns.

45. Once the rock dyke is in place, filling of the reclamation will occur over an approximately 18 – 36 month period. Reclamation fill is likely to be sourced from quarries in the greater Wellington area, or if available, made up of dredged sandy material won from the harbour channel (if Centreport are

granted resource consents for the proposed Wellington Harbour Channel Deepening Project).

46. It is possible that all material will be conveyed to the construction site via land based transport methods, with routes centred principally on SH1 or SH2. Barge options involving the transfer of fill from quarry to barge (via road trucks) then on to the site may be feasible and could be selected as the preferred option by the final contractor.

47. Assuming all fill is sourced from land based quarries, access in and around the Airport and through the surrounding area by haulage traffic is proposed via a separate day time and night time haulage route.

48. Should barges (i.e. powered barges or barges towed to site by tugs) be used to transport fill material from quarries to the site, the applicant has predicted between 15-25 barges (i.e. 30-50 two-way movements) will be required to operate each day (over an 18 hour period) during construction stages C/D, E and H (refer to further information letter dated 1 July 2016 attachment 3). The applicant identified the potential barge route on a map provided in further information provided on 13 June 2016 Annexure B.

49. Any fill won from the Wellington Harbour channel would be transferred direct from the dredge to the site.

50. Rock from the Nelson/Collingwood areas would be transported by sea, whilst rocks from other sources will most likely come by road (possibly being trucked to a barge loading site then delivered to the site via marine transport). Machinery may need to operate from barges in order to place rock at the reclamation site.

51. Due to height restrictions for structures and machinery near the runway it is likely that different methods to build the rock dyke and fill the reclamation will be required, such as marine based platform barges and land based diggers.

52. The construction, maintenance and use of temporary structures within the CMA will be necessary to facilitate the extension of the runway. Temporary structures will include:

- Temporary moorings for barges, tugs and other floating equipment necessary for dredging and placement of dredged sediment, importation of construction materials by sea routes, construction of the rock dyke and installation of stone columns. The exact type and location of mooring systems required will depend on the contractors proposed construction approach and marine construction equipment. The mooring buoys will be installed in the general vicinity of the work areas to provide temporary mooring for staging equipment. These moorings are proposed to be anchored using either deadman type anchor blocks or Danfoss-type anchors, connected to heavy anchor chain which will be connected to the mooring buoys. Approximately 100-200m chain would be required from the anchor to the mooring to effectively engage the mooring based system in heavy seas.

- Temporary navigational and operational lighting within the CMA may be required during construction for marine equipment.

- The control of the sediment plume from the works is likely to include the need to construct and maintain temporary structures within the CMA. This will include floating silt fences or sediment curtains and the necessary support structures.

53. The proposal includes the removal of a hillock at the south western end of the Airport between Stewart Duff Drive and Freight Drive. It is likely that the material removed will be used as fill in the reclamation. Once this area has been levelled, it will be used initially as a construction staging area and then anticipated to be used in the long term for aircraft and car parking purposes.

54. The Moa Point WWTP coastal outfall passes through the area of the proposed reclamation. In the early phases of the work it is proposed to construct a protection structure over the outfall pipe to avoid damage due to the placement of the dyke and reclamation fill.

55. The early stages of the proposed runway work will involve the extension of the runway taxiway. This will require the extension of the Moa Point Road tunnel or the construction of a new bridge structure.

56. The applicant proposes a number of amenity improvements/mitigation, specifically:

- A Submerged Wave Focussing Structure (SWFS) - The proposed runway extension will have an adverse effect on current surf amenity in Lyall Bay. The application includes the construction of a SWFS in Lyall Bay designed to mitigate and potentially enhance the surf post construction of the runway extension.

- Moa Point Road improvements - The application includes a series of roading, walking and cycling improvements to the western edge of that portion of Moa Point Road stretching from the eastern end of Lyall Bay to the western portal of the Moa Point Road underpass/bridge.

- Moa Point Beach improvements - At Moa Point Beach it is proposed to reinstate a beach form in the corner where the runway meets the curving beach. This is proposed to include enhanced ecological habitat for colonisation by marine life. A gateway landform at the eastern end of the beach and a scrambling or “rock hopping” path around the eastern edge of the runway extension is also proposed.

57. The application includes temporary exclusion zones during construction of the runway extension and SWFS. The proposed exclusion zones are shown on Figure 4 below. For the runway extension site, the exclusion zone is depicted as a 300m line that extends out from the existing breakwater and around the reclamation site to Moa Point Beach. The proposed exclusion zone for the SWFS is depicted as an approximate 100m line that extends out and around the construction footprint.

58. The proposal, as described above, is shown on Figure 4 below.

Figure 4: Proposal. Source: *Assessment of Environmental Effects*, Mitchell Partnerships, 28 April 2016, p.9 (Figure 5-1).

59. Due to airport and weather constraints, the applicant is seeking the flexibility to work over a seven day period, 24 hours per day.

60. The applicant provided an indicative construction sequencing programme in the resource consent application (see Table 2 below). The application states that stages can and will be performed concurrently with staggered start dates. The total construction programme could take between three and four years. This timeframe takes into consideration the likely delays due to adverse weather conditions.

Table 2: Indicative construction sequence. Source: *Assessment of Environmental Effects*, Mitchell Partnerships, 28 April 2016, p.83 and email from the applicant dated 17 August 2016 confirming duration for Stage H for land and/or marine fill.

Stage	Duration	Description
Stage 0	3 months	General site establishment works, including site compounds, staging areas and temporary marine support and berthing/mooring structures.
Stage A	14 months	Installation of stone columns beneath the rock dyke, if required.
Stage B	14 months	Once stone columns are sufficiently advanced, commence installation of stone blanket over stone columns, adjacent filter layer on seabed and secondary armour layer over seabed filter layer.

Stage	Duration	Description
		Trim all rock to final profile.
Stage C	14 months	Once stone blanket, seabed filter layer and secondary armour over seabed filter are sufficiently advanced, commence installation of core rock section of the rock dyke. Remove existing Akmon armour units in the immediate vicinity where land-based operations have commenced.
Stage D	14 months	Progressively place filter layer to outside of core batter and trim to profile. Trim top of core material to obtain filter profile to complete placement of filter material.
Stage E	15 months	Once the core section and filter layer are sufficiently advanced, place primary armour to toe; secondary armour over batter filter layer; followed by outer primary armour to batter. Progressively recover existing Akmon armour units to place on outside of new eastern rock dyke.
Stage F	13 months	Complete core and filter to top surface, and then complete placement of secondary armour and primary armour top (horizontal layers. Leave out accropodes immediately adjacent to precast concrete wall location.
Stage G	1 month	Fabricate geotextile into large panels and roll onto mandrel. Fix geotextile to top of rock dyke and roll down the batter.
Stage H	5 months for marine based fill or 18 months should land based (or a combination of land and marine based fill) be used.	Construct reclamation using locally dredged material with marine-based equipment and/or land-based (and possibly marine based) equipment for land-based fill material. For the marine-based method, establish pumping connections and locations for off-load of the dredged material from marine-based equipment, as well as flow discharge points from reclamation. Place fill material to finished surface level.
Stage I	3 months	Once reclamation is sufficiently complete, place precast concrete wave wall units (3-metre-long precast units ~30 tonnes each) using crawler crane. Place final (primary armour) accropodes in position adjacent to the precast structure. Place precast drain and graded gravel surface to top surface of precast units.

Stage	Duration	Description
Stage J	1 month for wick drains, and if performed, 10 months for surcharge, including 8 months consolidation	Perform ground improvements (such as vibrocompaction) of reclamation fill materials. Alternatively, where applicable, install wick drains within area of reclamation to be surcharged then construct surcharge fill.
Stage K	10 months	If surcharge fill placed, remove surcharge. Construct airfield drainage, pavements, amenity improvements to Moa Point Road and Moa Point Beach, and install navigation lighting etc.

Assessment of alternatives

61. An assessment of alternatives has been provided in the resource consent application. The applicant has considered alternative airport sites, options for extending the existing runway and different engineering options for extending the runway to the south.

62. The applicant engaged AIRBIZ to evaluate the potential for alternative airport sites within the Wellington Region. This assessment built on an earlier study undertaken in 1992 and was provided with the consent application as Technical Report 12. The original study encompassed the establishment of selection criteria for feasible airport sites, a search for such sites within the Wellington region, and a high level economic evaluation of candidate locations. Seven sites were identified. The 1992 study supported retention of the airport at its current location. Technical Report 12 confirmed that the current airport location is the most appropriate. Table 3 below shows the outcomes of the assessment undertaken by AIRBNZ.

Table 3: Multi-criteria assessment of airport locations. Source: *AirBIZ Alternative airport sites investigation*, 20 August 2013 (Technical report 12 of resource consent application).

Airport Location	Principal non-operational factors	Construction Costs		Principal operational factors (primary impediment noted)	Total Discounted Travel Costs relative to WIAL site
		1992 Cost ($M)	2013 Cost ($M) Ref Note 1		
Existing site	Coastal Regional consents. District Consents – noise, land use	133	247	Good on most factors except turbulence	0%
Ohariu	Significant earthworks, access	437	813	Crosswind, Low cloud / visibility	10%
Horokiwi	Noise, community issues and access	411	765	Low cloud / visibility	-12%
Mana Island (a)	DoC Estate, bird sanctuary, Iwi issues	501	932	Crosswind, Low cloud / visibility	19%
Mana Island (b)	DoC Estate, bird sanctuary, Iwi issues	549	549	Low cloud / visibility	19%
Paraparaumu	Urban development and noise	340	633	Superior	48%
Te Horo	Flood, ecological and community issues	339	631	Superior	73%
Wairarapa	Impacts on rural communities and activity	339	631	Not assessed	66%
Pencarrow	Regionally significant landscape, access	534 to 972	993 to 1808	Low cloud / visibility	9-21%

Note 1: Adjusted by Construction Cost Index annual rise per annum of circa 3% (21 years x 3%)

KEY	Statutory approval risk	Development Cost ($M 2013)	Operational factors	Travel Costs
	Straightforward	<250	Excellent	5% to 15% saving
	Low to Moderate risk	250-500	Good	Neutral (plus/minus 5%)
	Moderate risk	500-750	Adequate	Plus 5% to 10%
	Moderate to high risk	750-1B	Marginal	Plus 10% to 20%
	High risk	1B+	Not viable	20% plus

63. The applicant engaged Astral to consider the viability of a number of runway extension length options for the existing runway to determine which would allow viable operations of long haul flights from Wellington to east Asian and western North American destinations. The outcome of this assessment was that a 355m extension is the minimum viable for long haul operations of wide bodied aircraft at the Airport.

64. Given the Airport's current constraints at either end by the CMA, it was identified that enabling an extension would likely be through land reclamation, or a pile supported structure. In assessing options for extending the current runway the following performance objectives were developed:

- The 500 year earthquake event design to match the Airport's current post disaster operational requirements, which include the Airport being operational, potentially with a shortened runway, while minor repairs are undertaken;
- For a 2,500 year earthquake event the rock dyke and runway platform will remain stable following the event, although extensive reconstruction would likely be required;
- Design criteria for a 100 year wave/storm event.

65. The applicant considered the engineering viability and construction requirements for extending the existing runway to either the north or south, or a combination of the two through a pile supported structure (similar to a pier) or a platform built on reclaimed land. Following further investigation of these options, the reclamation approach was preferred because it offered the lowest lifecycle cost by a considerable margin.

66. A series of concept design options and a range of project alternatives were developed and evaluated. Based on this evaluation and additional geotechnical investigation in Lyall Bay, further options for the southern extension were identified and assessed. In total, 13 project alternatives were identified and assessed (See Technical Report 7 of the application). The assessment concluded that extending the existing runway to the north would cost significantly more than a southern extension and therefore the northern option was no longer viable.

67. Further work was then completed on investigating the various southern options as well as a north/south hybrid option. As a result of this analysis, the current proposal (project alternative 10) was recommended as the preferred option because it would achieve the projects objectives on an operational, cost, engineering and environmental basis.

Statutory reasons for requiring resource consents

Resource Management Act 1991

68. Under sections 9, 12, 14 and 15 of the Resource Management Act 1991 (the Act) the proposed activities are governed as follows:

- Section 9(2) and (3) – Restriction on the use of land
- Section 12(1) – Restrictions on certain uses of the foreshore or seabed
- Section 12(2) – Restrictions on occupying the foreshore or seabed
- Section 14(2) – Restrictions on the taking, using, damming, or diverting water
- Section 15(1) – Restrictions on the discharge of contaminants into water and onto land
- Section 15(2A) – Restrictions on the discharge of contaminants into the air

69. The actvities proposed by the applicant are not permitted as of right under these sections of the Act or by the regional plans; therefore, resource consent is required.

Regional Rules

70. The operative regional plans and Proposed Natural Resources Plan (PNRP) identify areas which are significant and/or subject to specific requirements under the plans. The location of the proposed activities is identified in the following appendices/schedules of the operative Regional Coastal Plan (RCP) and PNRP.

<u>Operative Regional Coastal Plan (RCP):</u>

- Wellington Airport Height Restriction Area - Take-off and approach fans and transitional side surfaces perimeter as shown on Planning Map 7 of the RCP.

- Water managed for contact recreation purposes. This area includes all of Wellington Harbour and the Wellington South Coast as shown on Planning Map 8D of the RCP. Activities within this area are subject to water quality guidelines for contact recreation as set out in the RCP.

- The area around Moa Point is identified as being an area where water is to be managed for shellfish gathering purposes. Activities within this area are subject to water quality guidelines for shellfish gathering as set out in the RCP.

Proposed Natural Resources Plan:

- Schedule B: Nga Taonga Nui a Kiwa. Raukawa Moana (Cook Strait) is identified as a coastal entity from which Taranaki Whanui ki te Upoko o te Oka a Maui derive cultural and spiritual identity.

- Schedule D: Statutory acknowledgements. The coastal marine area is identified in the statutory acknowledgements from the Port Nicholson Block Claims Settlement Act 2009.

- Schedule D: Statutory acknowledgements. Te Moana o Ruakawa (Cook Strait) is identified in the statutory acknowledgements from the Ngati Toa Rangatira Claims Settlement Act 2014.

- Schedule F2c: Habitats for indigenous birds in the coastal marine area. The Wellington Harbour foreshore from Palmer Head to Lyall Bay is identified as having four threatened or at risk indigenous bird species which are known to be resident or regular visitors to this habitat: little penguin, red-billed gull, variable oystercatcher and white-fronted tern.

- Schedule K: Significant surf breaks. Three significant surf breaks are located within and near the proposed runway extension area - Airport Rights, Lyall Bay Clubrooms, and Lyall Bay Corner surf breaks.

- Wellington Airport Height Restriction Area – Take-off and approach fans and transitional side surfaces perimeter.

71. The following significant sites are located near the proposed runway extension.

- Hue te Taka (Wellington South Coast) is a site of significance to Ngati Toa Rangatira located near the site of the proposed activities (Schedule C).

- Moa Point is identified in Schedule J as a regionally significant geological feature in the coastal marine area for its rock stacks, shore platforms and raised beach including the 1855 uplift ridge.

72. An assessment of the proposed activities against the rules in the operative and proposed regional plans is provided in Table 4 below.

Table 4: Assessment of the activities associated with the proposed Airport runway extension against the rules in the operative and proposed regional plans

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Reclamation of approximately 10.82ha of the coastal marine area	Coastal permit	Rule 1 of the RCP states that large reclamations outside the Commercial Port Area are a **discretionary activity** provided the reclamation is located outside any area of Significant Conservation Value. The proposed reclamation is not located within an area of Significant Conservation Value. A large reclamation is defined as a reclamation that is: • equal to or exceeds 1ha; or • extends 100 or more metres in any direction; or • is an incremental reclamation connected to or part of another reclamation which commenced or received a resource consent after 5 May 1994 and the sum of the existing and proposed reclamations are equal to or exceed the dimensions above.	Rule R214 of the PNRP provides for reclamation and drainage for regionally significant infrastructure (which includes the Wellington International Airport) including the: – occupation of the CMA – destruction of the foreshore and seabed – disturbance of the foreshore and seabed – deposition in, on or under the foreshore or seabed – discharge of contaminants and – diversion of open coastal water Outside habitats in schedules C, E4, F4, F5 and J as a **discretionary activity**. The activity is not located within any of the schedules listed in Rule R214.	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Temporary structures including their development, and use, specifically: • Site establishment facilities; • Machinery and equipment; • Lighting structures; • Geotechnical equipment; • Moorings for construction related purposes.	Coastal permit	Rule 8 of the RCP provides for the erection or placement of temporary structures as a permitted activity subject to conditions. The proposed temporary structures will not comply with the conditions of condition 8, specifically the maximum period that temporary structures can be in place and lawful public access to and along the coast. Rule 15 provides for the placement of swing moorings inside a Mooring Area that has available mooring spaces as a controlled activity. The proposed location of the moorings is not within a Mooring Area. Rule 25 provides for all remaining activities involving the use and development of structures outside an area of significant conservation value as a discretionary activity.	Rule R154 of the PNRP provides for new temporary structures including any associated occupation, disturbance, deposition, discharge and diversion as a permitted activity subject to conditions. The proposed temporary structures do not meet the conditions of R154 because they will be located within an airport height restriction area, they will be in place for more than 31 days, and will not comply with the general conditions. Rule R158 provides for structures including temporary structures within the airport height restriction area including associated: • Occupation of the CMA • Disturbance of the foreshore and seabed • Deposition in, on or under the foreshore or seabed • Discharge of contaminants; and • Diversion of open coastal water As a discretionary activity	Discretionary
Permanent structures including their development and use, specifically:	Coastal permit	Rule 17 of the RCP relates to structures which impound or contain 8ha or more of the CMA outside an area of significant conservation	Rule R158 provides for new structures within the airport height restriction area as a discretionary activity including associated: • Occupation of the CMA	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
• Rock armouring and accropodes • Stone columns • Alterations to existing wastewater outfall pipe; • Navigational aids; • Toe of reclamation below mean high water mark; • Submerged Wave Focussing Structure (SWFS) in Lyall Bay		value. The rock armouring and toe structures would fall under this rule as a **discretionary activity**. Rule 25 provides for the use and development of any structure outside an area of significant conservation value as a **discretionary activity**.	• Disturbance of the foreshore and seabed • Deposition in, on or under the foreshore or seabed • Discharge of contaminants; and • Diversion of open coastal water The rock armouring and accropodes, protection structure over the main outfall pipeline, navigation aids and toe of the reclamation are proposed to be located within the airport height restriction area and are therefore a **discretionary activity** under R158. Rule R161 of the PNRP provides for new structures outside sites of significance as a discretionary activity including any associated occupation, disturbance, deposition, discharge and diversion. The proposed Submerged Wave Focussing Structure is located outside the airport height restriction area and is not within an area of significant conservation value and is therefore a **discretionary activity** under Rule R161.	

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Occupation by temporary and permanent structures associated with the project within the CMA, as well as the temporary occupation of the CMA for construction purposes (reclamation).	Coastal Permit	Rule 84 of the RCP states that any activity involving the occupation of the CMA which would exclude public access from areas of the CMA over 10ha is a **discretionary activity**.	Rules R158 and R161 of the PNRP for temporary and permanent structures (discussed above) include the occupation of the CMA by those structures. The occupation of the CMA by temporary and permanent structures is a **discretionary activity** under rules R158 and R161.	Discretionary
Disturbance of the foreshore and seabed associated with the reclamation and the construction and use of temporary and permanent structures.	Coastal permit	Rule 37 of the RCP provides for major disturbance of the foreshore and seabed as a **discretionary activity**. Major disturbance is defined as any activity involving, in any 12 month period, disturbance of foreshore and seabed, including any removal of sand, shell or shingle, or other material: • in volumes greater than 50,000 cubic metres; or • extracted from areas equal to or greater than 4 hectares; or • extending 1000 metres or more over foreshore or seabed	Rule R214 relating to the reclamation, R158 relating to temporary structures and R161 relating to permanent structures include any associated disturbance of the foreshore and seabed. Disturbance of the foreshore and seabed associated with mooring of vessels is a **discretionary activity** under rules R214, R158 and R161.	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Deposition of material into the CMA during construction (excluding the reclamation).	Coastal permit	Rule 46 of the RCP is for the deposition of large volumes of substances on the foreshore or seabed in quantities greater than 50,000 cubic metres in any 12 month period outside any area of significant conservation value. The proposed deposition is a **discretionary activity** under Rule 46. *Note: the deposition rules in the operative RCP do not apply to reclamation activities. Reclamation has been assessed above under Rule 1 of the RCP.*	Rule R158 of the PNRP relating to temporary structures and R161 relating to permanent structures include any associated deposition of material on the foreshore and seabed. Deposition of material on the foreshore and seabed during construction is a **discretionary activity** under rules R158 and R161.	Discretionary
Deposition of sand or other natural material onto the Moa Point Beach foreshore for the purposes of beach enhancement and amenity.	Coastal Permit	Rule 45 of the RCP provides for the deposition of natural material directly onto any foreshore for the purpose of combating beach or shoreline erosion or improving the amenity value of the foreshore as a **controlled activity** subject to conditions.	Rule R207 of the PNRP provides for the deposition of natural material directly onto any foreshore as a controlled activity where it is undertaken by, or for, a local authority. As the beach nourishment is not proposed to be undertaken by, or for, a local authority it is a **discretionary activity** under Rule R208. Moa Point Beach is not identified as a site of significance in the schedules listed in Rule R208.	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Discharge of contaminants (sediment) and water into the CMA during reclamation, construction of both temporary and permanent structures and discharge of water to facilitate dewatering of the rock dyke.	Coastal permit	Rule 61 of the RCP is for the discharge of a contaminant to land or into water in the coastal marine area which is outside an area of significant conservation value. The discharges to the CMA in association with the reclamation, temporary and permanent structures and dewatering of the rock dyke are a **discretionary activity** under Rule 61.	Rules R214 relating to the reclamation, R158 relating to temporary structures and R161 relating to permanent structures include any associated discharge of contaminants. The discharge of contaminants (sediment laden water) during reclamation, and the construction and use of temporary and permanent structures is a **discretionary activity** under rules R214, R158 and R161. Rule R42 provides for the discharge of minor contaminants into water as a permitted activity subject to conditions. The discharge of water from within the rock dyke may not meet the permitted activity standards and is therefore a **discretionary activity** under R68.	Discretionary
Discharge of contaminants (sediment) and water into the CMA during earthworks to remove the hillock, reclamation, construction of both temporary and permanent structures and discharge of water to facilitate dewatering of the rock dyke.	Discharge permit	Rule 1 of the Discharges to Land Plan provides for the discharge of contaminants to land where the discharge enters water. The discharge of sediment laden water from the earthworks to remove the hillock may enter water and is a **discretionary activity** under Rule 2.	Rule R99 provides for earthworks and the discharge of stormwater to water or onto land where it will enter water as a permitted activity subject to conditions. The earthworks required to remove the hillock between Stewart Duff Drive and Freight Drive will be greater than 3,000m^2. Therefore any discharge of sediment laden water from the earthworks is a **discretionary activity** under Rule 101.	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Diversion of water in the CMA during construction of the project.	Coastal permit	Rule 76 of the RCP states that the diversion of water outside any Areas of Significant Conservation Value is a Discretionary Activity. The site is not located within an Area of Significant Conservation Value.	The several permissions which may be required under section 9 and sections 12 to 15B of the Act are often included in a single rule in the PNRP. The diversion of water associated with the activities required for the project are included in Rules R155 (temporary structures), R158 and R161 (new structures), and Rule R214 (reclamation) as restricted discretionary and discretionary activities.	Discretionary
Earthworks above mean high water springs during construction of the project.	Land use consent	The Regional Soil Plan (RSP) rules for earthworks apply to erosion prone land only. As the site does not fall within the definition of erosion prone land (land with a slope greater than 28 degrees) the RSP rules do not apply.	Rule R99 of the PNRP provides for earthworks of a contiguous area up to 3,000m^2 per property and the discharge of stormwater into water or onto land where it may enter water as a permitted activity subject to conditions. The earthworks required to remove the hillock between Stuart Duff Drive and Freight Drive will be greater than 3,000m^2. Rule R101 of the PNRP states that earthworks not meeting Rule R99 is s discretionary activity.	Discretionary
Discharge of dust to air during construction of the project.	Discharge permit	Rule 65 of the RCP provides for the discharge of dust, particulate matter, or other contaminants to air in the CMA associated with the construction of a structure as a	Rule R27 of the PNRP provides for the discharge of contaminants into air, including in the CMA, from the handling of aggregate as a permitted activity provided there is no discharge noxious, dangerous, offensive or	Discretionary

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
		permitted activity provided there is no discharge of dust which is offensive or objectionable which will have an adverse effect on the environment and subject to the general conditions. Rule 10 of the Regional Air Plan provides for the discharge of contaminants into air in connection with the sorting, storage and conveying of aggregate as a permitted activity provided there are no discharges that are noxious, dangerous, offensive or objectionable at or beyond the boundary. The applicant considers that it is unlikely that these rules will be breached but have sought resource consent as a discretionary activity under Rule 71 of the operative RCP and Rule 23 of the Operative DAP.	objectionable odour, dust, or particulate at or beyond the boundary. The applicant considers that it is unlikely that Rule R27 will be breached but have sought resource consent as a discretionary activity under Rule 41 (all remaining discharges).	

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
Discharge of operational stormwater from the runway extension once constructed	Coastal permit	Rule 53 of the Regional Coastal Plan provides for the discharge of stormwater onto land or into water in the coastal marine area from paved surface and any structure as a **permitted activity** subject to conditions. The discharge of operational stormwater following completion of the project will meet Rule 53.	Rule R214 of the PNRP provides for the reclamation and drainage for regionally significant infrastructure activities (which includes the Wellington International Airport) including any associated discharge of contaminants as a **discretionary activity**. The operational stormwater discharge from the reclamation once it is complete is covered in the ambit of this rule. Rule R52 of the PNRP states that the discharge of stormwater into water or onto or into land where it may enter water from any airport is a restricted discretionary activity. This rule will necessitate a consent being required in the future for the whole airport site. Until such time as Rule R52 becomes operative, WIAL will rely on existing use rights pursuant to section 20A of the Act to continue to authorise the discharges from the existing airport site i.e. consent is only required for discharges from the proposed reclamation area.	Discretionary
Noise within the CMA	Coastal permit	The RCP and PNRP both contain general standards in relation to noise within the CMA. The standards apply when a rule in the plan requires compliance with the general standards. The proposed activities will not meet the general standards for noise in the RCP or PNRP. Section 16(2) of the Act allows a consent authority to prescribe noise emission standards for s12 activities. The consents applied for by the		Discretionary under rules for reclamation, temporary and permanent

Activity	Consent type	Operative Regional Plans rules assessment	Proposed Natural Resources Plan (PNRP) rules assessment	Overall activity class
		applicant include noise emissions.		structures outlined above.
Operational discharges to air from aircraft		Clause 5.1.1 of the Discharge to Air plan states that the *'rules do not apply to discharges from mobile transport sources, whether or not the mobile transport source is on industrial or trade premises, and no resource consents are required for such discharges.'*	Rule R33 of the PNRP provides for the discharge of contaminants into air from a mobile source as a permitted activity. The definition of mobile sources in the PNRP includes aircraft.	Permitted

Wellington City District Plan Rules

73. An assessment of the proposed activities against the rules in the Wellington City District Plan (undertaken by Mr Daly) is provided in Table 5 below.

Table 5: An assessment of the activities associated with the proposed Airport runway extension against the Wellington City District Plan rules

Airport Precinct – Chapter 11:		
Rule 11.3.1	Construction, operation and maintenance of the proposed runway extension, and associated infrastructure and structures (including fencing and utilities) on land above legal road (Moa Point tunnel underpass). This proposal does not comply with permitted activity standard 11.1.1.8 in that an existing grass boundary adjoining Moa Point Road will not be retained as part of the proposed works.	Discretionary (Restricted)
Rule 11.3.3	Temporary construction activities/compounds, which includes site offices and facilities, compounds and laydown areas, and material stockpiles. These activities do not comply with the following permitted activity standards: • 11.1.1.1.8 - Land based noise operations • 11.1.1.3 – Dust • 11.1.1.6 – Lighting	Discretionary (Restricted)
Rule 11.3.1	Construction of new access ways in the airport precinct.	Discretionary (Restricted)
Open Space B		
Rule 17.2.4	Modification to indigenous vegetation (if present) within the construction footprint.	Discretionary (Restricted)
Rule 17.3.2	Any recreational and other activities in the Open Space B or C area not provided for as a permitted activity. The proposed runway extension is not provided for as a permitted activity.	Discretionary (Unrestricted)

Section 89 of the RMA & Rule 3.8.2	The use of reclaimed land is assessed against the rules of the adjoining area. In this case, the proposed development adjoins the Open Space B zone. Under the Open Space B rules, the proposed runway is not provided for as a permitted activity.	Discretionary (Unrestricted)
Utilities		
Rule 23.3.3	Construction of new underground utility structures or underground lines to provide for temporary construction activities, and/or the relocation of existing network utility structures or lines to provide for the construction, operation and maintenance of the runway extension. These activities do not comply with the following permitted activity standards: The construction, alteration of and addition to underground utility structures or underground lines: • on or in Open Space B and C Areas and Conservation Sites that are not on formed legal roads or accessways; or • that do not meet the Permitted Activity conditions	Discretionary (Restricted)
Earthworks – Chapter 30:		
Rule 30.2.1	The proposal will involve earthworks that do not comply with the following permitted activity standards: • 30.1.2.1(a) with respect to area and height of earthworks, and • 30.1.2.2 with respect to the distance from the coastal marine area.	Discretionary (Restricted)

Overall activity status

74. In relation to all consents/permits sought for the proposal from GWRC and WCC, the application is assessed overall as a Discretionary (unrestricted) Activity.

Notification and submissions

Notification

75. The application was publicly notified in the Dominion Post on Saturday 2 July 2016 and in the Wellingtonian and Cook Strait News on Thursday 7 July 2016.

Submissions

76. A total of 776 submissions were received in relation to the applications. This includes the 34 late submissions that were accepted. The general position of the submissions is outlined in Table 6 below.

77. We note that the Guardians of the Bay created an online submission form through Action Station and approximately 371 submissions came through in this format. These are valid submissions in accordance with Form 13 of the Resource Management (Forms, Fees, and Procedure) Regulations 2003.

Table 6: Summary of the number of submissions received on the proposal

General Position of Submission	Total
Oppose	527
Support	227
Conditional	4
Submissions that are Neutral	18
Total Submissions received	776

78. A summary of submissions is provided in Appendix 12 of this report.

Issues raised by submissions

79. We have reviewed all 776 submissions and found that most submissions traversed a range of issues relevant to both GWRC and WCC. The topics raised and the number of submissions which include discussion on these topics are outlined in Table 7 below.

80. A small number of submitters noted in their submission the difficulty they experienced in using the submission forms provided. We received feedback on the forms throughout the submission period and made changes accordingly to ensure they were as user friendly as possible.

Table 7: Summary of issues raised in submissions on the proposal

Issues	No. of times issue raised
Traffic effects including construction, airport operational and/or haul route traffic	256
Visual effects including landscape and natural character effects and/or change in outlook	43
Effects from noise (construction, airport operational and/or haul route) and vibration	202
Air quality effects including health & nuisance effects, construction dust and truck discharges	73
Effects on urban-design including open space, pedestrian and cycle changes/access around Moa Point, seating, gateway landscape and/or underpass	6
Effects from natural hazards and climate change	183
Effects on surf including wave height and period, refraction and/or Submerged Wave Focussing Structure	252
Economic effects including economic impact assessment, cost benefit analysis, funding, project viability and/or benefits	492
Effects on tangata whenua and cultural values	14
Recreational effects	220
Ecological effects	209
Effects of fill including sediment, water clarity, contaminants in fill, turbidity and/or fill source	103
Effects of erosion including beach remediation, foreshore erosion and/or accretion	19
Effects on utilities such as Moa Point wastewater pipeline, stormwater networks and/or underground cables	36

81. The assessment provided in this report covers the issues raised in submissions within the jurisdiction of GWRC.

82. Submission number 744 raises concerns about the impacts of the proposal on commercial rock lobster fishing. The issues raised in this submission are outside the area of expertise of GWRC and has not been assessed in this report.

83. Submission number 738 from the NZ Air Line Pilot Association opposes the application unless the extension includes an adequate RESA or it incorporates an engineered material arresting system. This issue is outside GWRC's jurisdiction and is currently being addressed through a separate process.

Matters for consideration

84. Section 87F of the Act outlines that if a consent authority grants a request for direct referral it must prepare a report on the application and in the report, the consent authority must—

> *(a) address issues that are set out in sections 104 to 112 to the extent that they are relevant to the application; and*
>
> *(b) suggest conditions that it considers should be imposed if the Environment Court grants the application; and*
>
> *(c) provide a summary of submissions received.*

85. The applications are for a Discretionary (unrestricted) Activity under the operative regional plans and Proposed Natural Resources Plan. The consent authority may grant or refuse consent under section 104B of the Act and, if granted, may impose conditions under section 108 of the Act.

86. Section 104(1) of the Act sets out the matters a consent authority shall have regard to in considering an application for resource consent and any submissions received. Subject to Part 2 of the Act, the matters relevant to this proposal are:

> *When considering an application for resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to –*
>
> *(a) any actual and potential effects on the environment of allowing the activity; and*
>
> *(b) any relevant provisions of –*
>
> *i. a national environmental standard,*
>
> *ii. other regulations,*
>
> *iii. a national policy statement,*
>
> *iv. a New Zealand coastal policy statement,*
>
> *v. a regional policy statement or proposed regional policy statement; and*
>
> *vi. a plan or proposed plan; and*
>
> *(c) any other matters the consent authority considers relevant and reasonably necessary to determine the application.*

87. Section 105 of the Act lists additional matters that a consent authority must have regard to when considering applications for discharge or coastal permits

to do something that would contravene section 15 of the Act. These matters are addressed later in this report.

88. Section 107(1) of the Act places restrictions on the grant of resource consents for the discharge of contaminants into water if they cause certain adverse effects in receiving waters after reasonable mixing. The effects listed in section 107(1) of the Act are also discussed later in this report.

Assessment of actual and potential effects 104(1)(a)

89. The assessment of environmental effects below considers the key effects arising from the application that are within the jurisdiction of GWRC. These effects are:

- Effects on coastal processes
- Ecological and water quality effects
- Effects on tangata whenua and cultural values
- Noise and vibration within the coastal marine area
- Effects on air quality
- Effects on archaeological and heritage values
- Effects on recreation activities
- Landscape and visual effects
- Effects on natural character
- Natural hazards
- Effects on coastal birds
- Effects of operational stormwater discharges
- Effects on navigational safety
- Effects on Moa Point wastewater treatment plant infrastructure
- Effects from the ongoing maintenance of structures
- Economic impacts

Effects on coastal processes

Effects of the proposal

90. The actual or potential effects of the proposed runway extension and SWFS on coastal processes, specifically hydrodynamics, sediment transport and

morphological effects in the nearshore areas of Lyall Bay and Moa Point are outlined below.

Hydrodynamic effects

91. Hydrodynamic effects (i.e. changes in tidal and current flows, waves and swell post construction of the runway extension) were assessed using models outlined in Technical Reports 15 and 17. In summary, hydrodynamic modelling undertaken by the applicant showed:

- Within Lyall Bay the tidal currents are very small and the development will have no significant effect on tidal currents (excluding currents generated by the wind).

- The introduction of the proposed runway extension may create two calmer zones with negligible net currents either side of the proposed runway extension. While less general flushing is anticipated as a consequent of these changes, particularly to the east of the runway, the Moa Point bay remains open and exposed to waves; therefore the effect on coastal physical processes is considered minor.

- There will be a negligible effect on circulation (near the foreshore) of the inner bay.

- The strong ebb-tidal currents that enter the bay and exit back out to Cook Strait remain unchanged under the pre and post extension scenarios modelled.

- Little change in Lyall Bay wind-driven circulation during strong northerly winds, other than minor localised changes around the runway embankment area. Circulation during northerly winds would remain largely unaffected in the bay by the proposed runway extension.

- The main effect on wave climate (wave heights, periods and directions) will be at The Corner surf break, where wave height could be reduced by approximately 0.2m to 0.4m for a 1.5m incident wave. Conversely, a localised increase in the 8 second wind waves were observed immediately behind the breakwater due to diffraction.

- The bay east of the runway was shown to exhibit a reduction in wave height, with more resonant or wave sloshing behaviour likely after the extension has been constructed.

- A slight increase in wave heights was modelled around the breakwater, the narrow central component of the inner bay of the main beach and at an area close to the eastern end of the bay near The Corner surf break.

- Wave height in the central part of Lyall Bay Beach was shown to only be slightly affected by the proposed runway extension, otherwise elsewhere in the bay, including the western side, the effects on wave climate were considered negligible.

92. Effects on surfing amenity are covered in the recreational effects assessment later in this report.

Sediment transport and morphological effects

93. The sediment transport modelling undertaken by the applicant showed:

- Changes would be no more than minor (<1 cm) over much of Lyall Bay, including the nearshore area off Lyall Bay Beach and the eastern cove.
- Net change in seabed heights are likely to be small, particularly within the inner Lyall Bay, the main beach, the eastern cove and the areas along the western and eastern perimeter of the bay.
- Localised changes within 50m of the proposed runway extension are likely to be observed where the existing sea bed has to adjust to the presence of the rock dyke and the associated wave interactions.
- Localised deposition may occur on the SW and SE corners of the rock dyke under certain environmental conditions. Over much longer periods, certain environmental conditions may re-mobilise sand deposits.
- Long-term morphological effects are difficult to predict due to limited beach profile data. Seabed height variability largely occurred within about 600m of the shoreline which suggests that any morphological effects of the proposal will be driven by waves and currents (which will remain largely unchanged post construction).

94. The effect of the proposed SWFS on the shoreline is assessed in Technical report 14. In summary, modelling undertaken by the applicant predicted the position of the shoreline may recede approximately 10-15m in the lee of the submerged focusing structure along a 200 m wide stretch of the beach and accrete along a 300m wide stretch approximately 5m on both sides. The predicted changes to the shoreline would occur on top of the natural variability, and were not considered to be significant by the applicant.

Avoiding, remedying and mitigating effects

95. The following measures are proposed by the applicant to monitor and mitigate the effect on coastal processes:

- Post construction monitoring data, such as seabed bathymetry and beach profiles will be gathered to ensure any physical changes to the existing environment are appropriately documented and analysed;
- A SWFS to mitigate or enhance surfing amenity in Lyall Bay;
- Changes to the shoreline in lee of the SWFS to be managed at the detailed design phase.

Assessment

96. Dr Goring reviewed the models in Technical Reports 14, 15 and 17 and considers they provide a thorough examination of the effects of the development on coastal processes.

97. With regard to hydrodynamic effects, Dr Goring states:

> *The changes in wave heights along the transects clearly show that the main effect of the extension will be in reduced diffraction (sideways spreading of energy) in the vicinity of The Corner at the eastern end of Lyall Bay, but little changes elsewhere.*

98. Dr Goring notes there could be reductions of up to 0.8m in wave height at The Corner surf break, depending on the incident wave height and period. These results appear to conflict with the results from models presented in Technical Report 14 where wave heights at The Corner during three selected events were found to exhibit little change.

99. The author and Dr Goring advise that sediment transport modelling (Technical Report 15) used to assess the effect of the extension needs to be used with caution (because model validation is not practicable), meaning that the results can only be used in a comparative, not absolute sense. However, Dr Goring agrees with the applicant's assessment that there is likely to be little change in erosion and sediment deposition at Lyall Bay and Moa Point Beaches.

100. With regard to the suspended-sediment plume model, Dr Goring advises that in high winds (either northerly or southerly), the plume will disperse further, and for a discharge of 2 kg/s the plume may extend into Lyall Bay. To ensure the discharge has a no more than minor effects on water quality Dr Goring recommends the discharge would need to be restricted to 1kg/s. Dr Morrisey has advised that the critical controls should be the limits at the boundary of the mixing zone rather than the discharge rate. This allows the contractor to have flexibility to discharge up to 2kg/s in suitable conditions and they will be responsible for ensuring that erosion and sediment control measures and the rate of discharge are appropriate so the limits at the mixing zone boundary are not breached. We agree with this approach.

101. An assessment of the effects of sediment discharges to the coastal marine area, and the proposed erosion and sediment control measures are described in the ecological and water quality effects section below.

102. A shoreline model was run by DHI (Technical Report 14) to assess the effect of the SWFS on the beach at Lyall Bay. Dr Goring acknowledges that there was limited data available (in particular bathymetry and sediment sizes) to inform the shoreline model. However, Dr Goring recommends that the DHI shoreline model is validated using evidence of shoreline retreat in Lyall Bay (i.e. 1979 data showing retreat in winter and recovering in summer by 20m) to provide certainty to decision makers that model outputs can be relied upon. **We recommend the applicant provide this information for decision makers to consider.**

103. The predicted retreat (15m) of the shoreline opposite the SWFS will be on top of natural variability, Dr Goring raises the following concerns**:**

- Natural variability has been excluded from the model but it is unclear how this was done;

- Shoreline movement may not be a simple calculation of adding natural variability to shoreline retreat predictions as sediment transport process are non-linear, they result from complex interactions between process. It is unclear how linearity can possibly be applicable for shoreline movement.

- Assuming the 15m retreat from the SWFS can be added to the 20m natural retreat during winter means a total retreat of 35m. With such a large retreat in shoreline, waves could impinge on the dune system and the road. This matter has not been assessed in the consent application nor have remedial action or mitigation options (if at all possible) been proposed in the event the predicted recession occurs.

104. **We recommend the applicant provides a response to the matters listed above for decision makers to consider.**

105. The applicant proposes to undertake a further bathymetric survey in eastern Lyall Bay two years following construction of the rock dyke and compare the results to the bathymetric survey carried out by NIWA in January 2014 (refer to Technical Report 17 p.80 and Technical Report 15 p. 26-27). Dr Goring notes that the 2014 survey was for the western (not eastern) part of Lyall Bay. To provide sufficient information to inform coastal process models, Dr Goring recommends a bathymetric survey of the entire Lyall Bay that is more detailed than earlier surveys which still allows comparison to be made. This survey should be compared with the results from earlier surveys (refer to Technical Report 15 p.26-27) to ascertain any anomalous changes in seabed heights or accretion/deposition patterns following the proposed development.

106. To provide baseline information on erosion and accretion in Lyall Bay and inform the design of the SWFS Technical Report 14 (p. 26) recommends that five coastal profiles along Lyall Bay are surveyed every 1-2 months for a full year. This recommendation has not been proposed as a condition of consent by the applicant. Dr Goring recommends this be required as a condition of consent.

107. In addition, to inform the design of the SWFS Technical Report 14 (p. 26) recommends that bed sediment grab samples are collected between +2m and -5m depths at one metre interval depth contours for three transects along the beach. This recommendation has not been proposed as a condition of consent by the applicant. Dr Goring recommends this monitoring requirement is added to the applicant's proposed condition 70.

108. Technical Reports 11 and 14 (SWFS effects) and Technical Reports 15 and 17 (runway extension effects) make reference to the paucity of bathymetry data available and the resulting difficulties that caused with the modelling. Therefore additional bathymetric surveying validated with field monitoring is

required to establish baseline information, and is critical to appropriately monitor and mitigate any adverse effects resulting from the proposed SWFS (presuming this is possible).

109. In summary:

- the proposed runway extension will likely result in a less than minor effect on coastal processes (hydrodynamic and sediment transport processes) in Lyall Bay and Moa Point.

- the applicant considers the predicted changes to shoreline as a result of the SWFS will not be significant. However the level of effect the SWFS will have on the shoreline in the lee of the structure is uncertain because the validity of the model is in question. The assessment above describes the information that is required before a recommendation can be made on this matter.

- considerable baseline information is required to characterise the existing environment so that actual effects of the proposed runway extension and SWFS on coastal processes can be identified, monitored and mitigated.

110. Provided the shoreline model is validated and the SWFS designed and managed to minimise erosion/deposition on the foreshore, we consider that the conditions of consent recommended below will ensure that any adverse effects on coastal processes could be mitigated to an acceptable level. Note: the level of effect on surfing amenity is described in a separate section of this report under 'Recreational Effects'.

Recommended conditions

111. The applicant proposes the following bathymetric surveys as conditions of consent:

- Prior to the construction of the proposed runway and SWFS, undertake seasonal surveying of nearshore bed morphology in Lyall Bay including at the anticipated location of the SWFS, on a quarterly basis for one year. The surveys will be undertaken using LiDAR or similar technology. The purpose of this monitoring is to assess and quantify seasonal variations in sediment movement in Lyall Bay (baseline information).

- Six months post-construction of the SWFS, undertake seasonal bed morphology monitoring of the Lyall Bay area including at The Corner and the location of the SWFS using LiDAR or similar technology. The purpose of this monitoring is to assess whether there are any significant adverse effects from the SWFS with respect to the sea bed morphology or adverse erosion/accretion, and recreational safety within the Lyall Bay area.

- Two years following the construction of the rock dyke, undertake a bathymetric survey in eastern Lyall Bay similar to that described in Technical Report 17 which was undertaken in 2014. Prepare a hydrographic survey report comparing the results of the survey to the 2014 survey. The purpose of this monitoring is to assess any anomalous changes

in seabed heights or accretion/deposition patterns resulting from the proposed runway extension.

112. Dr Goring noted there appears to be a lack of coordination in the specification of the three bathymetric surveys recommended by the applicant. As noted above there is insufficient baseline information on sea bed morphology within the Lyall Bay area, and post construction surveying is critical in identifying any adverse effects the SWFS may have on erosion/deposition. We therefore recommend the following conditions about bathymetric surveying pre and post construction:

- Survey sea bed morphology of the whole of Lyall Bay on a quarterly basis for a period of one year prior to the construction of the proposed runway extension or SWFS. The method of survey is not specified in the recommended condition so that the consent holder can use LiDAR (or similar) technology or multi-beam surveys as used in the 2014 bathymetric survey. The key point is that the surveys are undertaken in such a way that they are comparable with other sea bed surveys. The purpose of this survey and field monitoring outlined below is to establish a seasonal baseline.

- Survey sea bed morphology of the whole of Lyall Bay six months following the completion of the SWFS. Again, the method of survey is not specified for the reason outlined above. The purpose of this survey is to determine if the SWFS is causing changes to sea bed morphology or adverse erosion/accretion on the foreshore or impacting recreational safety.

- Survey sea bed morphology of the whole of Lyall Bay and Moa Point embayment two years following the completion of the SWFS. Compare the survey to the results from the Mackay & Mitchell (2014) bathymetric survey referenced in Technical Report 17, any other relevant surveys and surveys undertaken as part of consent monitoring. Submit a report to GWRC outlining any anomalous changes in seabed heights or accretion/deposition patterns post construction of the proposed runway extension and SWFS and any remedial action/mitigation required. Again, the method of survey is not specified for the reason outlined above. The timing of this survey has been adjusted to after the SWFS is constructed (rather than the rock dyke as proposed by the applicant) so that any effects of the SWFS can be assessed as well. The purpose of this survey is to determine any anomalous changes in seabed heights or accretion/deposition patterns post construction of the proposed runway extension and SWFS in Lyall Bay and Moa Point embayment. The report is required to outline any remedial action or measures required to mitigate adverse effects.

113. We agree with the following conditions of consent recommended by the applicant to track construction progress in the CMA:

- Notify GWRC within 10 days of completing each stage of ground-treatment works, reclamation structures and revetments within the CMA;

- A complete set of as-built plans, final topographic, bathymetric data, and engineering certification of structures submitted to GWRC within 60 days of the reclamation works being completed. The applicant has proposed to undertake remedial work and/or mitigation works in the event the SWFS does not meet the key performance criteria. One of the key performance criteria of the SWFS is that it does not increase coastal erosion or accretion in the lee of the structure. Based on advice from Dr Goring we recommend that any remedial works or mitigation proposed to address poor performance of the SWFS (including impacts on shoreline morphology) is approved by GWRC.

Ecological and water quality effects

Effects of the proposal

114. The ecological effects associated with the construction of the proposed runway extension are largely associated with the disturbance to the seabed and the production of turbid plumes from dewatering discharges. The actual or potential effects arising from construction activities on coastal water quality and ecology are outlined below.

115. The proposed reclamation and occupation of the CMA will cause physical disturbance and loss of habitat. This will result in the loss of intertidal and subtidal habitat of an area of approximately 10.82 ha. The habitat loss will include soft bottom and reef habitat and the biota that currently exist within the area.

116. During the construction phase, disturbance of the seabed, dewatering discharges from the reclamation infilling and discharges from land based earthworks (removal of the hillock) will result in increases in suspended sediment and turbidity of the water column. This could have effects on plankton and fish in the water column, benthic biota and reduced light levels, which could impact on benthic and pelagic algae and foraging seabirds. If fill is contaminated, this could result in the introduction of contaminants to the CMA. The effects of suspended sediment within the CMA are addressed in the recreational effects assessment.

117. The sedimentation of material suspended by construction works will eventually settle out. This has the potential to smother benthic animals and plants causing reduced growth and changes to community structure and in extreme cases mortality.

118. Noise from drilling and blasting activities has the potential to generate underwater noise which could affect some fish and mammals that are receptive to sound. Animals with swim bladders and other sensitive organs can be impacted by sudden pressure waves causing rupture and possible mortality. The installation of stone columns and/or vibro-coring in the seabed and reclamation area to support the rock dyke and runway fill material are potential noise and vibration sources.

Avoiding, remedying and mitigating effects

119. The applicant has proposed the following mitigation and monitoring to address the potential effects on the ecological values in the CMA:

- The preparation of an Erosion and Sediment Control Plan which will set out measures to minimise the discharge of turbid water. The Erosion and Sediment Control Plan will also set out construction methodologies to prevent uncontrolled discharges of sediment or other contaminants (such as hydrocarbons and hydraulic fluid from machinery) into the CMA.

- The establishment of compliance and control monitoring sites for continuous (telemetered) turbidity sensors.

- The establishment of appropriate threshold limits for monitoring of turbidity:

  - When the sensor-calibrated suspended sediment concentrations at the control site/s, using a 48-hour rolling median, are less than 15 mg/L then the maximum suspended sediment concentration allowable at the compliance site/s shall be 25 mg/L;

  - When sensor-calibrated suspended sediment concentrations at the control site/s are equal to or above 15mg/L using a 48-hour rolling median, then the suspended sediment concentrations at the compliance site/s shall not exceed the ambient concentrations by more than a maximum of an additional 10 mg/L (ambient plus 10mg/L) based on a 48-hour rolling median.

- In the event that the turbidity limits outlined above are exceeded, a full audit of all erosion and sediment control measures will be undertaken, causes of the exceedance will be identified and remedied and GWRC notified of the exceedance.

- In the event that the turbidity limits outlined above are exceeded for more than 48 hours, an investigation into the likely extent of effect shall be undertaken within three days and a report into the investigation provided to GWRC.

- As far as practicable the use of clean fill low in silts, preferably marine based sands.

- The monitoring of the sediment plume during construction of the reclamation and rock wall to confirm that limits are achieved and the extent of the plume is as predicted;

- Preparation of an Ecological Mitigation and Monitoring Plan which requires the following habitat enhancement measures:

  - The addition of roughened/pitted surfaces on 50% of each accropode to increase the range of mirco-habitats available for colonising marine algae and invertebrates;

- The inclusion of five shallow indented prisms along the arm of each accropode to increase the possibility of at least one forming a rock pool no matter what the final orientation of each accropode.

- The insertion of one $1m^3$ concrete block with a truncated conical shaped hole in the top layer of the secondary armour every 10m around the perimeter of the rock dyke somewhere between mean low spring and mean high spring tide levels.

- Accropodes are to incorporate holes of three sizes to accommodate newly settled lobsters.

- The rock dyke to provide for a range of crevices, overhangs, flat open surfaces and dark shaded surfaces for a range of fish and invertebrates.

- The 0.5m filter bed where the rock bed meets the seabed is to be sufficiently stable for the attachment and growth of macroalgae in order to reduce sediment scour around the rock dyke.

- The rock dyke may result in nesting sites for penguins.

- Field collection of selected mobile marco-invertebrates from reefs destined for burial, holding these for the construction period in sea water facilities on land, and later transferring them to new reef surfaces once the construction is completed.

- Monitoring for marine mammals during construction and stopping construction activities if marine mammals (dolphins and whales) are observed within 100m of the work.

- Surveys of the reef and benthic communities three years post construction and comparative analysis with surrounding reefs to indicate success of the recolonisation process.

Assessment

120. The applicant's assessment of effects of the proposal on marine ecology has been reviewed by a number of technical experts. Their comments are included in the assessment below.

Physical disturbance and loss of habitat

121. The area of soft-sediment habitat lost as a result of the runway extension will be 5.9ha which represents approximately 3% of such habitat in Lyall Bay. The applicant considers that this loss of soft-sediment habitat is not ecologically significant given the absence of any species or habitat of particular ecological or conservation significance, and the availability of equivalent habitat elsewhere in Lyall Bay. Dr Morrisey has reviewed the applicant's technical reports and agrees with this conclusion.

122. The area of subtidal reef habitat (which includes natural rock and existing rock dyke) lost as a result of the runway extension will be 5ha which represents

approximately 5% of the subtidal reef in Lyall Bay. A further 0.28km of intertidal hard habitat will be lost (much of it artificial) which represents 7% of the total length of coastline bordered by reef in the bay. The rock dyke around the proposed runway extension would result in a net gain of 0.6km of hard coastal habitat bordered by reef and a net loss of 2.3ha (less than 3%) of the total subtidal reef habitat in the bay. The applicant considers that the effects of the loss of hard-substrata habitats will not be ecologically significant. Dr Morrisey agrees with the applicant's conclusion.

123. The applicant has proposed to develop an Ecological Mitigation and Monitoring Plan (with the aim of achieving a similar level of habitat and species diversity along the proposed rock dyke post-construction of the runway extension comparative to communities on other reefs in Lyall Bay. It is proposed that mobile macroinvertebrates (including paua, kina, starfish and large gastropods) be collected from reefs within the reclamation area prior to the start of construction. These will be held in suitable seawater facilities on land and transferred back to new hard substrata once construction is completed. The Ecological Mitigation and Monitoring Plan is proposed to set out methods to determine whether remedial or mitigation measures have been successfully achieved.

124. In their submission on the application, the Paua Industry Council suggest that where possible the species in the area of hard substratum that would be buried beneath the proposed reclamation should be translocated to Hue te Taka peninsula to the east of the proposed reclamation. Dr Morrisey considers that this should be included in the Ecological Mitigation and Monitoring Plan as an alternative to the collection of larger invertebrates, holding and subsequently placing them on the new structure (as proposed by the applicant).

125. The Paua Industry Council also suggests that juvenile paua and kina be translocated to the new rock dyke to provide founder populations to accelerate recolonisation. Dr Morrisey considers that this should be included in the Ecological Mitigation and Monitoring Plan and recommends that the Ecological Mitigation and Monitoring Plan include the source of the paua and kina and consider issues of genetic compatibility related to this.

126. Dr Morrisey recommends that, if feasible, molluscs collected from reefs within the reclamation area should be tagged before release and their retention and survival on the new reef be monitored to assess the effectiveness of this mitigation. A mechanism will also need to be developed for obtaining information on any transplanted animals that are subsequently collected by recreational or commercial fishers. Dr Morrisey's recommendation has been included in the recommended conditions for an Ecological Mitigation and Monitoring Plan.

127. The Paua Industry Council Limited has suggested that extra artificial reefs be created in the middle of Moa Point Bay to provide a reef-like pathway to encourage recolonisation of the proposed new rock dyke and increase the amenity values for fishers and divers. Dr Morrisey considers that this should be included in the requirements of the Ecological Mitigation and Monitoring Plan.

128. The applicant proposes to undertake surveys of the reef and benthic environment along the rock dyke and other reefs in Lyall Bay three years after completion of construction to determine the degree of recolonisation. Given the relatively low diversity and abundance of macrofauna in the soft-sediment habitats of the bay Dr Morrisey recommends the design of post construction surveys should include meiofauna. Meiofauna are potentially better indicators of environmental change than macrofauna in the present context. The inclusion of meiofauna in the monitoring surveys has been included in the recommended conditions for an Ecological Mitigation and Monitoring Plan.

129. The Department of Conservation's submission on the application proposes a condition requiring that any rocks where a red foliose alga is growing (as referred to in Technical Report 18, NIWA – Ecological Character Report), should be moved from the area that will be disturbed by the proposed work to an undisturbed area nearby before works begin. Dr Morrisey recommends that this should be required as a condition of consent. We agree with Dr Morrisey and have recommended the applicant's proposed condition for the Ecological Mitigation and Monitoring Plan be amended to include this requirement.

Birds mammals and fish

130. Birds, mammals and fish can be adversely affected by construction noise, vibration and light. The applicant considers that adverse effects on these animals during the construction phase are not likely to be significant because the area is already subject to existing noise and light from airport operations. Dr Morrisey considers that the noise from pile-driving poses a particular risk to marine mammals and recommends that these risks be mitigated through the Ecological Mitigation and Monitoring Plan. Dr Morrisey considers that the risks to marine mammals from collision with vessels working on the reclamation or entanglement with structures during construction should also be addressed in the Ecological Mitigation and Monitoring Plan.

131. Dr Crisp has considered the effects of construction activities on coastal birds and this assessment is covered in the 'effects on coastal birds' section later in this report.

Effects of sediments suspended during ground improvements

132. There may be a need for ground improvements as part of the project but this is not known at this stage. The application states that the ground improvement methodology could include stone columns and/or vibro-compaction. The installation of stone columns is undertaken by ramming a pile to the required depth and then installing stones inside the casing, after which the casing is removed. Mr McLean considers that there will be localised minor sediment discharges as the casing is rammed in and then removed. Mr McLean considers that the sediment related effects of both stone columns and vibro-compaction can be managed to an appropriate level through the use of silt curtains. It is recommended that the use of silt curtains be outlined in the Erosion and Sediment Control Plan to be approved by GWRC prior to construction commencing.

Effects of sediments suspended during construction of the rock dyke

133. The sediment related effects from the placement of material during the construction of the rock dyke will depend on the final construction methodology and the type of material used for the construction. Dr Morrisey's assessment is that the amount of sediment suspended during placement of the rock dyke will be very limited and short lived given the small proportion of fine material (silts and clay) in the sediment of Lyall Bay. Mr McLean considers that the effects will be minor provided appropriate mitigation measures, such as silt curtains, are installed. Such measures will need to be set out in the Erosion and Sediment Control Plan and approved by GWRC prior to construction commencing.

Effects of sediment discharges during the removal of the 'hillock'

134. The applicant proposes to remove a small hillock located within the airport site. The works for the removal of the hillock have the potential to result in the discharge of sediment laden water to the CMA. The applicant proposes to manage the effects of the discharge from these works through an Erosion and Sediment Control Plan. We agree that the potential effects from discharge from the removal of the hillock can be appropriately mitigated through the Erosion and Sediment Control Plan.

Effects of dewatering during fill placement

135. Dewatering to the CMA during the placement of fill material has the greatest potential sediment related effect on the marine environment.

136. There is the potential for the introduction of contaminants associated with fill material used in the construction of the reclamation, however information on the source of the fill is not available at present. The applicant proposes that all imported fill material conform to the Ministry for the Environment's 'clean-fill' requirements (Publication ME418, *A Guide to the Management of Cleanfills*, 2002). Dr Morrisey considers that provided this is the case, the risk from suspension and dispersal of sediment associated contaminants during construction will be negligible. Both Dr Morrisey and Mr McLean recommend that a testing regime be implemented to ensure that all material is confirmed as being cleanfill. It is recommended that this be addressed through the Construction Management Plan.

137. A number of submissions raised concerns about contaminants in dredged material having ecological impacts in the CMA (should the use of dredged material as fill become an option to the applicant). Dr Conwell (GWRC Environmental Scientist) has provided advice on the contaminant levels in the material proposed to be dredged from Wellington Harbour. Only sediment from the Thorndon Container Wharf area (and not the Harbour Entrance Area) is contaminated and to GWRC's knowledge is not proposed to use this material as fill for the runway extension.

138. Dr Conwell's assessment is that the results of sediment analyses from the Harbour Entrance Area indicate contaminant concentrations are very low, and

well below the ANZECC (2000) sediment quality guideline values. If dredged material from the harbour deepening project at the Harbour Entrance area is to be used as fill for the runway extension, Dr Conwell does not consider further testing to be required – there are no historical indications of contaminants, no known sources of contaminants, and it is not a depositional zone for stormwater related and fine particulate contaminants. The dredged material from the harbour entrance (if used) will not contribute significantly to Lyall Bay sediment concentrations. The 'Harbour Entrance' is a defined area and is shown in Figure 5 below. A condition of consent is recommended that would only allow dredged material from the 'Harbour Entrance Area' to be used as reclamation fill.

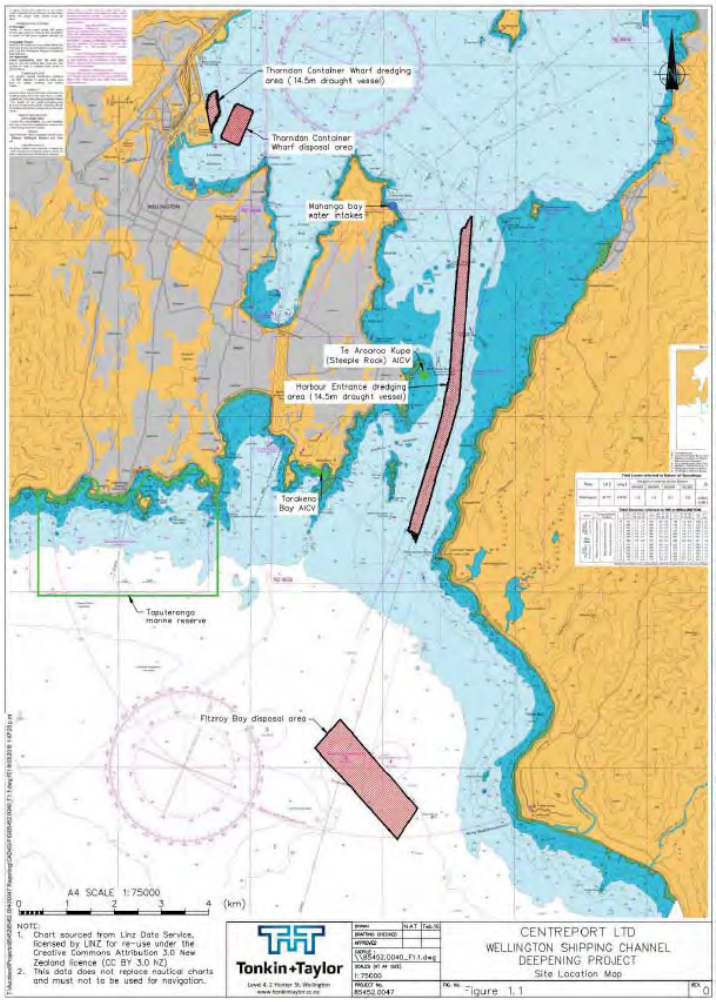


Figure 5: Site location map showing location of proposed Harbour Entrance Dredging Area. Source: *Draft marine ecological assessment for Wellington harbour shipping channel deepening*, Tonkin and Taylor (May 2016)

139. The proposed construction programme indicates that the reclamation filling could take between 5 and 18 months depending on the source of material (Stage H in the indicative construction sequence). In this regard there will be sediment discharges for the duration of the reclamation operation. Dispersal of suspended sediment generated by dewatering and runoff from the fill used in the reclamation was modelled numerically by the applicant for two rates of discharge (1kg/s and 2kg/s) and for three proposed discharge locations around

the perimeter of the reclamation, under different wind conditions. The proposed discharge locations are illustrated in Figure 6 below.

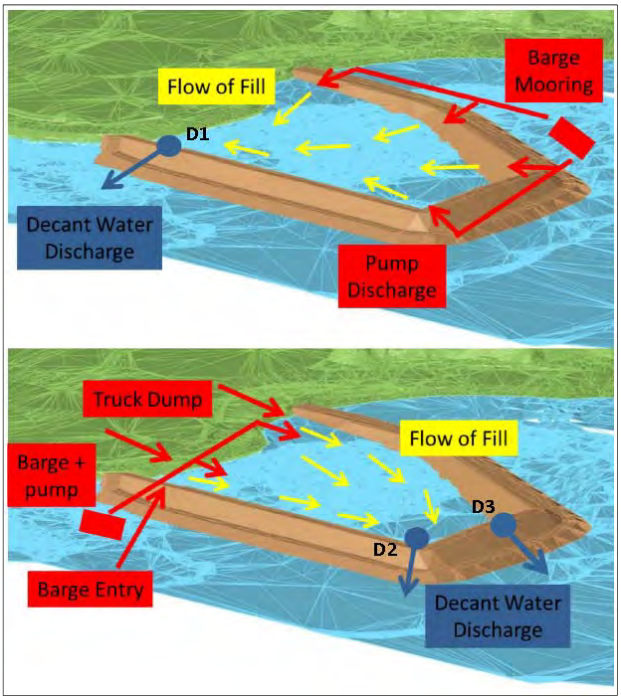


Figure 6: Schematic of a NW decant discharge location (top) and a SW discharge location (bottom) in the perimeter rock dyke. Source: *Technical Report 17, NIWA - Coastal Hydrodynamics and sediment processes in Lyall Bay (March 2016)*

140. The modelling results presented in the application suggest that a maximum concentration of total suspended solids (TSS) at the edge of a 150m mixing zone around each discharge point would be 15 mg/L and 34 mg/L for discharges of 1kg/s and 2kg/s respectively. For most of Lyall Bay, concentrations would be < 8mg/L under all modelled scenarios. These concentrations are comparable to those generated by wave actions during storms and from swells entering the bay from Cook Strait. The applicant concluded that adverse ecological effects are unlikely, particularly after reasonable mixing. Dr Morrisey agrees with this conclusion. Dr Morrisey also considers the effects from the re-deposition of sediment are unlikely and any adverse effects are likely to be localised and short term.

141. The Taputeranga Marine Reserve lies immediately to the west of Lyall Bay, occupying 854ha and extending 2.3km from the coast. The principal far-field effect of construction of the runway extension is a temporary increase in the concentration of suspended sediment in the water column and possible re-deposition of this material in sheltered areas. The applicant's modelling of the sediment plume shows that the plume would not reach the marine reserve under any of the scenarios modelled. Dr Morrisey considers that adverse effects on the marine reserve from suspended or re-deposited sediment is very unlikely to occur. Dr Morrisey also considers that adverse effects on the marine reserve from underwater noise during construction are also unlikely given that the construction site is 1.5km from the eastern boundary of the reserve.

142. The Department of Conservation (DoC) (in their submission on the application) requested that monitoring of suspended sediment be undertaken at the boundary of the marine reserve. Based on the applicant's and Dr Morrisey's assessment, we do not consider this monitoring to be necessary.

143. In their submission on the resource consent application, the Friends of Taputeranga Reserve (submission number 346) raised concerns about the possibility of fine sediment blankets during the construction period adversely affecting the re-colonisation and recovery of rocky and soft sediment communities along the Lyall Bay shoreline if significant sedimentation was to occur. It is considered that any risk of significant deposition will be spatially and temporally limited. The potential ecological effects of this temporary deposition will be minor in Dr Morrisey's opinion.

Erosion and sediment control and discharge limits

144. The applicant has proposed that during construction work and dewatering, TSS concentrations at the edge of a 150m mixing zone around each outfall shall not exceed 25 mg/L when the concentration at a reference location station in Lyall Bay is less than 15 mg/L, and shall not exceed the reference concentration by more than 10 mg/L when the concentration at the reference site is > 15 mg/L. These values are based on 48-hour rolling medians derived from continuously monitored, telemetered turbidity sensors with the data processed on a daily (24 hour) basis.

145. The TSS limits proposed by the applicant are based on information on effects of suspended sediment on visual foraging by terns and gannets. The limits have been used for dredging projects for the Port of Melbourne and Port Otago. Based on the information presented by the applicant, Dr Morrisey considers the proposed limits to be appropriate. Dr Morrisey also considers that the reasonable mixing zone proposed by the applicant to be appropriate given the size of the mixing zone relative to that of Lyall Bay and the fact that the area within the mixing zone consists predominantly of soft-sediment seabed and artificial hard substrata.

146. The modelling suggests that concentrations of suspended sediment would exceed 25 mg/L at the edge of the mixing zone under certain combinations of wind direction and point of discharge (as highlighted in Dr Goring's assessment). However, Dr Morrisey is comfortable with both the 1kg/s and 2kg/s discharge rates because the critical controls will be the limits at the boundary of the mixing zone. The contractor will have flexibility in the discharge rate (up to 2kg/s) and will be required to use erosion and sediment control measures and adjust the rate of discharge (if necessary) to ensure the limits at the mixing zone boundary are not breached.

147. In their submission on the application, DoC submitted on the application and requested that, if the TSS concentration at the control site(s) is less than 15 mg/L, the maximum suspended concentration allowable at the compliance site(s) shall be no more than 15 mg/L above the sediment concentration at the control site up to a maximum concentration of 25 mg/L. Dr Morrisey has considered this request and has advised that the applicant's proposed limits

apply within the reasonable mixing zone which is relatively small and the modelling suggests that concentrations decline fairly rapidly beyond this so there is no need for the reduction suggested by DoC.

148. Both Dr Morrisey and Mr McLean highlight that because the applicant has proposed limits for TSS but have proposed continuously monitoring of turbidity, the concentration of TSS requires calibration of turbidity values against known TSS concentrations (in the laboratory). This needs to be done using the fill material once determined. As the fill will not be from a single source, this calibration exercise will need to be undertaken each time the fill source changes. Continuously monitoring turbidity would provide real time data that can be compared with the compliance limit (calibrated to turbidity) which would then enable appropriate adaptive management actions to be undertaken in a timely manner.

149. The Ministry for the Environment *Guidelines for the management of Water colour and clarity* (1994) recommend that guidelines for the protection of visual water clarity should be used in preference to suspended solids concentrations or turbidity. Visual clarity is particularly relevant for this application because the proposed limits are intended to protect the ability of seabirds to hunt visually. There is no information to indicate what an appropriate minimum clarity would be to protect bird feeding i.e. that corresponds to the TSS limits. Dr Morrisey recommends that visual clarity should also be measured during the calibration of turbidity and TSS to determine the relationships between visual clarity and turbidity and between visual clarity and TSS. Dr Morrisey recommends that visual clarity (as transmissivity) should be monitored in conjunction with turbidity during construction and there should be a condition of consent requiring that clarity is not to be reduced by more than 50% of background at the edge of the reasonable mixing zone (i.e. the value at the reference site) as a result of the discharge.

150. Consent conditions requiring the calibration of turbidity, TSS and clarity (as transmissivity), continuous monitoring of turbidity and clarity and limits for turbidity and clarity have been suggested below. The applicant has not provided details of the number of monitoring sensors that will be deployed. Dr Goring recommends at least three monitoring sites (at 150m from each of the discharge points) and at least 5 control sites at various locations in Lyall Bay.

151. In their submission on the application, DoC requested monitoring of suspended sediment concentrations at stations along a gradient away from the discharge sites. This is not considered useful unless the information is used by the consent holder to inform site management. The proposed conditions are considered to be clear and combined with the modelling results, there is no reason to expect that limits would be exceeded elsewhere when they are not exceeded at the mixing zone boundary. A condition requiring the monitoring of suspended sediment concentrations along the gradient away from the discharge sites is not considered necessary.

152. The applicant states that an adaptive management approach to monitoring turbidity against background levels will be required. Mr McLean notes that the

limits proposed by the applicant are not adaptive management triggers, they are compliance limits. Both Mr McLean and Dr Morrisey consider that it is necessary for early warning (management) triggers to be established for turbidity and clarity. Management triggers would allow the contractor to make any necessary changes to site management before compliance breaches occur, rather than just responding after a breach of the compliance limit has occurred. We agree that this approach is appropriate. Mr McLean considers that should the management triggers be reached actions required by the consent holder should include a full audit of the site controls and any necessary maintenance be undertaking. The management triggers for turbidity and clarity and the actions required should the triggers be reached have been included as requirements of the erosion and sediment control plan and recommended conditions of consent.

153. Dr Morrisey considers that in the event of a breach of the management triggers, information on the rate of the discharge leading up to the breach would help identify the cause. Because the assumed rate of discharge of suspended sediment is integral to the modelling of the extent of the sediment plume, Dr Morrisey recommends that if TSS concentrations exceed the management triggers, the actual rate of discharge (as concentration times flow rate) should be measured at the discharge points to verify the assumptions of the model. Dr Morrisey considers continuous monitoring of concentration of suspended sediment is probably not feasible. Measuring the rate of discharge (as TSS concentration times flow rate) when the management trigger for TSS is exceeded is suggested as a condition of consent.

154. The applicant's proposed conditions set out the actions required by the contractor should an exceedance of the TSS compliance limits occur. This includes a full audit of all erosion and sediment control measures within the construction area, undertaking any necessary maintenance and notifying GWRC. Mr McLean has advised that if the compliance trigger is breached then the first course of action should be to cease works and the discharge. All decant systems should have a shut off valve installed so that this can be achieved. We agree with Mr McLean that ceasing the discharge is critical to managing the effects on the environment, without it the discharge limits provide no protection to the environment as there is potential for discharges of unknown quality (and therefore with unknown effects) to occur.

155. In their submission on the application, DoC recommend that should the compliance limit for TSS be exceeded for more than 48 hours, sediment discharge should cease. Dr Morrisey has advised that understanding the ecological implications of a non-compliant discharge is difficult because it would depend on the size of the exceedance (i.e. how much sediment was released outside the reasonable mixing zone). We consider that should monitoring data show the compliance limits at the reasonable mixing zone has been exceeded the discharge should be required to cease immediately. The applicant has proposed that logged monitoring data be processed and assessed on a 24 hour bases, this would mean that a non-compliant discharge could occur for 24 hours before it is stopped.

156. The applicant proposes to manage sediment discharges and water quality throughout the construction phase of the project to meet the discharge limits via a Construction Management Plan and Erosion and Sediment Control Plan. The Construction Management Plan will describe the environmental management and monitoring procedures to be implemented during the construction phase. The Construction Management Plan states that the management of sediment discharges throughout the construction phase will be implemented via the Erosion and Sediment Control Plan.

157. For works within the CMA, the draft Erosion and Sediment Control Plan provided with the application identifies a number of tools available to manage sediment related effects from the works. Mr McLean agrees that the measures listed are appropriate and considers that the key measures will be the use of floating silt curtains, the weir/decant system coupled with the proposed construction methodology and fill source/quality.

158. Floating silt curtains isolate sediment-laden waters, allowing sedimentation of disturbed waters within the enclosed area and can be effective in controlling turbidity in the coastal environment. Mr McLean considers that floating silt curtains should be used for all marine based work. Dr Morrisey has considered the effect of the use of floating silt fences and has advised that they will concentrate the effects on habitats within each curtain, potentially smothering the seabed around the reclamation. Dr Morrisey recommends that rather than surrounding the entire work area, it would be optimal to have silt curtains just around the discharge points. The associated loss of habitat would be limited relative to the rest of the bay. The silt curtains would not be a hazard to marine mammals because they are substantial, stationary objects that could be detected and avoided. Any risks to mammals are to be minimised through the Ecological Mitigation and Monitoring Plan. This should include the maintenance requirements for the floating silt fences. We agree with Mr McLean that floating silt curtains should be used and with Dr Morrisey assessment regarding the potential effects of the floating silt curtains on marine mammals. We have recommended conditions which require the use and maintenance of floating silt fences to be set out in the erosion and sediment control plan and Ecological Mitigation and Monitoring Plan.

159. The weir/decant system will operate once the perimeter rock dyke is in place. Mr McLean considers that discharges should be controlled via floating T-Bar decants. The Erosion and Sediment Control Plan will need to demonstrate how the design parameters in the Erosion and Sediment Control Guidelines for the Wellington Region (2006) for floating decant T-Bars will be met. Mr McLean also recommends that the use of floating booms constructed from non-perforated nova coil strung across the impounded water should be addressed in the Erosion and Sediment Control Plan.

160. Mr McLean considers that chemical treatment of impounded water will assist in the settlement of any sediment laden runoff and further improve the quality of water to be discharged. A condition requiring a chemical treatment plan is recommended. Mr McLean has provided an assessment of the effects on the environment from using chemical treatment and considers the potential effects will be minor.

Effects on marine ecology of the proposed submerged wave focussing structure (SWFS)

161. The applicant's assessment of effects from the SWFS concludes that the main adverse effect is likely to be the loss of soft-sediment habitat caused by the placement of the structure and this is not considered to be significant. The total loss of soft-sediment as a result of construction of the runway extension and the SWFS would represent 4% of that occurring in Lyall Bay. Based on the limited information about the design and construction of the SWFS, Dr Morrisey agrees with the conclusion reached by the applicant.

162. Effects from the generation of noise and light during construction of the SWFS are likely to occur. Dr Morrisey considers that these effects are not likely to be significant.

Biosecurity risks

163. In their submission on the application, the Friends of the Taputeranga Reserve raise concerns about biosecurity risks associated with altered patterns of vessel activity in Lyall Bay. Dr Morrisey considers that there are potential risks from biofouling on the hull of vessels and other equipment used in the construction of the reclamation, organisms attached to material used to construct the rock dyke and the material used as fill in the reclamation. These could potentially create biosecurity risks through the introduction of new harmful marine organisms in ballast water or as biofouling on barges and other construction vessels brought from outside the Wellington Region and the introduction of harmful marine organisms in material used as fill. To mitigate any biosecurity risks Dr Morrisey recommends a Biosecurity Management Plan be prepared and implemented. We agree with Dr Morrisey and recommend the preparation and implementation of a Biosecurity Management Plan as a condition of consent.

Summary of ecological and water quality effects

164. In summary:

- The proposed runway extension and SWFS will likely result in minor effects in relation to physical disturbance and loss of habitat;
- Construction noise, vibration and light will likely result in minor effects on mammals and fish;
- Sediment discharges during ground improvement work, placement of the rock dyke, earthworks to remove the hillock and as a result of dewatering will likely result in minor effects;
- Adverse effects from the proposal on the Taputeranga Reserve are likely to be less than minor.

165. We consider that the conditions of consent recommended below will ensure that any adverse effects on coastal ecology and water quality could be appropriately mitigated to an acceptable level.

Recommended conditions

166. The application has proposed the preparation of an Ecological Mitigation and Monitoring Plan which requires the following habitat enhancement measures:

- The addition of roughened/pitted surfaces on 50% of each accropode to increase the range of micro-habitats available for colonising marine algae and invertebrates;

- The inclusion of five shallow indented prisms along the arm of each accropode to increase the possibility of at least one forming a rock pool no matter what the final orientation of each accropode.

- The insertion of one $1m^3$ concrete block with a truncated conical shaped hole in the top layer of the secondary armour every 10m around the perimeter of the rock dyke somewhere between mean low spring and mean high spring tide levels.

- Accropodes are to incorporate holes of three sizes to accommodate newly settled lobsters.

- The rock dyke to provide for a range of crevices, overhangs, flat open surfaces and dark shaded surfaces for a range of fish and invertebrates.

- The 0.5m filter bed where the rock bed meets the seabed is to be sufficiently stable for the attachment and growth of macroalgae in order to reduce sediment scour around the rock dyke.

- Field collection of selected mobile macro-invertebrates from reefs destined for burial, holding these for the construction period in sea water facilities on land, and later transferring these to new reef surfaces once the construction is completed.

- Monitoring for marine mammals during construction and stopping construction activities if marine mammals (dolphins and whales) are observed within 100m of the work.

- Surveys of the reef and benthic communities three years post construction and comparative analysis with surrounding reefs to indicate success of the recolonisation process.

167. It is recommended that the Ecological Mitigation and Monitoring Plan set out how mobile macro-invertebrates collected prior to construction will be transferred to new reef surfaces instead of being held on land during the construction period as proposed by the applicant. We also recommend that the survey proposed by the applicant to be undertaken 3 years post construction include meiofauna. In addition to the matters outlined above, we recommend the following be included in the Ecological Mitigation and Monitoring Plan:

- The translocation of juvenile paua and kina following construction. The source of the paua and kina and consideration of genetic compatibility

must be outlined in the Ecological Mitigation and Monitoring Plan which is to be approved by GWRC;

- Monitoring of tagged individuals to determine the effectiveness of field collection and transferring species. This monitoring is to be undertaken within three years of the completion of the reclamation.

- The creation of artificial reefs in Moa Point embayment to encourage recolonisation of the new rock dyke;

- In addition to the monitoring of marine mammals during construction (as proposed by the applicant), the Ecological Mitigation and Monitoring plan is to address risks to mammals from collision with vessels working on the reclamation or entanglement with structure during construction.

- Any rocks where a red foliose alga is growing (as referred to in Technical Report 18, NIWA – Ecological Character Report), should be moved from the area that will be disturbed by the proposed work to an undisturbed area nearby before works begin.

168. We recommend a condition of consent requiring the development of a biosecurity management plan to prevent the introduction of species that are not native to the Wellington Region.

169. The proposed condition framework for erosion and sediment control and managing discharges from the site is as follows. Recommended changes or additions to the applicant's proposed conditions are noted:

- The requirement for all fill to meet the Ministry for the Environment publication *'A guide to the management of cleanfills'* (2002) including a fill testing programme. This has not been proposed by the applicant;

- Any dredged material used as fill shall only be sourced from the Harbour Entrance Area. This has not been confirmed by the applicant;

- A reasonable mixing zone of 150m from each of the 3 discharge points;

- A maximum sediment discharge rate of up to 2kg/s. This has not been proposed by the applicant as a condition of consent;

- The installation and maintenance of continuous (telemetered) turbidity and clarity monitoring censors along the boundary of the reasonable mixing zone. There will be a minimum of 3 monitoring sites (at 150m from each discharge point). The applicant has proposed continuous turbidity monitoring. We recommend that clarity monitoring also be undertaken.

- The installation and maintenance of continuous (telemetered) turbidity and clarity monitoring sensors at a minimum of 5 control sites within Lyall Bay. The applicant has not specified a minimum number of control sites;

- Calibration to determine the relationship between TSS, turbidity and clarity for each fill source prior to the source being used so that the

turbidity and visual clarity values corresponding to the TSS limits can be determined. This has not been proposed by the applicant;

- Management triggers for turbidity and clarity to be set out in the Erosion and Sediment Control Plan. The purpose of the management triggers are to provide early warnings that the discharge quality is decreasing and on-site management should be investigated. Management triggers and the actions required should the triggers be exceeded (as outlined below) have not been proposed by the applicant;

- If the management triggers are exceeded, the consent holder is to immediately undertake an audit of all erosion and sediment control measures, remedy any cause of the exceedance, monitor the rate of discharge (as TSS concentration times flow rate), record why the exceedance occurred, conditions at the time and what actions were taken.

- Compliance limits as follows. The turbidity limits have been proposed by the applicant. We recommend the addition of limits in reduction of clarity:

  - When the sensor-calibrated suspended sediment concentrations at the control sites, using a 48-hour rolling median, are less than 15 mg/L then the following shall not be exceeded:

    - The suspended sediment concentration at any of the compliance sites shall not exceed 25 mg/L;

    - A reduction in visual clarity by more than 50% of background clarity as measured at the control sites

  - When sensor-calibrated suspended sediment concentrations at the control sites are equal or above 15 mg/L using a 48-hour rolling median, then the following shall not be exceeded:

    - The suspended sediment concentration at any of the compliance sites shall not exceed the ambient concentrations by more than 10 mg/L (ambient plus 10 mg/L)

    - The reduction in visual clarity by more than 50% of background clarity as measured at the control sites.

- If monitoring data shows that the compliance limit is exceeded, the consent holder is to cease works on site and the discharge to the coastal marine area, immediately undertake an audit of all erosion and sediment control measures, remedy any cause of the exceedance, record why the exceedance occurred, conditions at the time and what actions were taken. Works on site and the discharge to the CMA cannot recommence until the investigation is complete and remedial works taken and the suspended sediment and visual clarity measured at all compliance sites is below the compliance limits. The applicant proposes undertaking an investigation if compliance limits have been exceeded. We recommend that works on-site

stop and the discharge to cease until monitoring shows that water quality at the reasonable mixing boundary is below the compliance limits.

- A Construction Management Plan to detail the environmental management and monitoring procedures to be implemented during the construction phase of the project.

- An Erosion and Sediment Control Plan and Chemical Treatment Plan which provide details of the specific erosion and sediment control measures that will be implemented during the construction phase of the project to meet the discharge limits. The Erosion and Sediment Control Plan is to be in accordance with the Erosion and Sediment Control Guidelines for the Wellington Region, 2002. An Erosion and Sediment Control Plan has been proposed by the applicant. It is our expectation that chemical treatment will need to be used to help manage the quality of sediment discharges and recommend that a chemical treatment plan be required as a condition of consent.

Effects on Tangata Whenua and cultural values

Effects of the proposal

170. There are three iwi groups who are identified as exercising kaitiakitanga within the area affected by the proposal:

- Taranaki Whanui ki te Upoko o te Ika

- Te Atiawa ki Whakarongotai

- Ngati Toa Rangatira

The Wellington Tenths Trust and Palmerston North Maori Reserve Trust and Port Nicholson Block Settlement Trust are the relevant iwi authorities for Te Atiawa and Taranaki Whanui. Taranaki Whanui cultural associations with the area have been formally recognised in their own Deed of Settlement set out in the Port Nicholson Block (Taranaki Whanui ki te Upoko o te Ika) Claims Settlement Act 2009. Ngati Toa Rangatira cultural associations with the area have been formally recognised in their own separate Deed of Settlement set out in the Ngati Toa Rangatira Claims Settlement Act 2014.

171. As part of the application, the applicant has provided a Cultural Values Report and Cultural Impact Assessment (CIA), both prepared by Raukura Consultants. The applicant's assessment of environmental effects (section 7.6) refers to a draft CIA prepared by Te Runanga o Toa Rangatira Inc. This draft CIA was not submitted as part of the application.

172. The application area has a very long association with the earliest Maori and the very early Polynesian explorers lead by Kupe. The potential effects of the proposal on cultural values are:

- Damage and destruction of sites of cultural significance;

- Impacts on customary and commercial fishing;

- Commercial and economic effects

173. Maori consider water as taonga. Maori ancestors referred to freshwater as the lubricant of life, and they maintained a strong reliance on awa (rivers) and moana (the ocean) for their physical and spiritual sustenance. Interfering or disrupting natural processes within the marine environment has the potential to adversely affect the physical and spiritual health of waterways, coastal systems and the people it supports. In this regard, during construction of the proposal runway extension there is potential for water quality to be compromised. The reclamation will result in the loss of habitat and marine ecosystems and will inevitably lead to the loss of 'mauri' within the reclaimed area.

174. The CIA submitted with the application states that there are no known sites of Maori significance that will be directly affected by the proposed reclamation or associated earthworks on the landward side of the Airport. The area has in the past, however, seen finds of taonga (carved stone and bone items) along with Moa bones. Te Moana o Ruakawa (Cook Strait) is regarded by Ngati Toa Rangatira as a taonga of paramount significance. The proposal has the potential to adversely affect Ngati Toa Rangatira's cultural values of the waters of Te Moana o Ruakawa.

175. The proposal has the potential to adversely affect customary and commercial fishing operations undertaken by Maori along the south coast and in Cook Strait as a result of habitat loss, effects on water quality and the construction exclusion zone.

Avoiding, remedying and mitigating effects

176. The applicant has proposed the following measures to mitigate or monitor the effects of the proposal on tangata whenua and cultural values:

- Sediment control to minimise adverse effects on water quality during construction;
- The inclusion of an accidental discovery protocol as a condition of consent;
- The creation of habitat to enhance or offset the loss of species and engagement with iwi in the preparation of the Ecological Mitigation and Monitoring Plan;
- Ongoing consultation with iwi throughout the construction of the project, and annually for a period of five years post construction;
- A memorandum of understanding (MOU) to be developed between iwi and WIAL which recognises kaitiaki's role in relation to the project area, and provides the basis for iwi to work in partnership with the applicant through the course of the project.

Assessment

177. A submission from Te Runanga o Toa Rangatira Incorporated (submission #664) was received on the application. The submission is neutral and states that

Te Runanga o Toa Rangatira Incorporated is supportive of the following mitigation measures proposed by the applicant:

- Creating an artificial reef to support re-colonisation of taonga species;
- Conducting field surveys of taonga species before the work commences and storing them for re-planting into the artificial reef structure;
- Out-planting juvenile paua in captivity to the new artificial reef structure

178. Concerns raised by Te Runanga o Toa Rangatira Incorporated about the proposal primarily relate to effects on kaitaikitanga and customary fisheries. They state that there is uncertainty about the effects the sediment plume will have on the larval stage of taonga species as well as the impact on important fishing grounds adjacent to the application area. To allow Ngati Toa Rangatira to practice kaitaikitanga and to mitigate the adverse effects of the proposal, Te Runanga o Toa Rangatira Incorporated recommend that the development of a MOU is a condition of resource consent (if granted). The MOU is to include how the applicant is to engage and collaborate with Te Runanga o Toa Rangatira Incorporated on the development of the Environmental Management Plan. The iwi authority would like to be engaged on:

a) The development of the monitoring programme which is to include developing cultural health indicators for the work. The cultural health indicators should monitor the actual works and the effectiveness of the artificial reef system proposed;

b) Conducting research on the impact of sediment on larval stages of taonga species and the hydrodynamics of Lyall Bay and modelling of the sediment plume;

c) Surveying surrounding areas for taonga species; and

d) Impacts of the wave focussing structure on the ecology of the surrounding area.

179. With regard to the request by Te Runanga o Toa Rangatira Incorporated for the development of an MOU as a condition of consent, we do not think it is appropriate (or within GWRC's powers) to set out the requirement for an agreement with a third party in a condition of consent. The resource consent application does state that the applicant will develop an MOU with iwi which will provide the basis for iwi to work in partnership with the applicant through the course of the project.

180. With regard to the matters which Te Runanga o Toa Rangatira Incorporated have requested to be engaged on, our assessment of these are as follows:

a) The applicant's proposed conditions 80 - 85 relate to the development of an Ecological Mitigation and Monitoring Plan. Condition 80 requires the Ecological Mitigation and Monitoring Plan to be finalised in consultation with mana whenua. Draft condition 81 requires the Ecological Mitigation

and Monitoring Plan to include monitoring of cultural health indicators as agreed with iwi. We consider this addresses point a) above.

b) The applicant's proposed condition 85 requires a survey to be undertaken three years following construction of the project of the reef and benthic environment along the rock dyke, and other reefs within Lyall Bay. This survey is to be address in the Ecological Mitigation and Monitoring Plan developed in consultation with iwi. We consider this addresses paragraph 178 point b) above.

c) We consider that paragraph 178 point c) can be included in the survey (described above) which is to be outlined in the Ecological Mitigation and Monitoring Plan and finalised in consultation with iwi.

d) No further detail is provided with respect to paragraph 178 point d) and we are unsure what exactly Te Runanga o Toa Rangatira Incorporated is requesting. Dr Morrisey has advised that the ecological effects of the proposed SWFS will not be significant. However, this was in relation to effects at the proposed location of the SWFS and not the 'surrounding area' as referred to by Te Runanga o Toa Rangatira Incorporated.

181. A submission from Hue te Taka Incorporated (HtT) was received on the application (submission #712). HtT aims to protect the interests of the Moa Point residents who will be directly impacted by the proposal. HtT represents the views of a number of Moa Point residents, some of whom are whakapapa to local mana whenua. HtT opposes the application and their submission outlines a number of concerns. With regard to effects on mana whenua values HtT's submission states that they understand that local mana whenua have provided cultural impact reports on the application through iwi entities, however, HtT represent mana whenua who disagree strongly with the iwi entities' position.

182. HtT are deeply concerned about the adverse effects the proposal will have on mana whenua values. They state that adverse effects on mauri and water quality will in turn affect, for example, kai moana. The adverse effects of the proposal on water quality, kai moana and the ability of people to collect kai moana and conditions to mitigate these effects are addressed in the sections of this report relating to ecological and water quality effects and effects on recreation.

183. In summary, we consider that the applicant has undertaken appropriate pre-application consultation with iwi to understand to cultural significance of the area and iwi concerns in relation to the proposal. This is reflected in the submission on the application from Te Runanga o Toa Rangatira Incorporated. However, we acknowledge the strong concerns held by HtT in contrast to those held by Te Runanga o Toa Rangatira Incorporated. If the proposal is to proceed, we consider it important that the issues raised by HtT are considered by the applicant in the development of the MoU.

Recommended conditions

184. The following conditions have been proposed by the application. We agree that that these conditions are appropriate to mitigate adverse effects on tangata whenua and cultural values, subject to the changes recommended in other sections of this report:

- Creation of an artificial reef along the rock dyke to support re-colonisation of taonga species;
- Conducting field species of taonga species before the work commencing and storing them for re-planting into the artificial reef structure;
- Out-planting juvenile paua in captivity to the new artificial reef structure
- The requirement for the development of an Ecological Mitigation and Monitoring Plan in consultation with iwi. The Ecological Mitigation and Monitoring Plan is to include, amongst other things, the establishment of cultural health indicators and monitoring of these, and the details of a survey to be undertaken three years after completion of construction.
- The preparation of an accidental discovery protocol in consultation with iwi and the implementation of the protocol during construction works.

Noise and vibration within the coastal marine area

Effects of the proposal

185. The proposed activities will result in noise and vibration above and below the water column in the CMA. This has the potential to adversely affect fish, birds and mammals and recreational activities in the CMA. Users of the CMA could also be potentially affected by noise from trucks using the haul route.

186. Construction activities will generate noise within the water column during the reclamation process. The most significant activity will be when inserting stone columns in the seabed and reclamation area. Piling will also occur for temporary mooring purposes and potentially for other structures required to facilitate the construction process.

187. Underwater sound can cause disturbance to noise sensitive marine species including marine mammals. Typical effects include changes in behaviour such as avoidance of areas where noise is being generated. The applicant acknowledges that construction noise may impact on fish in the vicinity of the construction area; however effects on fish will be negligible in Lyall Bay. The applicant considers that birds and mammals in the area are used to a noisy environment and will move away from a noisy source and therefore not be impacted by construction noise.

188. Recreational activities tend to occur mostly during daylight hours. Recreational users present in Lyall Bay and Moa Point Beaches will be exposed to construction and haul route noise.

189. In certain situations, construction noise and haul route noise will be masked by high levels of ambient noise, particularly for recreational users in Lyall Bay

and plane spotters on Moa Point Road. Should ambient noise levels reduce, construction related noise can become the most dominant source, for example, in calm weather conditions and limited aircraft activity or lulls in vehicle movements. The applicant acknowledges that, due to the character of construction noise and haul traffic, it may be noticeable even in periods of relatively high ambient noise, however they do not consider it will cause widespread annoyance amongst recreational users.

190. Recreational users present in the Lyall Bay area will be exposed to construction and haul route noise. Table 7-10 in the assessment of environmental effects (AEE) predicts construction noise to range between 34-49 dB and haul route noise up to 51 dB for surfers and other users of Lyall Bay beach.

191. Recreational users on Moa Point Road and beach and the breakwater will experience the highest level of construction noise (up to 60 dB) and haul route noise (61 dB). We note that there is inconsistency in predicted haul route noise presented in Table 14 in Technical Report 10 compared to Table 7-10 of the AEE document.

192. A description and assessment of construction and haul route noise at residential receptors (i.e. above Mean High Water Springs (MHWS) is provided in Mr Daly's s87f report for WCC.

Avoiding, remedying and mitigating effects

193. The applicant proposes the following measures to avoid, remedy and mitigate noise in the CMA:

- No haulage is to be undertaken on weekends to reduce noise impacts at times of maximum enjoyment by beach users and patrons of the café.
- Stop construction activities if marine mammals are observed nearby.
- A Stakeholder Communications Management Plan that outlines how information about construction activities will be disseminated to the public and the procedure for recording and responding to complaints.

Assessment

194. Over 200 submissions raised concern about construction and operational noise. The number of submissions specifically relating to noise effects in the CMA could not be isolated, however, submissions that raised concern about noise impact on residents may have in part been referring to noise effects whilst recreating in Lyall Bay or Moa Point Beach.

195. Mr Lloyd reviewed Technical Reports 6, 10 and 26 as well as further information received regarding construction and operational noise. His assessment of construction noise effects in the CMA is outlined below.

196. Mr Lloyd advises that Table 2 of the Construction Noise Standard NZS6803:1999 sets out the relevant noise limits to assess the proposed development. However there is nothing specific in this standard that relates to the CMA or its users.

197. Recreational use of the CMA is primarily in the daytime and Mr Lloyd advises that the applicant's predictions show these limits can be met at all times during the daytime with a reasonable margin of safety.

198. Mr Lloyd advises that construction noise will be audible as far away as Lyall Bay beach but it should not cause any significant impacts given the raised ambient sound levels from the surf and occasionally from aircraft noise. Given Lyall Bay is the principal recreation area and is therefore deserving of protection, Mr Lloyd considers the weekday limits in Table 2 of the Standard to be appropriately applied on Lyall Bay Beach.

199. Mr Lloyd considers it reasonable to expect construction noise limits of 70 dB L_{Aeq} and 85 dB L_{Amax} (0730 to 2000hrs) to be met at Lyall Bay Beach. This control will protect beach users and surfers using Lyall Bay (to a slightly lesser degree) who will normally be closer to the beach than to the construction works.

200. Beyond 2000hrs the night-time noise limits at residential sites (which are much lower i.e. 45dB L_{Aeq} and 75 dB L_{Amax}) will set the restriction, and by default noise in the CMA will be minimised. Recreational activities in the CMA are expected to be significantly less at this time of day.

201. Mr Lloyd has advised the recommended construction noise limit (i.e. 70 dB L_{Aeq}) might be threatened at Moa Point Beach at times and therefore has not recommended a noise limit at Moa Point Beach. Construction activities that generate noise will impact the pleasantness of the area for walkers on the south coast, people fishing or plane spotters.

202. With regard to vibration effects, Mr Lloyd has said that although vibration effects are not expected to be significant, it would be prudent to reference a vibration standard in consent conditions for reference if vibration becomes an issue. **Mr Lloyd recommends expert caucusing on this topic prior to the hearing to establish appropriate vibration limits, monitoring and reporting requirements.**

203. In summary, provided the applicant complies with the recommended conditions of consent, we consider the effects of construction noise on recreational users of the CMA in Lyall Bay will be less than minor.

204. Effects on recreational users of the CMA at Moa Point is likely to be more than minor given its close proximity the construction site. Albeit temporary (up to 48 months) construction noise will likely impact recreational amenity in this area.

205. The potential effects of construction noise on birds and mammals have been covered by Dr Crisp and Dr Morrisey in the ecological and water quality effects assessment and coastal birds effects assessment.

Recommended conditions

206. The applicant proposes a condition of consent for a Construction Noise Vibration Management Plan (CNVMP). The CNVMP is to outline construction

activities that will generate noise and vibration, monitoring, reporting and mitigation measures. We agree with this condition with the addition of the reference to the German vibration Standard DIN 4150-3:1999. Further work is required by experts to establish appropriate vibration limits, monitoring and reporting requirements. We also recommend this condition require no haulage periods (i.e. weekends) to be specified in the CNVMP.

207. The applicant recommends construction noise limits at residential receivers. We agree with this condition with the addition of the noise limit for Lyall Bay beach recommended by Mr Lloyd.

Effects on air quality

Effects of the proposal

208. The actual and potential effects on air quality arising from the proposal relate to particulate or dust and combustion emissions, specifically:

- dust from site establishment activities, placement and compaction of fill, wind erosion of working areas, rehabilitation of completed areas, the operation of vehicles on access/site roads and transportation of fill material along haul routes; and
- combustion emissions from vehicle exhausts during construction and;
- operational aircraft discharges.

Dust

209. Suspended particulate matter is dust or aerosol which stays suspended in the atmosphere for significant periods of time. Total Suspended Particulate (TSP) is commonly used to describe the total amount of suspended particulate in the atmosphere at any one time. Deposited particulate matter is dust or aerosol which falls from the air and is generally associated with nuisance effects.

210. Dust will be generated from a number of site activities including the initial site establishment involving the construction of haul and access roads and the removal of topsoil, the placement and compaction of fill material, the operation of vehicles on the access/haul roads, wind erosions of working areas and rehabilitation of completed areas.

211. There are a number of locations where people or surroundings may be particularly sensitive to the effects of dust from construction within close proximity to the proposed runway extension. The closest residential properties are located 200m east of the proposed runway construction activities along Moa Point Road. As well as residential properties there are a range of recreational activities (surfing, fishing, cycling, walking etc.) which occur close to the site that have the potential to be adversely affected by dust. Aircraft on approach and take-off are also potentially sensitive due to the potential damage and increased wear on aircraft engines from dust emissions.

Combustion emissions during construction

212. Traffic emissions during construction will arise from trucks transporting fill material to the construction zones at the airport and construction vehicles at the airport construction site.

213. The key pollutants that will be emitted to air from vehicles along the haul routes and at the construction site include:

- Carbon monoxide (CO);
- Nitrogen oxides including nitrogen dioxide (NO_2);
- PM_{10} and $PM_{2.5}$;
- Sulphur dioxide (SO_2); and
- Hazardous air pollutants (e.g. benzene, polycyclic aromatic hydrocarbons);

214. In addition to pollutants directly emitted from vehicles, ozone and particulate can form downwind of the point of emission by reacting with other gases in the atmosphere. These are called secondary pollutants.

Operational aircraft discharges

215. The applicant predicts an additional 1,355 long-haul aircraft per year as a result of the runway extension (Marshall Day Technical Report 26. Predicted difference in annual long-haul (only) aircraft movements between 2016 and 2035). Aircraft emissions are the source of the following pollutants:

- Nitrogen dioxide (NO_2);
- PM_{10} and $PM_{2.5}$;
- Lead (Pb); and
- Hazardous air pollutants

Avoiding, remedying and mitigating effects

216. The applicant has proposed a number of measures to mitigate the effects of dust and vehicle emissions during construction. Operational discharges from aircraft are discussed in the assessment section below.

217. The measures proposed by the applicant to mitigate the adverse effects of dust and construction vehicle emissions are:

- Implementing management measures to minimise the creation of potential for dust including:
  - limiting vehicle speeds on unsealed access roads to 20 km/hr;
  - Development management guidelines for stockpiles;

- Damping of exposed surfaces via watercarts;
- Wheel washes to prevent the transportation of material onto sealed surfaces where the material can become a source of dust emissions; and
- Sweeping of sealed surfaces within the construction area.

- Measures to reduce emissions from construction vehicles including;
  - Appropriate and regular engine maintenance;
  - Ensuring that tyres are inflated to the correct pressure;
  - Ensuring that the haul roads are appropriately maintained; and
  - Ensuring that vehicles are not overloaded.
- Setting dust trigger values and installing a continuous dust monitor to ensure compliance with the dust trigger values;
- Having a community liaison person who is available to deal with any concerns or complaints relating to dust arising during construction; and
- Having a comprehensive complaints procedure.

Assessment

Dust

218. The applicant undertook an assessment of effects in accordance with the Ministry for the Environment (MfE) *Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions* (2001). Overall, the applicant concludes that there is some potential for unmitigated air discharges from the construction site to cause off site effects, primarily at locations within 300m of the site and on aircraft approach and take off from the south. However, the applicant proposes mitigation and management to control these emissions and ultimately concludes that there should be no significant adverse effects within 50m of the site.

219. Ms Wickham has assessed the proposal against current good practice for dust management. Ms Wickham considers that additional mitigation is required to ensure that fugitive dust does not cause any adverse effects offsite. This is particularly important at Moa Point where the high wind environment may create an ‘eddy’ in the bay increasing the likelihood for deposition of dust emissions.

220. The number of submissions received with concerns about discharges from the construction site, in particular dust, highlights the importance of controlling dust on-site. We concur with Ms Wickham that it is appropriate to focus on mitigation and good practice management of fugitive dust to ensure no adverse effects occur offsite.

221. In particular, Ms Wickham recommends more stringent 'trigger levels' for TSP and PM_{10} requiring prompt action by the consent holder than those suggested by the applicant. This will minimise emissions and ensure that there are no adverse amenity impacts and no adverse health effects offsite. The recommended trigger levels are based on existing good practice at other construction sites.

222. Ms Wickham has also suggested additional monitoring is undertaken based on existing good practice at other construction sites. This includes continuous monitoring for TSP, PM_{10} and meteorology for a full year prior to construction commencing. This baseline monitoring will provide site-specific, representative data to refine the existing good practice 'trigger levels' for TSP and PM_{10} to be site-specific for Moa Point's high wind environment when construction commences.

223. With regard to dust emissions from vehicles transporting fill material, following a request for further information the applicant advised that all truckloads of fill will be covered prior to transport (refer to further information letter dated 13 June 2016 response to question 2.10).

224. Letter from Mitchell Partnerships dated 13 June 2016). Ms Wickham considers that the covering of loads is best practice and will satisfactorily mitigate potential fugitive dust over the haul route.

Combustion emissions during construction

225. The applicant considers that it is unlikely that there will be any measurable changes in vehicle related combustion emissions from 310 trucks per day. Ms Wickham's screening modelling supports this conclusion with respect to long-term nitrogen dioxide levels.

226. Ms Wickham agrees with the applicant's technical expert that monitoring of ambient levels of nitrogen dioxide should be undertaken. However, this recommended monitoring has not been included in the applicant's proposed conditions. Ms Wickham recommends baseline monitoring using passive samplers over a period of a year in accordance with best practice (rather than the applicant's technical expert recommendation for only 6 months).

227. Ms Wickham agrees with the applicant's proposed passive nitrogen dioxide monitoring along the transport route but recommends two further monitoring locations at Lyall Bay Parade and at Moa Point because these are locations where residents may also be exposed to transport emissions.

Overall assessment

228. Overall, provided her recommended conditions of consent are implemented, Ms Wickham considers that the discharges to air from construction activities will not have any adverse health effects or nuisance impacts offsite. Ms Wickham is satisfied that discharges from trucks hauling fill will not have any significant impact on air quality in the wider region and also considers that the

proposed construction will not impact on achievement of the NES-AQ ambient standards for PM_{10} and nitrogen dioxide.

229. We consider that, subject to the recommended conditions of consent outlined below, the adverse effects from discharges to air of dust at the construction site and along the haul route and of vehicle emissions from the transport of material to the construction site will be less than minor.

Operational discharges from aircraft

230. Emissions from aircraft can have adverse effects on human health. Although discharges to air of operational aircraft emissions do not require a resource consent under the Operative Regional Air Quality Management Plan and Proposed Natural Resources Plan, GWRC sought further information from the applicant on the effects of aircraft emissions through a s92(1) request. Specifically, GWRC requested a desktop assessment against the NES-AQ and National Ambient Air Quality Guidelines 2002.

231. The applicant responded to this request stating that undertaking an assessment against the NES-AQ and the National Ambient Air Quality Guidelines 2002 is difficult given that it is predicted that the aircraft activity will continue to grow at Wellington Airport, regardless of whether the extension occurs or not. It will therefore be difficult to determine whether there will be any material increase in effects from the discharge of contaminants arising from aircraft activity that are directly attributable to the runway extension. The applicant concludes that the matter is best left in terms of regulation and control at the national level.

232. The submission by Helen Salisbury on the application (submission #564) raises concerns about the lack of assessment on the impacts of emissions from current and predicted aircraft numbers against the National Environmental Standard for Air Quality (NES-AQ) and the National Ambient Air Quality Guidelines 2002.

233. The NES-AQ sets a guaranteed minimum level of health protection for all New Zealanders. It is the responsibility of GWRC to monitor air quality and ensure compliance with the NES-AQ through regional plan rules and enforcement action under the Resource Management Act (the Act). The NES-AQ is addressed in the Relevant Planning Instruments section of this report.

Recommended conditions

234. The following are recommended conditions of consent to mitigate and monitor adverse effects from discharges of dust at the construction site and along the haul route and vehicle emissions along the haul route. We have identified below where our recommended conditions differ to those proposed by the applicant.

General conditions

- The following have been proposed by the applicant:

- The appointment of a community liaison person and preparation and implementation of a Stakeholder and Communications Management Plan.

- The preparation and implementation of a Construction Air Quality Management Plan.

- In addition, we recommend the following general conditions:

  - That there are no noxious, dangerous, objectionable or offensive discharges to air to the extent that the discharge causes an adverse effect at or beyond the construction boundary.

  - All loads that may generate fugitive dust discharges to air are to be covered. This includes all material being transported to and from the construction zone(s).

Air quality monitoring general

- The applicant has proposed the following conditions in relation to air quality monitoring:

  - All air quality monitoring equipment be sited and monitoring be undertaken in accordance with best practice standards and guidelines. All air quality and meteorological monitoring shall be undertaken in accordance with the *Good Practice Guide for Air Quality Monitoring and Data Management* (Ministry for the Environment, 2009).

  - Six monthly monitoring reports to be provided to GWRC of all monitoring data including air quality and meteorological monitoring.

- In addition, we recommend the following:

  - Continuous monitoring locations are to be representative of resident's potential exposure to discharges to air from construction and/or representative of local weather conditions across the construction zone.

  - Passive sampling for nitrogen dioxide is to be carried out at four locations: Onepu Road, Calabar Road, Lyall Bay Parade and Moa Point.

  - Continuous monitoring for particulate matter less than 10 micrometres in diameter (PM_{10}) shall be carried out in accordance with Schedule 2 of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

  - Continuous monitoring data shall be made available online in real-time in a format similar to GWRC public air quality monitoring.

Air quality monitoring: pre-construction

- The applicant proposes the monitoring of TSP for a minimum of three months prior to construction commencing. We propose that monitoring be carried out for at least one year prior to construction commencing, for:
  - TSP;
  - PM_{10};
  - Meteorology (rainfall, temperature, wind speed and wind direction); and
  - Nitrogen dioxide.
- At the completion of pre-construction monitoring, the consent holder and community liaison group shall review the trigger levels and amend them if necessary to ensure they are not under, or over, conservative.

Air quality monitoring: Construction

- The applicant proposes monitoring of TSP and meteorology during construction. We proposed monitoring shall be carried out during construction for:
  - TSP
  - PM_{10}
  - Meteorology (rainfall, temperature, wind speed and wind direction); and
  - Nitrogen dioxide.
- The applicant sets out management trigger levels for TSP. Based on Ms Wickham's advice, we propose more stringent management trigger levels for visible dust, TSP and PM_{10}. Where the trigger levels are exceeded, the cause of the exceedance is to be investigated and mitigation measures initiated.
- The applicant proposes a compliance trigger level for TSP. Where the compliance limits are exceeded works must cease until the compliance trigger levels are no longer breached. We propose tighter compliance trigger levels for one-hour PM_{10} and TSP.

Construction Dust Management

- We propose the following conditions for construction dust management:
  - The speed of vehicles travelling on unsealed areas or access roads shall be limited to less than 10 km/hr.

- Dust suppression is to be used to minimise dust emissions from unsealed areas and other sources of fugitive discharges of dust to air.

- There shall be no deposition of earth, mud, dirt or other debris on any public road or footpath resulting from transport of materials, construction or construction related activities.

- A wheel wash shall be installed, maintained and used to prevent the transportation of material onto sealed surfaces where the material can become a source of dust emissions.

- Construction is to be carried out, as far as practicable, in accordance with good practice mitigation of fugitive discharges of dust to air as outlined in the most up to date version of *Good Practice Guide for Assessing and Managing the Environmental Effects of Dust Emissions* (Ministry for the Environment, 2001). This includes:

    - Locating stockpiles and sources of fugitive discharges of dust to air so as to maximise separation distance to sensitive receptors (primarily residents at Moa Point).

    - Limiting the height and slope of stockpiles.

    - Limiting the drop heights from conveyors, loaders or other equipment transferring material that may generate fugitive discharges of dust to air.

    - The use of wind breaks and/or bunding for stockpiles.

    - Re-vegetation of exposed surfaces (including inactive stockpiles).

    - Regular sweeping of sealed surfaces.

    - Swift clean-up of spillage around transfer points.

- Construction vehicles shall be serviced and maintained to minimise discharges to air as follows:

    - Appropriate and regular engine maintenance (no visible emissions to air for more than 10 seconds).

    - Ensuring vehicles are not overloaded.

<u>Complaints management</u>

- The applicant proposes to maintain a register of all complaints received and response to any complaint within 10 working days. We recommend that GWRC be notified of any complaint (not just relating to dust but any complaint in relation to matters within GWRC's jurisdiction) within 24 hours. We also, consider that the proposed 10 working day period for responding to any complaint should be reduced to 3 working days.

Construction: Dust management training

- We recommend that the Consent Holder shall ensure that personnel responsible for supervising contractor site staff (e.g. foremen, supervisors, and managers) shall undergo dust management training required by the Construction Management Plan. Specifically, training shall include:
  - Dust mitigation;
  - Dust complaint management; and
  - All conditions of consent relating to dust management including trigger levels and actions to be undertaken in the event these are exceeded.

Effects on archaeological and heritage values

Effects of the proposal

235. The proposal involves earthworks and disturbance activities which could potentially affect sites of heritage and archaeological significance.

236. The following two heritage sites are identified within the regional planning documents as being of heritage significance and are located within the vicinity of the proposed runway extension:

- The Lyall Bay seawall is identified in the Operative Regional Coastal Plan.
- Hue te Taka/Moa Point is identified in the Proposed Natural Resources Plan as a site of significance to Maori.

237. The applicant's assessment of effects of the activity on archaeological and heritage values uses criteria set out in section 66 of the Heritage New Zealand Poutere Taonga Act 2014 (HNZPTA) and concludes that the project area may have some historic heritage value which will not be affected by the proposal.

Avoiding, remedying and mitigating effects

238. The applicant has proposed to prepare an accidental discovery protocol in consultation with iwi and Heritage NZ and for the protocol to be implemented during the project. The protocol will cover training procedures for contractors, parties to be notified and procedures to be undertaking in the event of an accidental discovery of archaeological evidence. The applicant also proposes additional procedural requirements should taonga be discovered.

Assessment

239. Ms Tanner has reviewed the applicant's assessment and generally agrees with the conclusion reached by the applicant that the historic heritage items in the vicinity of the project will not be impacted by the proposal.

240. Ms Tanner states that the applicant has not undertaken a full archaeological assessment including of the seabed where the reclamation is to take place. The archaeological assessment undertaken makes reference to the fact that several

ships have wrecked in the vicinity of the entrance to Wellington Harbour, including Winwick which was reportedly wrecked in Lyall Bay in 1841.

241. It is Ms Tanners recommendation that until a full archaeological assessment is undertaken, including a survey of the seabed, it cannot be concluded that there is no archaeological evidence on the seabed within the area proposed for reclamation.

242. The effects of the proposal on any archaeological evidence that may be present on the seabed and discovered as a result of an archaeological survey can be appropriately mitigated through archaeological recording and investigation. Ideally this assessment would be undertaken prior to a hearing. We have recommended a condition of consent requiring that an archaeological assessment be undertaken should one not be done prior to a hearing.

Recommended conditions

243. It is recommended that a condition of consent be included that requires an archaeological survey of the seabed be undertaken across the area proposed for reclamation prior to construction commencing. Should any archaeological evidence be found, the provisions of the HNZPTA would apply.

Effects on recreation activities

Effects of the proposal

244. Recreational activities that occur near the proposed runway extension and SWFS site include cycling, walking/running, dog walking, plane-spotting, sight-seeing, diving/spearfishing, fishing, swimming, body boarding, surfing, kite surfing, wind surfing, stand-up paddle boarding and surf-life saving (refer to Figure 7 below).

Figure 7: Recreational users. Source: *Technical Report 6*, TRC, 25 April 2016 p.3

245. Lyall Bay is acknowledged by the applicant as popular and as having important surf break for surfers living in Wellington, Hutt and Porirua cities. However, only a small minority of residents surveyed by the applicant who live locally said their main reason for visiting Lyall Bay was to participate in water sports e.g. surfing, swimming, sailing (refer to Figure 8). The survey of residents who live further afield showed that water sports was an even less common reason (4%) for visiting Lyall Bay (refer to Technical Report 6).

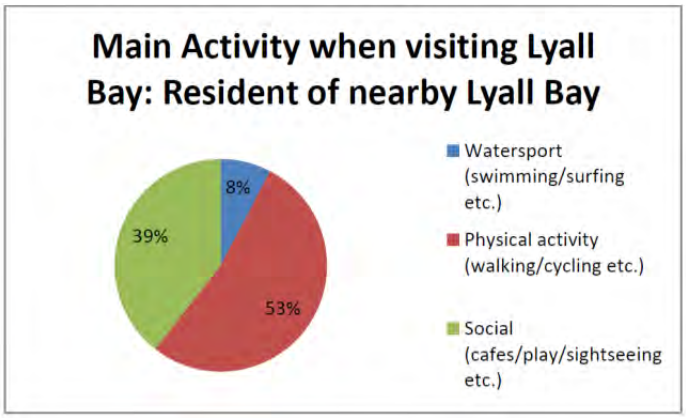


Figure 8: Main Activity for Lyall Bay Residents. Source: *Technical Report 6* TRC, 25 April 2016 p.5

246. The applicant's assessment of the actual and potential effects on recreational activities from the construction and operation of the proposed runway extension and the SWFS are listed and described in turn below:

- Discharges of sediment impacting water quality during construction
- Impacts on marine ecology quality, abundance and catchability of marine species (via diving and fishing) in and around Lyall Bay
- Traffic movements during construction around Lyall Bay and the Airport and barge movements within the CMA
- Dust discharges from construction activities
- Construction noise and aircraft noise (operational)
- Access to the CMA during and post-construction
- Changes to waves in Lyall Bay

Impacts on water quality

247. The applicant's assessment of construction discharges on water quality is based on plume modelling undertaken by NIWA (refer to Technical Reports 15 and 17). Temporary discharges are not expected to extend so far as to alter the water clarity for those using known swimming areas (refer to Figure 7) in Lyall Bay. The proposed reasonable mixing zone boundary around the construction site and turbidity limits and monitoring are discussed in the ecological and water quality effects assessment earlier in this report.

Impacts on diving and fishing

248. Fishing from land, spear fishing and collecting seafood (paua and crayfish) occur along the road parallel to the runway, off the breakwater and in the waters between Moa Point and Hue-te-taka Peninsula. Participation in fishing from land, spear fishing and gathering paua and crayfish was assessed by the applicant as relatively low.

249. High levels of suspended sediments within the immediate vicinity of the construction area are expected by the applicant to have a negligible impact on fish. Impacts on fish communities and fishing is expected to be localised and short term.

250. Impacts on reef animals and macroalgae from sedimentation sourced from the construction site is expected to be localised, short term (up to a few weeks) and either minor within a few hundred metres of the discharge or negligible for greater distances.

251. Public access for recreational pursuits including fishing and seafood gathering will be restricted in the short-term by the temporary exclusion area. Public access restriction is described in further detail below.

252. Post-construction of the proposed runway extension, the portion of the CMA that will be lost was not considered particularly significant for recreational fishing, diving or seafood gathering by the applicant.

Traffic and barge effects

253. The effect of haul traffic on walking, running, cycling along Moa Point Road and Lyall Bay is described and assessed in Mr Daly's s87f report for WCC.

254. The effect of dust from trucks using the haul route is discussed in the air quality effects assessment section of this report.

255. Barges transporting fill material to the construction site will follow the existing shipping route within Wellington Harbour to a point opposite Pencarrow Head. From there, barges will travel across the harbour entrance and around to the construction zone. It is intended that this route on the east side of the bay entrance will minimise disruption to recreational activities in the bay such as surfing, kite boarding and stand-up paddle boarding (refer to further information letter dated 13 June 2016 response to question 2.19 and Annexure B).

Construction dust discharges

256. The potential effects of construction dust discharges are discussed in the air quality effects assessment of this report.

257. As recreational activities are predominantly carried out during daylight hours in this area, construction noise effects within the CMA (beyond the proposed 300m exclusion zone around the proposed runway extension construction site) are not expected to be adverse by the applicant.

258. The applicant does not expect operational noise effects (post construction) within the CMA to be noticeable to recreational users when considering the existing noise environment and the predicted scale of change.

Access to the CMA

259. The temporary exclusion zone around the proposed runway extension construction site will restrict access to approximately half of the area used for gathering seafood between Moa Point and Hue-te-taha Peninsula during construction (3-4 years). Based on the low levels of participation in fishing from land/spear fishing, diving and seafood gathering surveyed/observed, the effects of the temporary exclusion zone were considered by the applicant as less than minor (refer to further information letter dated 13 June 2016 response to question 2.18).

260. Access to the surf break Airport Rights (refer to Figure 9 below) will be lost permanently from commencement of the proposed runway construction.

261. The SWFS will take 6-12 months to construct. The temporary exclusion zone proposed around the SFWS will only be necessary when active works are being undertaken (e.g. if weather conditions preclude works from occurring no exclusion zone will be necessary). Any exclusion will be intermittent for up to 12 months. The Construction Management Plan will confirm how long the temporary exclusion zone will be in place, and how exclusion will be enforced (refer to further information letter dated 1 July 2016 response to question 3).

262. The effect of the temporary exclusion zone (during construction) around the SWFS is considered to be short-lived by the applicant and further out than most surfers are located. The exclusion zone may encroach the middle bay area and lead to slightly more congestion at The Corner surf break (refer to Figure 9 below) but only during ideal conditions and during construction (refer to further information letter dated 13 June 2016 response to question 2.18).

263. A key design criteria of the SWFS is to ensure the structure does not pose a safety risk to surfers and other recreational users such as stand-up paddle boarders, swimmers, surf-life saving training and events (refer to further information letter dated 1 July 2016 response to question 3).

Changes to waves in Lyall Bay

264. The applicant's assessment of the proposed runway extension effect on surf quality and swimming safety is based on investigations undertaken by NIWA (refer to Technical Reports 15 and 17) and DHI numerical modelling (refer to Technical Report 11).

265. Surf conditions pre and post construction were modelled using three separate surf events that occurred in 2014. These included an event on 1 June 2014 that was considered to be representative of common good surf conditions in Lyall Bay (Scenario 2), and two larger events that occurred on 4 March 2014 (Scenario 3) and 9 September 2014 (Scenario 1) that were considered representative of large swells of high quality and of importance to the surfing community.

266. According to the applicant surf breaks known as The Corner, Middle Beach and West Beach (Refer to Figure 9 below for surf break locations) will have

reduced “wave peakiness” which enables the wave to break on a peak and then be rideable. This is because the rock revetment around the proposed runway extension is expected to reduce wave refraction to the east which will reduce the overall peakiness of waves propagating further into the bay.

267. At The Corner surf break wave quality is governed primarily by the diffracted wave field that extends from the rock formation beneath the breakwater and causes a favourable angle between the incoming waves and the local bed contours. The applicant’s assessment showed characteristic surf rides are expected to be least affected at this location compared to other surf spots, namely reduced by 4-8%.

268. With the reduction in wave peakiness, the reduction of characteristic surf rides is expected to be 14-29% at Middle Beach and 18-27% at Western Beach.

269. For all three surf spots, negative impacts are expected to be largest for large wave periods (long period swell or Scenarios 1 and 3 in the applicant’s assessment).

270. Airport Rights only breaks in very large swell and when it does break it is typically a short ride which ends in a powerful close out. The Airport Rights surf break exists because of the existing runway extension and is therefore not entirely a natural break. Airport Rights is within the proposed runway extension footprint and will be lost permanently. The loss of Airport Rights is considered by the applicant to only affect a small group of expert surfers.

Figure 9: Surf Breaks. Source: *Technical Report 11*, DHI, 5 April 2016 p.4

271. In nearshore areas of Lyall Bay the overall small difference in significant wave heights and change in wave induced currents is expected to pose a negligible impact to changes in swimming safety.

Avoiding, remedying and mitigating effects

272. The applicant has proposed a number of measures to mitigate the effects of the proposed runway extension on recreation.

273. The measures proposed by the applicant to mitigate the adverse effects of construction activities are:

- Minimise adverse effects on water quality and marine life by ensuring dewatering discharges meet specified limits at the boundary of a reasonable mixing zone, and deployment of booms around the construction site to prevent the spread of particulate material.

- Provide ecological habitat areas within the rock dyke to enhance biodiversity i.e. positive effect on shellfish populations and other marine biodiversity around the proposed extension

- Restrict haulage truck movements to weekdays 9:30am to 2:30pm and 10:00pm to 6:00am

- Monitoring dust emissions, management of stockpiled material and vehicles transporting fill to minimise discharges

- Public access to the Moa Point Beach and coastal margin is enhanced (described in Technical Report 23 and 24)

- Prepare a Surf Mitigation Adaptive Management Plan (SMAMP) that includes key performance criteria, detailed design, monitoring, reporting and maintenance requirements.

- Design a SWFS in Lyall Bay in consultation with the surfing and surf-life saving community. Modelling of Scenario 1 (large surf conditions, 1.8m face height) predicted longer right and left hand rides with larger wave face heights in the lee of the structure (described in Technical Report 11 p. 58).

- Monitor effects on surfing amenity against key performance criteria. Monitoring to include fitting tracking devices to surfers boards for three months, wave measurements, and sea bed morphology surveys before and after the SWFS is constructed.

- If key performance criteria of the SWFS are not being met, an investigation will be undertaken and remedial action taken if required. If key performance criteria are being met, monitoring will be reduced to five yearly or following damage to the SWFS.

Assessment

Assessment methodology

274. The applicant assessed recreational use in Lyall Bay using three techniques (key informant interviews, on-line survey, and participant observation) and

these are described in Technical Report 6. Dr Michael Stevens describes the following short-comings in the applicant's recreation assessment:

- Key informant interviews were largely focused on land-based activities (e.g. itinerant recreational fishers visiting by boat were not represented)

- Local residents were significantly under-represented in the on-line participation survey compared to residents living in the outer Wellington suburbs

- Marine-recreational users, particularly surfers, were significantly under-represented in the on-line survey sample

- Only seven days of participant observation data was reported. There is no indication of weather conditions, duration and time of observations, or where activities were observed within the six observation sites that were studied (e.g. what recreational activities were recorded within Moa Point embayment which will be most directly impacted by construction).

275. GWRC requested further information on the short-comings identified on 20 May 2016 and 16 June 2016. The applicant responded to all questions raised on this topic on 13 June 2016 and 1 July 2016. The applicant agreed to complete further survey work on recreational use in Lyall Bay during 2016 and present this information as part of evidence at the hearing (refer to further information letter dated 1 July 2016 response to q.4).

276. In conclusion Dr Steven states:

> *The short-comings of the on-line survey and participant observation methods aside, I consider the recreation assessment provides a reasonable but generalised understanding of recreational use patterns within Lyall Bay. The more common recreational activities are identified, and there is some limited information on their temporal and spatial distribution, and the particular weather and sea conditions that favour marine-based activities.*

277. Technical Report 11 prepared by DHI refines the wave modelling carried out by NIWA and uses the results to estimate changes in surf quality as a result of the proposed runway extension.

278. Dr Goring provides the following summary of the DHI modelling results:

> *The modelling shows that the development will not affect the wave height to any large extent, but the length of the ride and the number of rides is likely to reduce depending on:*
>
> - *the location, with Western and Middle beaches affected more than The Corner; and*
>
> - *the period, with the rare long-period swell affected at all locations more than the common shorter-period swell.*

279. However, the DHI Boussinesq model uses boundary conditions based on wave climate in the North Sea which Dr Goring suggests should only be used when measured wave spectra are not available and for situations similar to the enclosed area of the North Sea. The marginal ocean between the UK and Europe has a limited fetch. This is quite different to the wave climate at the entrance to Lyall Bay which is exposed to storms over the unlimited fetch from the Southern Ocean. In a letter dated 16 June 2016 GWRC:

- Informed the applicant that long-term wave data is available from Baring Head buoy (8 km Southeast of Lyall Bay), and a 40 year hindcast dataset used by NIWA for regional storm surge and extreme water level modelling; and

- Requested a plot comparing spectrum used in the Boussinesq model and local wave spectra.

280. The applicant confirmed that at the time of DHIs surf impact assessment measured wave spectra conditions at the entrance of Lyall Bay were not available to them. DHI propose the spectral shape in Lyall Bay will not be the same as Baring Head as it is a much more sheltered location and that the choice of analytical spectrum would not affect the predicted impacts on surfing quality concluded in the study (refer to further information letter dated 1 July 2016 response to q.9).

281. Dr Goring compared outputs from a model using data from 15 wave events with a maximum height greater than 4m in 2015 and parameters used by the applicant's model. The analysis showed that predicted wave height was similar; however, the wave period was over-estimated by up to two seconds when using the North Sea versus locally sourced wave spectra. Given that wave period is a measure of good surf conditions (i.e. a short period can often mean messy surf conditions) GWRC requested this discrepancy be investigated further to assess potential effects the proposed runway may have on surfing in Lyall Bay (refer to further information request dated 19 July 2016 q. 6 and 7).

282. The applicant has not responded to this further information request. **We recommend the applicant provide a response the information requested in the letter dated 19 July 2016 regarding wave spectra used in the surf impact assessment for decision makers to consider.**

283. Dr Goring considers the analysis of effects of the proposed runway extension on surf quality are satisfactory and follow best practice except for assumptions about the shape of the wave spectrum outlined above. However, effects on surfing amenity post construction of the proposed runway extension and SWFS are to some extent uncertain. The development is likely to reduce the surfing amenity to some degree and of course at Airport Rights, the surf break will disappear altogether. The level of effect on surfing amenity is discussed in further detail below.

Impacts on water quality

284. Dr Goring (refer to Appendix 1) reviewed the findings of the SSC model (Technical Report 17) which predicts the extent of the plume discharge under different discharge rates and conditions. Dr Goring concluded that:

> *The results show that in high winds (either northerly or southerly), the plume will disperse further, but the SSC will be less; whereas, in calm weather the plume will disperse less, but the SSC will be greater. For a discharge of 1 kg/s, the extent of the plume is restricted to a few hundred metres from the discharge point, whereas for 2 kg/s the plume extends into Lyall Bay, especially for discharge points D1 and D2. Thus, to confine the plume to the close proximity of the construction site, the discharge would need to be restricted to 1 kg/s.*

285. Dr Steven suggests that a turbidity plume (from the higher sediment discharge rate) in Lyall Bay during calm weather may result in water discolouration which may impact adversely upon amenity for swimmers.

286. Provided the applicant complies with the recommended conditions of consent, in particular the discharge ceases if the compliance limit is met at the reasonable mixing zone boundary, we consider the effects on water quality for recreational use beyond the reasonable mixing zone will be no more than minor.

Impacts on surfing amenity

287. Technical Report 6 concludes that adverse effects with respect to surfing amenity are likely to be minor. Dr Steven considered this is an under-estimate of the level of likely effects for the following reasons:

- The focus appears to be on the number of users that will likely be affected rather than the effects on the surfing resource itself. Dr Steven considers Airport Rights as a popular, but rare wave break and that this is of greater relevance than the number of participants who use that resource. A complete loss of amenity in the case of Airport Rights surf break can be regarded as significantly adverse rather than minor.

- The reduction in surf rides may aggravate congestion already known to exist at The Corner surf break.

- The uncertainty of effects on wave activity owing to insufficient baseline data and different approaches to modelling (refer to Dr Goring's assessment).

- Any benefits the SWFS may accrue from its construction are largely hypothetical at this stage.

288. Dr Goring explains that it is entirely plausible that surfing will be reduced by the proposed runway extension because of reduced diffraction or sideways spreading of wave energy as it enters the Bay. However actual effects will be a

result of complex interactions that are not simulated by models such as SWAN and ARTEMIS used by NIWA. Nor are the effects easily extracted from the results or measured. In summary the effects on surfing amenity are to some extent uncertain, but there will be an adverse effect on surfing amenity as a result of the proposed runway extension.

289. The applicant's assessment is that the SWFS will mitigate the impacts of the airport extension and also has the potential to enhance surfing amenity for Lyall Bay. In particular the SWFS will (refer to Technical Report 11 p.58-62):

- Provide longer right and left hand rides with large wave heights in the lee of the structure during Scenario 1 events (1.8m face height); and
- Increase the length and wave face height of surfable waves in Middle Beach during large events (>2.1m face height).

290. Dr Goring's assessment of the applicant's modelling is that there will only be a slight increase in surfing amenity in terms of wave height at Middle Beach, but a small reduction at The Corner. Dr Goring noted that the lack of detail in the presentation of the model results prevents a quantitative comparison of the length and number of rides (which is how effects of the proposed runway extension were presented by the applicant).

291. Dr Goring raises the following concerns about the SWFS:

- If the SWFS is not constructed to withstand 100 year return period waves (10.5m) the structure could be destroyed resulting in large rocks being strewn along the beach; and
- There is no account in the consent application whereby the design of the runway extension (i.e. the shape and slope) was reviewed to reduce the effect on surfing waves and modelled using the methods for the SWFS.
- Wave enhancement appears to be quite small and only at Middle Beach, with wave heights at The Corner being reduced as a result of the SWFS.
- Monitoring proposed by the applicant (i.e. tracking surfers) to assess changes in surfing amenity post-construction may be impacted by many variables (e.g. weather and surf conditions during the three month survey period).
- There is not enough detail presented in the consent application to say if the SWFS is likely to meet the 50-100m wave length requirement proposed by the applicant as a key performance indicator.

292. Overall Dr Goring states:

> *In my opinion, the expected enhancement of wave height by a few decimetres only at Middle Beach is a small benefit considering the cost of the SFWS and the risk of failure. I also consider that it is uncertain whether it will provide the mitigation suggested.*

293. Overall Dr Steven states*:*

> *I consider short term effects on water-based recreational activities, such as surfing and gathering kai moana to be more than minor within the areas of the exclusion zones. For some recreationists, such as surfers, adverse effects arising from the SWFS exclusion zone may be unacceptably adverse in the short term, and unable to be mitigated.*
>
> and:
>
> *For expert surfers, the loss of the Airport Rights break may be regarded as an unacceptable outcome, and an outcome that is beyond the potential of the SWFS to mitigate.*

294. The SWFS design is preliminary and based on natural reef formations and research on the concept of artificial wave focussing reefs. The Surfbreak Protection Society (SPS; submission number 652) raised the concern that:

> *…the SWFS that WIAL and DHI are proposing is unproven, without a working example found anywhere in the world.*
>
> Dr Mead (eCoast, engaged by SPS) states in Appendix 2 of the SPS submission:
>
> *It is noted that detailed investigations and design have not yet been undertaken for the focus reef. As with the responses to the initial presentation, other mitigation options should also be considered (e.g. supplementing the existing reef on the western side of the bay to create a right hander, incorporation of a left on the western side of the new reclamation, etc.), which could be incorporated into the further detailed investigations.*
>
> Dr Mead also suggests:
>
> *The focus reef, should also be designed to allow for large wave surfing to compensate for the loss of Airport Rights (this modification does not represent more cost, the rock weight/size would be the same, as would the volume, just the configuration would need to be considered)*

295. Local knowledge from surfers will provide valuable input in the design of mitigation options. Dr Goring acknowledges Mr Wollerman (submission number 598 and Mr Tervoort's (submission number 621) submissions on this matter. Dr Steven endorses the applicant's proposed collaborative approach to get input from the surfing community on the detailed design of the SWFS and provide feedback on baseline and operational monitoring (refer to Surf Steering Committee proposed condition in Appendix 11).

296. In summary, we consider the effects on surfing amenity as a result of the proposed runway extension will be more than minor because the Airport Rights surf break will be completely lost and the three other surf spots in Lyall Bay could have a reduction in characteristic surf rides of between 14-29%.

297. Whether the SWFS will mitigate effects to an acceptable level is uncertain because of:

- the concerns raised about the validity of models used to assess effects pre and post construction of the proposed runway;
- the lack of design detail or proven success of similar structures in similar environments
- the lack of direct comparison of effects (i.e. length and number of rides) pre and post construction of the proposed runway at all three surf break locations.

298. If modelling predictions are correct, there may only be a slight improvement in terms of wave height at Middle beach and this doesn't necessarily translate to "mitigation" of surfing amenity over Lyall Bay given that The Corner appears to be a surf break that is very important to submitters (and effects could still be more than minor at this location).

299. To address the uncertainty about the likely impacts, and the efficacy of the SWFS to appropriately mitigate effects on surfing amenity, consent conditions need to allow the applicant to have the capacity to adapt to the actual impacts (i.e. adaptive management). Considerable baseline monitoring is required to establish existing surf conditions so that actual effects post construction of the proposed runway extension are identifiable. It is important for decision makers to note that the level of effect on surfing amenity may only become evident post construction of the proposed runway extension and SWFS and at this point adverse effects may be irreversible and difficult to mitigate.

Impacts on other recreational users

300. The construction of the proposed runway will impact persons fishing, gathering shellfish and diving, particularly in the immediate vicinity of the construction site. Dr Steven's assessment is that the full implications of the temporary exclusion zones may not be apparent until construction gets underway. Recreational activities such as persons gathering kai moana and kayaking, kite surfing and wind surfing are not location specific and it is likely the exclusion zones can be accommodated through changed behaviour patterns.

301. The exclusion zone around the SWFS construction site is likely to affect the full range of water based recreation activities to some extent, although Dr Steven considers that recreational users such as kite surfers and wind surfers may be able to avoid the areas. Submissions raised concern about access to the CMA around the SWFS and questioned how this area will be policed. The applicant proposes to address this matter in the Construction Management Plan and we agree that a general overview of public access restrictions should be covered in this plan. However, we recommend the specific location of the exclusion zone around the SWFS, the timeframe it will be in place and how restrictions on public access will be minimised, and how the zone will be policed is detailed in the Surf Mitigation Adaptive Management Plan.

302. Dr Morrisey considers the ecological mitigation recommended in conditions of consent is appropriate for the scale of the development. Recreational opportunities for kai moana gathering and diving are unlikely to be as good where the rock dyke replaces natural reef. Where rock dyke replaces soft sediment seabed, the kai moana and diving opportunities would be better.

303. Dr Steven agrees with the applicant that an increase in dust (and large particulate matter from haulage vehicles falling onto roads) could have an adverse effect upon recreational users (particularly amenity of pedestrians and cyclists). In addition dust from construction site compounds, if not managed, could impact nearby recreational activities. An assessment of effects from dust emissions is included in the air quality effects assessment. We consider that the recommended conditions of consent will ensure that the effects of dust emissions on recreational users in the CMA will be less than minor.

304. Dr Steven agrees with the applicant's assessment that construction noise on recreational activities, such as walking, running, swimming, surf-life saving, and walking dogs along the beach, will not be significant.

305. Mr Lloyd has recommended a construction noise limit of 70 dB L_{Aeq} and 85 dB L_{Amax} (07.30 to 20.00hrs) at Lyall Bay beach to protect beach users. This control will also protect surfers using Lyall Bay (to a slightly lesser degree) who will normally be closer to the beach than to the construction works.

306. In summary, provided the applicant complies with the recommended conditions of consent we consider the effects of construction dust, noise and marine transport on recreational users (such as surfing, fishing, walking, running, swimming) in the CMA be no more than minor.

307. Access to the CMA around the proposed runway extension will be restricted for up to four years. Although recreational surveys showed low levels of participation in fishing from land/spear fishing, diving and seafood gathering in this area, it is apparent through submissions that this area is important to the community for recreational uses. In conclusion, given exclusion will be temporary; we consider there will be a minor adverse effect (i.e. adverse effects that are noticeable but will not cause any significant adverse impacts) on recreational users in the CMA.

Recommended conditions

308. The applicant proposes a condition of consent that requires the design of the SWFS to be undertaken by a suitably qualified person and in consultation with the Surf Steering Committee. The location and design will be based on findings of further modelling. We agree with this condition with the amendment that baseline monitoring information is to be utilised to validate surf impact modelling.

309. The applicant proposes a Surf Mitigation Adaptive Management Plan (SMAMP) to be prepared in consultation with a surf steering committee six months prior to the construction of the proposed runway extension to outline key performance criteria of the SWFS, its location, construction methodology, and monitoring, reporting and maintenance requirements of the SWFS. We

agree with this proposed condition with the addition of specifying the exclusion zone location and measures that will be adopted to minimise public access restrictions e.g. restricting construction of the SWFS to working days only so that public access is not restricted on Saturdays and Sundays. We also recommend the nature and scope of information required to outline ongoing maintenance of the SWFS is added to this condition.

310. Technical Report 11 illustrates and describes machinery operating at sea to construct the SWFS. We have recommended an amendment to the applicant's SMAMP construction methodology condition to include the requirement that works must be undertaken entirely at sea to minimise disturbance to recreational users on the beach.

311. The applicant proposes to establish a Surf Steering Committee to involve relevant stakeholders in the detail design of the SWFS and provide feedback on baseline monitoring and matters covered in the SMAMP. Another function of this committee is to make the consent holder aware of any safety issues as they arise. We agree with this condition excluding the requirement for the Consent Holder to liaise with the Surf Steering Committee regarding maintenance work of the rock wall which runs parallel to the runway (next to The Corner). This maintenance is outside the scope of the consents being sought in this consent application WGN160274 and therefore not appropriate to include as a condition of consent.

312. We note the requirement for the Consent Holder to cover the costs of the Committee was proposed by the applicant. We recommend an advice note is added to above condition for avoidance of doubt that the Surf Steering Committee is a liaison group between the consent holder and the community and does not have a decision making role.

313. The applicant proposes key performance criteria and objectives of the SWFS as a condition of consent. These criteria will direct the design of the SWFS and performance monitoring. It is our understanding that the criteria/objectives proposed by the applicant have been prepared in consultation with surfing organisations (submitters). We agree with this condition; however recommend that performance is measured against baseline information.

314. In addition to bathymetric surveys, the applicant proposes monitoring waves at The Corner and the anticipated location of the SWFS for six months to establish baseline wave characteristics. To ensure baseline wave characteristics are captured at all surfing locations in Lyall Bay and comparison can be made to the assessment presented in the consent application, we recommend all three surf breaks in Lyall Bay are monitored and measurements are taken during the three scenarios (events) described in Technical Report 11 when possible.

315. Dr Goring has advised that the surfing amenity model (OPTISURF) requires validation to enable appropriate design of the SWFS, we therefore recommend the following additional baseline monitoring and modelling:

- Five coastal profiles along Lyall Bay to be surveyed every 1-2 months for a full year.

- Bed sediment grab samples are collected between +2m and -5m depths at one metre intervals depth contours for three transects along the beach.

- Undertake surfing amenity modelling as described in Technical Report 11 using the collected baseline information i.e. wave, bathymetric data, sediment size and coastal profile information.

316. The applicant proposes to undertake a surfing amenity survey to confirm baseline conditions in Lyall Bay. We agree with this condition with the amendment to monitor surfing activity at all three surf breaks.

317. The applicant proposes a condition to submit construction details following the certification of the SMAMP. Construction details such as the date works are scheduled to commence relative to the stage of works programme, and contact details for the contractor are key pieces of information expected to be provided under this condition.

318. The applicant proposes that the timing of the construction of the SWFS shall be aligned with the placement of rock armouring around the runway extension reclamation (i.e. Stage B of the construction timetable). We agree with this revision and recommend it as a condition of consent.

319. The applicant proposes post-construction monitoring, reporting and adaptive management conditions for the SWFS. We have amended these conditions to incorporate a re-run of the surfing amenity modelling described in Technical Report 11 using the wave, bathymetric data, sediment size and coastal profile information collected. We recommend that post construction monitoring is compared against baseline information and key performance criteria.

320. In the event the SWFS has not met key performance criteria and objectives, remedial action or alternative mitigation options determined in consultation with the Surf Steering Committee are required to the approval of GWRC and implemented within six months. The approval of GWRC is necessary to ensure any remedial action or alternative mitigation options proposed are appropriate, a peer review by a technical expert may also be required.

321. If the SWFS has met key performance criteria the applicant proposes to repeat post construction monitoring on a five yearly basis for the duration of the consent or more frequently if damage to the structure is observed. We recommend that consent conditions should allow GWRC to request additional post construction monitoring if an adverse effect on shoreline morphology or surfing amenity is observed. An advice note has been included to ensure any additional monitoring is discussed with Consent Holder.

322. If the rocks comprising the SWFS have been moved by the large waves, both the surfing amenity and beach erosion may be affected. Therefore Dr Goring has recommended that the structural integrity of the SWFS is inspected after each 10-y return period wave event recorded at Baring Head, and remedial action taken if necessary. We agree and have recommended this requirement as a condition of consent.

323. As described in the Air Quality Recommended Conditions section of this report, we have recommended conditions of consent requiring visual dust monitoring and methods to limit dust emissions.

324. As described in the Noise and Vibration Recommended Conditions section of this report we have recommended a construction noise limit condition at Lyall Bay beach to protect beach users.

Landscape and visual effects

Effects of the proposal

325. The landscape and visual effects assessment is detailed in Technical Report 24 (also referred to as the "ALVE" report). The landscape/seascape area considered relevant to the proposal is shown on Figure 10 below. In their assessment, the applicant has divided Lyall Bay into two parts (1) the main bay west of the runway and out to Te Raekaihau Point that defines the western edge of Lyall Bay and (2) a small contained embayment between the runway and Hue te Taka Peninsula.

Figure 10: Lyall Bay Landscape/Seascape. Source: snapshot of *Technical Report 24*, Boffa Miskell Ltd, 22 April 2016 (figure 8)

326. When considering landscape and visual effects the applicant highlights that the proposed runway extension will be at the same level of the existing runway, have a low profile approximately 9.0m above sea level and will comprise elements similar to those that already exist. The existing breakwater will remain in situ in the current proposal.

327. Given the highly modified state of the area, the applicant does not consider Lyall Bay or its environs to comprise any outstanding natural landscape or

features nor as a natural landscape/seascape. However the applicant acknowledges there are some natural features (i.e. the sea, waves and tidal action, sandy beach, the fringe of reefs and the unbuilt headlands to the west and east).

328. The significance of effects was assessed using a 7-point scale (refer to Technical Report 24 p. 48). The landscape and visual assessment considers the biophysical landscape, visual effects and effects on landscape character. The applicant's assessment of these components are described in the following paragraphs.

329. Due to the high degree of modification, the biophysical effects were assessed as moderate within eastern Lyall Bay, low in wider Lyall Bay and negligible in Western Lyall Bay.

330. The most pronounced visual effects assessed were for those living closest and with direct views of the proposed runway extension, and those using public spaces in close proximity to it (refer to Table 8).

Table 8: Summary of Visual Effects from Representative Viewpoints. Source: *Technical Report 24, Boffa Miskell Ltd*, 22 April 2016 p.4

Viewpoint	Figures	Location	Distance to Viewpoint	Elevation of Viewpoint (asml)	Viewer Type	Significance of Visual Effects
1	20A-H[29]	Beach, Moa Point Road	185 – 320m	5m	Resident	Very high
2	21A &B	Breakwater, Moa point Road	160m	5m	Transient	Moderate-High
3	22A & B	Hue te Taka Peninsula	265m	3m	Transient	High
4	23A & B	Palmer Head	400m	96m	Transient	Very High
5	24A & B	Kekerenga Street, Strathmore	475m	73m	Resident/ Transient	High
6	25A & B	Spruce Goose Café	900m	7m	Transient	Moderate-Low
7	26A & B	Promenade, Lyall Bay Parade	1200m	4m	Transient	Moderate
8	27A & B	Arthurs Nose, Queens Drive	940m	3m	Transient	Moderate
9	28A & B	Waitaha Cove, Queens Drive	1200m	3m	Resident	Moderate
10	29A & B	Te Raekaihau Point	1300m	72m	Transient	Moderate
11	30A & B	Bunker Way, The Links, Strathmore	1000m	30m	Resident	Low
12	31A & B	Hornsey Road, Melrose	1600m	120m	Resident	Moderate
13	32A & B	Tirangi Road, Kilbirnie	1700m	25m	Resident	Very Low
14	33A & B	Inverell Way, Seatoun	2300m	100m	Resident	Low
15	34A & B	Truby King Park, Melrose	2100m	115m	Transient/ Resident	Low
16	35A & B	Mt Victoria Lookout	4500m	197m	Transient	Low
17	36A & B	Inter-island Ferry	3000m approx..	10m	Transient	Very Low

331. In terms of landscape/seascape character, the applicant considers the proposal will have:

- Low effect on the western side of Lyall Bay given the form and design of the proposed extension is similar to what already exists and the open sea will continue to have a major influence on landscape/seascape character; and

- High effect on the eastern side of Lyall Bay during construction and moderate at completion. Once constructed, the proposed runway extension will be a major new feature, albeit similar to what already exists. Once the proposed mitigation measures are in place, the effects on landscape character will be reduced as its overall form and design will be integrated with the existing runway.

Avoiding, remedying and mitigating effects

332. The measures proposed by the applicant to mitigate the adverse effects on landscape and visual amenity are:

- Creation of, and improvement to, marine and terrestrial ecological habitats (i.e. in the rock dyke and exterior armouring);

- Improved access and parking, including safety improvements for pedestrians and cyclists; and

- Additional and improved recreational facilities and opportunities (i.e. improved access to CMA and the proposed SWFS).

Assessment

333. Dr Steven reviewed Technical Report 24, his assessment is discussed below.

334. Dr Steven considers the landscape as defined in Figure 10 above as credible for the purposes of the assessment.

335. The applicant acknowledges that there are natural features present and natural processes occurring within Lyall Bay. Dr Steven considers that the waters of Lyall Bay have sufficient character to define the water surface as a seascape feature, but agrees with the applicant that the seascape/feature falls short of being exceptional (outstanding) with respect to each of natural science, sensory, shared and recognised factors.

336. Dr Steven describes the following short-comings with the applicant's assessment on biophysical landscape/seascape effects:

- The significance of effects scale is too rigid and prescribed i.e. does not allow for a high rating to be applied to biophysical effects unless alteration to several key features or attributes occurs.

- The proposed runway extension will result in highly adverse effects on the biophysical landscape/seascape in Lyall Bay east/Moa Point embayment (compared to moderate rating applied by the applicant) given the proposal involves a total loss of 10.8 ha of marine environment and its replacement with a terrestrial form.

337. Dr Steven agrees with the applicant's assessment that landscape/seascape character effects on the western side of Lyall Bay are likely to be low and acceptable. However, Dr Steven disagrees that effects on the eastern side of Lyall Bay will reduce post construction and will remain highly adverse. Dr Steven states:

The area of the sea to be reclaimed for the runway extension appears at least as great, if not greater, than the adjacent sea surface area that will remain within the embayment, post construction. The character of the embayment will also be changed further by Accropode armouring structures, the straight line edge of the extension, and the unnaturally acute angle formed between the embayment and the extension, compared to embayment's further east of Hue te Taka Peninsula.

338. Dr Steven considers that while landscape effects at Moa Point embayment are high they are acceptable and can be mitigated to an extent through landscape and ecological restoration initiatives. To ensure decision makers have sufficient detail on landscape mitigation measures we recommend the applicant provide the following information:

- How the proposed runway extension will be integrated into Moa Point Beach to mitigate landscape effects (i.e. around the junction of the proposed extension and Moa Point embayment beach); and

- How public access to the CMA will be provided around the structure whilst providing for public safety in a high hazard zone (wave exposure).

339. Dr Steven considers the viewing locations used in the assessment are representative, however suggests it would have been appropriate to validate the visual assessments with community opinion rather relying on a professional assessment of the scale of effects. GWRC requested visual assessments be validated (refer to further information request dated 16 June 2016), however the applicant responded that no further assessments were required (refer to further information response dated 1 July 2016). Based on Dr Steven advice, **we recommend the applicant validate the visual effects assessment by way of community consultation, including the scale of effects.**

340. Approximately 42 submissions raised concerns about visual effects in their submission. Dr Steven considers Mr Anstey's submission on the level of visual effects assessed by the applicant highlights the problem of adopting untested assumptions as the basis for assessing visual effects.

341. Several submissions raised concerns that the proposal will cause permanent irreversible adverse effects to the visual beauty and landscape of Lyall Bay, particularly at Moa Point. Submissions noted the proposed development will result in a loss of the natural environment, and some disagreed with the assessment that the extension would look sufficiently 'natural' to be acceptable or well-integrated into the existing context.

342. Dr Steven agrees with the summary of visual effects (as presented in a table in Technical Report 24 paragraph p. 36) except for residents on Moa Point Road and the beach at Moa Point. Dr Steven states:

I consider the effects on views from this area to be extreme, and unable to be remedied or mitigated. As such, I regard these effects as significant and unacceptably adverse.

343. Drawing on the advice from Dr Steven, considering matters raised in submissions, and provided the visual effects assessment is proved valid (by way of community consultation on visual effects), we:

- acknowledge that the proposed development will change the landscape and visual amenity in western Lyall Bay, however following completion of the mitigation measures we consider the landscape effects could be mitigated to an acceptable level;

- consider the proposed development will likely result in more than minor landscape effects in the Moa Point embayment. We have recommended conditions of consent to mitigate (to an extent) landscape effects in this area to an acceptable level;

- consider visual effects from the beach at Moa Point embayment are significantly adverse and unable to be remedied or mitigated.

Recommended conditions

344. To mitigate landscape/seascape and visual amenity effects, the applicant proposes a Landscape and Urban Design Management Plan (LUDMP) prepared by an urban designer/landscape architect in consultation with involvement from other experts (e.g. terrestrial/aquatic ecologist) and stakeholders (e.g. the CLG, Wellington City Council, Iwi). The proposed condition references the locations the LUDMP will encompass. Moa Point Beach is the only site within the CMA where amenity works are proposed and these works are discussed below. Other amenity improvements (above MHWS) are discussed in Mr Daly's s87f report for WCC.

345. The applicant states the purpose of the LUDMP is to outline the methods and measures that will be implemented to achieve good quality detailed design of the project. The amenity works are proposed to be completed prior to the completion of the project. A draft LUDMP was submitted as part of the consent application documentation. The draft LUDMP notes that the following amenity improvements <u>may</u> be included at Moa Point Beach:

- A path from the road to the beach

- A beach form that addresses the intersection of the beach and the runway extension edge to make a more naturalised grade and contour that prevents erosion, sustains coastal flora and fauna, and ties back into the existing beach form further east in the same bay.

- Revegetation using local coastal plant species which will be self-sustaining over time. Monitoring and replacement of any failed revegetation plants for a period of 5 years from implementation.

- Placement of construction materials in the shallow margins of the bay that enhance opportunities for marine life.

- Seating and sculptural elements

346. Dr Steven commends the design possibilities represented conceptually in Figures 14 and 15 in Technical Report 24. These figures show:

- An informal walkway to a lookout point
- Land from the runway extension formed to tie in with the beach
- Underwater structure for habitat creation and marine ecology enhancements
- Native coastal vegetation planting
- Lizard habitats
- Blue penguin nesting sites

347. We agree with the proposed LUDMP condition with the addition of the following details:

- Design modifications for new accropodes to render them more aesthetically fitting noting any design modification to the accropodes and rock wall need to consider the ecological habitat objectives outlined in the ecological and water quality effects section of this report.
- Details of the works required to re-create the beach post construction at the junction between the runway extension and Moa Point embayment, and how the Consent Holder will protect the environment (e.g. prevent sediment discharges to the CMA, prevent coastal erosion) during and post construction.
- The amenity/mitigation works specified in the LUDMP to be completed by the end of Stage K.

348. Additional ecological enhancements similar to that described above have been proposed by Dr Crisp and Dr Morrisey and already form part of our recommended conditions (refer to in the ecological effects assessment and coastal birds assessment). Measures required to mitigate natural character effects in Moa Point are discussed in the following section.

349. We also recommend specifying when the timeframe for completing these works as it is unclear i.e. works to completed within Stage K of the construction programme.

Effects on natural character

Effects of the proposal

350. To assess the different natural character attributes within Lyall Bay the applicant divided the area into eight sub-component areas (refer to Figure 11 below).

Figure 11: Lyall Bay Natural Character Component Areas. Source: *Technical Report 25, Frank Boffa*, April 2016 p.15

351. Although the natural character of the Lyall Bay area and in particular the shoreline has undergone considerable modification, the proposed runway extension will further change the eastern shoreline. The actual or potential effects on natural character of the CMA include:

- Loss of 10.8ha of marine habitat
- Localised reductions in tidal residual flows, wind driven currents, and wave heights;
- the Moa Point embayment will become more enclosed
- the visibility of the runway extension to residential properties situated around Moa Point embayment
- construction activities and associated sediment discharges, noise, and lighting
- Disruption of recreational activities such as fishing, diving, and swimming during construction activities
- Reduced surfing amenity

352. The applicant's natural character assessment (refer to Table 9 below) determined two areas that will experience a reduction in natural character; the Moa Point embayment and the Airport Component Area.

Table 9: Natural Character Assessment. Source: *Technical Report 25, Frank Boffa*, April 2016 p.33

Natural Character	Pre-Construction	Post Construction
South Coast	High	High
Lyall Bay Overall	Moderate	Moderate
Lyall Bay Component Areas		
Hue te Taka Peninsula	High	High
Moa Point Embayment	Moderate	Low
Airport	Low	Very Low
Lyall Bay Beach	Moderate/Low	Moderate/Low
Western Shore	Moderate	Moderate
Te Raekaihau Point	High	High
Inner Bay (Marine)	Moderate	Moderate
Outer Bay (Marine)	Moderate/High	Moderate/High

353. The applicant considers the proposal to be consistent with existing development and will therefore not give rise to any significant adverse effects on natural character and effects can, in part, be mitigated.

Avoiding, remedying and mitigating effects

354. Mitigation measures proposed by the applicant include:

- Modifying the existing man-made armoured western edge of the runway, including the proposed extension, and creating a 'softer' more natural like edge on part of the eastern side of the runway extension;
- Creating a new edge along the eastern side of the runway extension, which would integrate the armoured edge of the runway with the existing 'natural' edge of the Moa Point embayment;
- Creation of and improvements to, marine and terrestrial ecological habitats;
- Improved recreational and public access opportunities to be developed along the western edge of the airport along Moa Point Road;
- The development of a SWFS constructed in the inner part of Lyall Bay.

Assessment

355. Dr Steven reviewed Technical Report 25, his assessment is described below.

356. Dr Steven agrees with the approach used to assess effects of the proposal on natural character, and concurs with the assessment of the nature and magnitude of effects (as shown in Table 9 above).

357. Dr Steven considers the effects on the Airport component area (i.e. natural character reduced from low to very low) are acceptable provided ecological mitigation conditions proposed by the applicant are implemented.

358. Dr Steven considers the natural character effects (reducing from moderate to low) at the Moa Point embayment are unacceptable, and recommends additional mitigation (i.e. through ecological restoration and habitat creation and enhancement) is required to maintain the natural character level at moderate.

359. Dr Steven recommends a specific Moa Point natural character mitigation & restoration plan that integrates physical, biological aspects (i.e. marine, avian and terrestrial plants) and urban design solutions (i.e. pedestrian walkways, beach access, and form - junction of runway extension and beach) is the best approach to ensure natural character is maintained. A piecemeal approach will not suffice; it needs an integrated multi-disciplinary approach - a coordinated plan. We agree with Dr Steven and **recommend the applicant provide a Moa Point natural character mitigation & restoration plan to decision makers that address natural elements, natural patterns and natural processes in a coordinated way to maintain natural character post construction of the runway at Moa Point.**

360. Dr Steven advises that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS. As previously discussed the effect of the SWFS on natural processes (i.e. sediment transport and waves) may not become apparent until after the structure is constructed. The applicant proposes an adaptive management to address any such issues. We have requested further information on potential shoreline morphology effects from the SWFS and remedial action/mitigation options be provided prior to the hearing for decision makers to consider.

361. Submissions raised concerns about the reduction in natural character. In particular, some submitted that the extension is totally out of scale and character of the existing coastline and the proposal will be engineered with no natural character.

362. Drawing on the advice from Dr Steven and considering matters raised in submissions, we consider the proposed development will likely result in effects that are more than minor on natural character in Moa Point embayment and not acceptable without further mitigation.

363. We consider the effects on natural character in the wider assessment area (i.e. outside Moa Point embayment) will be less than minor.

364. Provided the applicant proposes suitable mitigation to maintain natural character at Moa Point (i.e. addressing natural elements, natural patterns and natural processes in a coordinated way) and complies with the recommended conditions of consent, we consider adverse effects on natural character could be remedied or mitigated to an acceptable level.

Recommended conditions

365. To mitigate natural character effects, the applicant proposes the LUDMP (refer to Landscape and Visual Effects assessment and recommended conditions sections of this report). The applicant proposes that mitigation measures such as improving the junction where the runway meets land and improving the south coast gateway with appropriate landscape and revegetation will provide environmental improvements for residents and transient visitors to the area.

366. We agree with the proposed LUDMP with the amendments described in the Landscape and Visual Effects recommended conditions section of this report. Additionally, we recommend the purpose/scope of the LUDMP include the restoration and enhancement of natural character. The measures the applicant proposes (via the Moa Point natural character mitigation & restoration plan) to maintain natural character at Moa Point will be outlined in the LUDMP.

367. Additional ecological enhancements in Moa Point embayment have been proposed by Dr Crisp and Dr Morrisey and already form part of our recommended conditions (refer to in the ecological effects assessment and coastal bird assessment). Dr Steven considers these measures are important to mitigate effects on natural elements of the environment, but to maintain natural character we need to look at structural/physical aspects of natural elements as well – i.e. the rocks and other materials used for restoration, as well as the forms and patterns created by their use. Therefore mitigation over and above that recommended by Dr Crisp and Dr Morrisey is required and this has been requested via the Moa Point natural character mitigation and restoration plan.

368. During construction of the proposed runway extension, there will be experiential effects on natural character from noise, lighting and the presence and activity of construction machinery in and around the CMA. People's perception of the area, particularly those living in close proximity (i.e. along Moa Point Road) will be adversely affected, however these effects will be temporary. The applicant has proposed construction noise/vibration and dust management conditions as well as community liaison and complaint procedure conditions to monitor and mitigate effects during construction on the community. We agree with these proposed conditions with the amendments outlined above.

Natural hazards

Effects from natural hazards

369. Natural hazards are the threat of naturally occurring events that may have a negative effect on people or the environment. Storm inundation, wave forces, tsunami, earthquakes and climate change have the potential to impact on the proposed runway extension.

370. Over the coming decades, climate change will result in more intense storms and a rise in sea levels. Coastal communities are most vulnerable to the impacts of climate change. The applicant has undertaken as assessment of the implications of the project arising from sea level rise and climate change effects on waves and storm surges over the next 100 years.

371. The applicant considered it appropriate to assess the proposed runway extension applying a sea level rise of 1.2m by the year 2115 and a 0.15m contribution for increases in waves and storm surge height induced by climate change effects.

372. The applicant's assessment is that climate induced changes would not endanger the current runway and even less so for the proposed runway extension due to the finished ground levels.

373. The applicant's seismic design criteria for the proposed runway extension comprise 500 year and 2,500 year earthquake events. The 500 year earthquake event design matches the Airport's current post disaster operational requirements, which include the Airport being operational, potentially with a shortened runway, while minor repairs are undertaken. For a 2,500 year earthquake event the rock dyke and runway platform will remain stable following the event, although extensive reconstruction would likely be required.

Assessment

374. A number of submissions raised concerns about the impacts of natural hazards on the proposed runway extension and whether the applicant had appropriately considered these effects.

375. Dr Goring has reviewed the applicant's assessment of coastal hazards, including sea level rise and climate change.

376. Technical Report 7 describes how a 100 year wave height was calculated. Dr Goring advises that the proposed runway extension has been designed to a satisfactory wave height (10.5m) based on the limited information provided in the consent application.

377. Technical Report 15 (NIWA – Coastal processes assessment) presents data on extreme sea levels, using a 2012 figure for the 100-year return period sea level as 1.71m above WVD-53 datum. Dr Goring points out that the applicant has not used sea-level data since 2012 despite this data being available.

378. To assess the effect of the extra four years of data Dr Goring downloaded the sea-level data from Jan-2012 to Aug-2016 at Queen's Wharf and extracted the highest sea level from the record. This occurred on 21-Jun-2013 and was 2255 mm above Chart Datum which translates to 1165 mm above WVD-53 datum. Dr Goring advised that the inclusion of this and the other smaller additional points from the four extra years of data would not have affected the result significantly, therefore the 2012 results can be used with confidence.

379. The applicant adds the following sea level rise and climate change effects to the 100-year return period level of 1.71m for extreme tides and storm surges:

- 1m sea level rise to 2115 as per guidance from the Ministry for the Environment; and

- 0.2m for the present observed subsidence of the land extrapolated over the next 100 years; and

- 0.15m for increases in swell waves resulting from increased winds induced by climate change.

This results in a total of 3.05m elevation in 2115.

380. The total sea level of 3.05 m needs to be compared with the minimum level of the existing runway, which is 4.6 m at 1300m from the northern end of the present embankment. When compared with the total sea level elevation of 3.05m, Dr Goring concludes that inundation of the runway is highly unlikely.

381. Dr Goring highlights that the applicant has not undertaken an analysis of the threat from tsunami. For a large development such as this, a desktop study using existing information should be carried out to assess the risk and if that risk proved high, a detailed study would be undertaken. To address this gap, Dr Goring reviewed a report prepared by GNS (Mueller et al. 2015) which presents the results from tsunami modelling for a wide range of tsunami sources around the Pacific and for various earthquake slip scenarios. The GNS reports indicates that for a magnitude 9.0 earthquake, the Lyall Bay – Southern Airport region was inundated in 75 to 100% of the scenarios considered in the study. This area also falls into the "yellow zone for self-evacuation". This means that in the event of a strongly-felt or long-duration earthquake, or when a forecast of a distant-source tsunami of above a specific threat level is issued, the area must be evacuated. Dr Goring concludes that there is a significant risk of inundation in a tsunami and the engineering design of the airport extension needs to be assessed for its integrity in the event of such inundation. **We recommend the applicant undertake this assessment and information on the outcomes of this assessment and mitigation measures (such as airport protocols) be provided for decision makers to consider.**

382. I have sought advice from Dr Iain Dawe (GWRC Senior Policy Advisor, Hazards) regarding the applicant's seismic design criteria for the runway extension. Dr Dawe considers that the Airport would have a special post-disaster function especially for Wellington where road access is almost certainly likely to be cut off and the Airport will be the only fast way to get people and resources in for the Civil Defence and Emergency Management response effort. Using the building importance categories (BIC) in NZS 4219:2009 *Seismic Performance of Engineering Systems and Buildings* would give the airport a BIC of 4 which means it would be required to maintain operational continuity after a moderate size earthquake (e.g. 1:500yr) and to require minimal repair after a large earthquake (e.g. 1:2500yr). Dr Dawe considers that the applicant's seismic design criteria is reasonable but is concerned about the length of time repairs would be required after a 2500 year event earthquake. **It is recommended that the applicant provides further assessment on this matter for decision makers to consider.**

Effects on coastal birds

Effects of the proposal

383. The Wellington south coast from Sinclair Head to Palmer Head is identified as a habitat for indigenous birds in the CMA in Appendix F2c of the Proposed Natural Resources Plan. This area includes all of Lyall Bay and Moa Point. Four threatened or at risk indigenous species are known to be resident or regular visitors to the habitat on the coastal shoreline where the proposed runway extension will be located; variable oystercatcher, red-billed gull, pied shag and white-fronted tern. The site supports a breeding population of little blue penguins and provides seasonal habitat or core habitat for a number of species. Reef Heron, which are nationally and regionally threatened, use Moa Point in particular as habitat.

384. The actual and potential effects on indigenous birds along the south coast arising from the proposal are:

- Effects on bird habitat;
- Effects on population arising from bird strike and/or culling; and
- Effects on the ability for visual marine foraging by birds.

385. The use of the coastal environment near the Airport as habitat by birds could potentially be affected by noise and lighting during construction activities. There is also the potential for effects on intertidal foraging habitat as a result of increased turbidity which could reduce fish stocks and invertebrate communities as a food source, hydrocarbon runoff from stormwater discharges and changes in water currents. It is possible that any breeding little blue penguins near to the construction zone could be disturbed. All of these effects have the potential to deter birds away from the area.

386. A longer runway could impact birds that fly across Lyall Bay if they do not deviate from their habitual routes, potentially resulting in higher numbers of bird strikes. The increase in seawall habitat created by the runway extension may also increase the number of shags and other coastal birds roosting on the new seawall. As the Airport is required to undertake bird control activities to ensure aircraft safety, there could be an increase in the number of shags culled as a result.

387. During the construction phase of the runway extension there will be discharges to the CMA from dewatering activity which result in an increase in sediment entering the water column adjacent and close to the construction area. This will increase the turbidity of the water, reduce the amount of light underwater and potentially reducing the foraging efficiency of seabirds and displace foraging birds from the area completely.

Avoiding, remedying and mitigating effects

388. The applicant proposes the following measures to mitigate the effects of the proposal on coastal birds:

- The construction of the runway extension may provide nesting sites for penguins within the rock dyke, especially on the more sheltered eastern side of the runway extension.

- A 150m reasonable mixing zone from the discharge points during construction of the runway extension and Total Suspended Solids (TSS) limits at the edge of the reasonable mixing zone. The limits proposed by the applicant are based on information on effects of suspended sediment on visual foraging by terns and gannets (developed for the management of dredging effects from the Port of Melbourne and adopted for Port Otago).

- Shading of lights during construction to minimise the risk of bird attraction and strikes.

389. Specific measures to avoid, remedy or mitigate potential effects from increased bird culling and bird strikes have not been proposed by the applicant.

Assessment

390. The applicant's assessment of environmental effects on birds near the construction site is that only a relatively small sub-set of seabirds species occurring in Cook Strait have been recorded in Lyall Bay close to the southern end of the Airport and there is little evidence to suggest these areas are important for seabirds either as breeding sites or feeding zones. The applicant states that while little blue penguins breed along the south coast of Wellington including the Moa Point area, it is considered unlikely this species breeds in the rock wall to the south of the Airport as the exposure to wave action would be relatively high. The applicant's assessment concludes that the potentially affected areas in Lyall Bay are deemed to not be critical habitat for any threatened or rare species.

391. With regard to effects on visual foraging, Technical Report 19 (Aquatic Environmental Sciences – Assessment of Ecological Effects) states that construction is likely to have short-term temporary effects on birds in the vicinity of the reclamation. The assessment goes on to conclude that birds are likely to avoid areas of high suspended sediment levels which will cause localised displacement but the area impacted compared to their foraging areas will be negligible and only affect a very small percentage of the Wellington populations.

392. GWRC requested further information from the applicant (refer further information request dated 20 May 2016 and 16 June 2016) in relation to:

- The impacts of the proposal on reef heron (a national threatened species).

- An assessment against Policy 41 of the Proposed Natural Resources Plan which sets out a framework for managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values.

- The effects of discharges of sediment laden water on penguins.

- How the applicant's ecological assessment of bird values was undertaken.

- An assessment of the effects of the proposal on the flight paths of birds.

393. The applicant responded to the requests for further information (refer to further information letter dated 13 June 2016 and 1 July 2016 response). In summary, the applicant's assessment is:

- There is potential for reef herons at Moa Point to be disturbed both during the construction phase and also post construction from planes landing and taking off some 400m closer to Moa Point. The construction phase could pose a temporary disturbance risk to reef heron through increased noise. Given Moa Point is currently exposed to aircraft movement noise it would seem reasonable to conclude that noise effects from construction might have a relatively minor effect. It is impossible to accurately predict any effect of noise from aircraft landing and taking off approximately 400m closer to Moa Point post construction but it is reasonable to conclude that it would have a relatively minimal effect.

- Despite the PNRP identifying the south coast as being a significant habitat for indigenous birds, the applicant's assessment has not identified any significant values for indigenous birds or other species in the immediate area on the basis that the area is already highly modified and is a noisy, active environment. The Airport's bird control operations are also likely to have altered the composition of species resident in and using the Airport environs.

- Blue penguins are likely to breed at Moa Point but are unlikely to nest in the wall along the runway.

- During construction increased turbidity could reduce the foraging efficiency of seabirds. Such effect would be temporary for the duration of construction and is considered to be very minor for blue penguins and other seabirds. The area and volume of water potentially affected by increased turbidity due to construction activities is very small compared to the overall range of available foraging habitat for seabirds.

- Any increase in turbidity would be relatively modest, localised, temporary and predicted to be substantially below those levels considered to adversely affect fish, so any effects, if they were to occur, would be negligible.

- Post-construction there is likely to be very little shift in the run-off of hydrocarbons in the local marine systems. It is highly unlikely that the post construction environment will result in significantly higher contaminant burdens in fish and therefore have any effect on reef heron.

- Any change in currents is highly unlikely to impact fish stocks to such an extent as to have a measurable effect on reef herons.

- Birds have evolved highly resolved sensory systems and are able to navigate successfully over various scales. The species found towards the south of the Airport occur in small numbers and are unlikely to pose any

additional risk to aircraft. It will be unlikely that a longer runway will result in higher levels of bird strike.

394. Dr Crisp has reviewed Technical Report 19 of the resource consent application and the further information provided by the applicant and considers the information to be unsatisfactory for assessing the effects of the proposal on birds.

395. Dr Crisp's assessment is that the effects of the proposal on the habitat of coastal bird species will be more than minor. All coastal bird species adjacent to the Airport will be affected by the noise, lighting and habitat changes caused by construction activities. It is Dr Crisp's opinion that birds will move away from the area. Dr Crisp considers that there is likely to be a permanent loss of intertidal foraging habitat adjacent to the Airport. To mitigate the adverse effects of the proposal on bird habitat Dr Crisp considers that including a variety of boulder sizes in the rock dyke should be included in the requirements of the Ecological Mitigation and Monitoring Plan so that penguins can find caves under rocks and locate ledges with small rocks, pebbles and gravel to construct nests. Dr Crisp also considers it necessary that the Ecological Mitigation and Monitoring Plan include mitigation for resident species (particularly penguins, variable oystercatcher and reef heron) that will be impacted by the runway construction by improving outcomes for those bird populations at other nearby sites. This should include consideration of more nesting boxes and predator control.

396. Dr Crisp's assessment is that the impact of increased bird strike and culling could be significant at a population level but this needs to be determined through monitoring. The area is an existing flyway for many coastal bird species. No quantitative evidence has been provided by the applicant that shows there is no permanent increased in risk of bird strike once the runway juts further out into Lyall Bay. To determine whether the proposal will result in increased bird strike Dr Crisp recommends that a monitoring programme be developed and implemented. Following three years of monitoring the information gathered is to be assessed to determine the likely effects of the extension and what measures are required to offset any increase in bird strike attributable to the runway extension. However, it is acknowledged that whether the airport currently monitors and records birdstrike and numbers and species of birds culled is unknown. It is considered that the number and species of birds culled could be recorded however, it is not known whether determining the number and species of birds killed through birdstrike is possible. This is currently an information gap.

397. The habitat created by the new rock dyke will likely increase the number of shags and other coastal birds roosting around the airport runway. This is likely to lead to an increase in bird control in the vicinity of the airport. It is considered that the recommended monitoring, as described in the previous paragraph, should include monitoring of birds culled and based on this information an assessment made as to what further mitigation is necessary. Dr Crisp also recommends that the Ecological Mitigation and Monitoring Plan should require consideration of methods within the design of the runway extension to deter shags and other coastal birds from roosting on the rock dyke.

398. With regard to the effects of the discharge plume on the ability for birds to forage, Dr Morrisey comments that the discharge limits proposed are based on effects of suspended sediment on visual foraging by terns and gannets. This does not necessarily protect birds that feed underwater using different methods to terns and gannets. Terns and gannets feed by 'plunge-diving', whereas others, notably shags feed by pursuing their prey underwater and water clarity may affect these two groups of birds differently. Dr Morrisey considers that visual clarity should be monitored and discharge limits set in relation to change in visual clarity at the edge of the reasonable mixing zone (in addition to turbidity). Provided the recommended limits for turbidity and visual clarity at the edge of the reasonable mixing zone are stipulated in consent conditions, the proposed limits are considered reasonable. Dr Crisp agrees with Dr Morrisey's assessment and the recommended conditions to mitigate the effects of sediment discharges. Measures to mitigate the effects of discharges from the construction works and to ensure compliance with the proposed limits at the edge of the reasonable mixing zone are discussed in further detail in the ecological and water quality effects assessment section of this report.

399. Dr Crisp concludes that the effects of the proposal on coastal bird habitat will be more than minor and the potential effects on regional bird populations as a result of increased birdstrike could be significant.

400. We consider that the effects of the proposal on bird habitat could be mitigated by improving the habitat for penguins in the rock dyke design and providing nesting boxes at other locations and undertaking predator control for penguins, oystercatchers and reef herons at nearby locations. Conditions to reflect this are recommended below. It is my understanding that WCC (as landowner) are supportive of the proposed mitigation. **The applicant should consult with WCC prior to a hearing to confirm whether they would be supportive of such mitigation.**

401. With regard to culling and bird strike**,** we have recommended conditions for monitoring effects from culling and bird strike and based on this monitoring an assessment undertaken to determine appropriate mitigation and biodiversity offsets for these effects. However, as outlined above, it needs to be determined whether this approach is achievable. **We recommend that the applicant provide detail on the airports current protocol for recording numbers and species of birds killed through birdstrike and culling and whether the monitoring recommended to address this matter is achievable from an operational perspective. If the applicant considers that that what is proposed is not achievable then alternative monitoring, mitigation and biodiversity off-setting should be presented.**

Recommended conditions

402. The following have been included in the condition for an Ecological Mitigation and Monitoring Plan to mitigate the adverse effects of the proposal on bird habitat:

- Nesting habitat creation for penguins through a variety of boulder sizes in the rock dyke in order to allow penguins to find caves under rocks and locate ledges with smaller rocks, pebbles and gravel to construct nests; and

- Methods to improve outcomes for penguins, variable oystercatchers and reef herons through the provision of nesting boxes and undertaking predator control at other nearby sites. These methods should be developed in consultation with Wellington City Council.

403. The following has been included in the condition for an Ecological Mitigation and Monitoring Plan to mitigate the adverse effects of increased bird culling:

- Methods to determine how shags and other coastal birds will be deterred from roosting on the rock dyke; and

404. To monitor, mitigate and/or offset the adverse effects of increased birdstrike and culling, the following conditions are recommended:

- A monitoring plan which sets out the details of monitoring of bird species that fly across the runway extension, number and species culled and number and species killed by birdstrike pre and post construction. The monitoring plan is to be approved by GWRC and monitoring is to be undertaken in accordance with the approved plan.

- Following completion of the monitoring, the requirement of an assessment of the monitoring results and whether a significant adverse effects on regional populations for those species monitored can be attributable to the runway extension. If the effects of the runway extension are determined to be significant, mitigation (if possible) and biodiversity offsetting (where mitigation is not possible) is to be proposed. The report is to be approved by GWRC and, if required, mitigation and/or biodiversity offsetting is required to be implemented in accordance with the approved report.

Effects of operational stormwater discharges

Effects of the proposal

405. Rule R52 of the Proposed Natural Resources Plan requires a resource consent for the discharge of stormwater to water and to land from large sites including airports. GWRC advised the applicant through a further information request (letter dated 20 May 2016) to apply for a stormwater consent for the whole of the airport site under Rule R52 of the PNRP. The applicant has chosen to rely on s20A of the Act for discharges from the existing airport site until Rule R52 of the Proposed Natural Resources Plan becomes operative. As such, resource consent has been applied for in relation to operational stormwater discharges from the proposed runway extension area only and the assessment below is limited to considering the effects of discharges from the runway extension area.

406. Urban stormwater has the potential to adversely affect ecosystem health if not managed appropriately. The inputs to urban stormwater include contaminants such as metals, polycyclic aromatic hydrocarbons and sediment. The potential effects from the discharge of these contaminants into the CMA include altered aquatic habitat, natural processes and reduced water quality.

407. The applicant's assessment of environmental effects states that once the runway extension is established the ongoing stormwater discharges are

expected to be minimal and will be collected and managed in a manner that is consistent with the current management regime at the Airport.

408. GWRC requested further information from the applicant (letter dated 20 May 2016) on the current approach to managing stormwater from the airport. We also requested information on the environmental effects of stormwater discharges and details of how the adverse effects of stormwater discharges were proposed to be managed and the quality of discharges improved over time.

409. The applicant responded to the further information request stating that with regard to the proposed management of stormwater from the runway extension there are several potential design solutions for dealing with stormwater runoff. The options are (a) design additional stormwater outfalls from the reclamation, (b) incorporate a soakage system into the reclaimed land and (c) upsize one or more of the existing outfalls to accommodate the additional runoff from the reclamation. The further information states that while the infrastructure associated with the stormwater system is yet to be finalised and designed, the effects arising from the discharge itself are expected to be minimal. Monitoring data between 2013 – 2015 from the existing discharge was provided and the applicant stated that the monitoring data shows contaminant levels from the outfalls to be negligible.

Avoiding, remedying and mitigating effects

410. The application is to install a stormwater design solution for the additional discharge from the runway extension area. No specific measures to avoid, remedy or mitigate the potential effects of stormwater discharges (including treatment) have been proposed by the applicant in the consent application.

Assessment

411. Dr Claire Conwell (GWRC Environmental Scientist) has reviewed the information provided by the applicant with respect to the effects from proposed stormwater discharges. Dr Conwell's assessment is that there is not enough information in the applicant's assessment of environmental effects to agree with the applicant's assessment that the effects of stormwater discharges from the runway extension will be minimal. While the application states that stormwater will be managed in a manner consistent with the current management regime at the Airport, no information has been provided on the current management regime. As far as GWRC is aware, there is no existing stormwater management plan for the Airport and no treatment of stormwater from the site.

412. After analysing the monitoring data provided by the applicant as further information, Dr Conwell's assessment is that the monitoring results do not support the applicant's statement that the contaminant levels from the stormwater outfalls will be negligible. Dr Conwell raised the following issues with the monitoring data:

- There are no site descriptors of where the samples were taken or what time.

- The list of parameters analysed does not include any metals, polycryclic aromatic hydrocarbons (PAHs) or BTEX (Benzene, Toluere, Ethylbenze and Xylene) which would be expected to be analysed for this type of land use on at least a series of first-flush occasions to gauge an indication of the presence and potential concentrations of these parameters under a range of scenarios (e.g. worst case to ambient conditions).

- Interpretation of the results needs to be matched with rainfall/dry period events. This is not provided or discussed.

- Results indicate that only one sample was analysed on one sampling occasion per year. One sample on an annual basis for only three years does not constitute a baseline of what represents typical stormwater discharging off the site.

- It would be impossible to make a justified statement regarding whether water quality discharging off site has improved or deteriorated over time based on the monitoring data provided.

413. Dr Conwell concludes that the quality of the stormwater discharge at the site remains unknown. The site will be an area of high fuel and vehicle use, and expected contaminants will be associated with high grade fuel, vehicle emissions, vehicle brake wear and tear (and associated particulate emissions). The runway extension area will be largely sealed and impermeable.

414. We consider that the information gap with respect to the volume and quality of stormwater discharges from the runway extension can be filled by way of pre-construction monitoring of existing stormwater discharges from the site. The adverse effects of the stormwater discharges can be appropriately mitigated irrespective of which of the three design options is chosen by the applicant. It is our expectation that stormwater discharged from the extension area would be treated (i.e. retrofitting existing stormwater infrastructure or including new devices in the design of the runway extension).

415. With regard to the options to discharge stormwater to the CMA via a coastal outfall(s) it is considered that following pre-construction monitoring, an assessment of the monitoring results can be undertaken to determine what treatment devices and management actions are required and a stormwater management strategy developed.

416. A condition setting out a reasonable mixing zone is required. However, without any information about stormwater volume and composition this is difficult to determine. A reasonable mixing zone will be able to be set following the monitoring discussed above.

417. With regard to the option to discharge the stormwater via a soakage pit, the effects of the discharge can be mitigated (following an assessment of the monitoring results) through the design of the soakage pit and a management plan for its ongoing maintenance.

Recommended conditions

418. As there are three options for stormwater management it is difficult to recommend a single set of conditions. Option C to upsize one or more of the existing outfalls to accommodate the additional runoff from the extension area also makes recommending conditions difficult because the discharge from the runway extension area will not be isolated from other stormwater from the site which will also be discharged via this outlet. Should option C be chosen by the applicant they will need to accept that the conditions of consent will apply to all discharges from outlet(s) that contain discharges from the extension area.

419. To understand the effects of operational stormwater discharges from the runway extension area, we recommend the following be required as consent conditions:

- Monitoring of current operational stormwater discharges from the Airport into Lyall Bay to determine the likely contaminant levels in stormwater discharges from the extension area. Monitoring results of stormwater discharges from the current Airport site can be used to reasonably understand discharges from the extension area. This will enable an assessment of effects on the receiving environment to be undertaken and the development of a stormwater management plan prior to the completion of construction and commencing operational discharges from the extension area. It is considered that monitoring will be required monthly for at least a year but could be required over a longer period depending on the number of discharge events that occur and the ability to undertake monitoring during these events.

- Once monitoring is completed a report is required to be prepared and submitted to GWRC for approval. The report is to provide detail on expected stormwater volumes, contaminant concentrations, an assessment of the risks to the receiving environment and design detail for the selected stormwater solution (including treatment). The assessment will also look at whether the discharge from the runway area (for a discharge to the CMA) is appropriate for the receiving environment and what treatment is necessary prior to discharge to ensure contaminant levels are appropriate. Receiving environment monitoring is not considered necessary. Technical reports 16 and 17 (NIWA – Marine sediments and contaminants, NIWA – Coastal Hydrodynamics and sediment processes in Lyall Bay) submitted with the consent application present detailed information that can inform the assessment of potential risk to the receiving environment. The monitoring information will also be used to establish an appropriate reasonable mixing zone. A reasonable mixing zone and an explanation of how this was derived should be set out in the monitoring report.

420. If the preferred stormwater management and treatment system is a soakage pit, we recommend certification that the soakage pit has been installed in accordance with the detailed design be provided to and approved by GWRC as part of the report described in the paragraph above.

421. To ensure the ongoing management of stormwater discharges from the runway extension area the following is recommended as a condition of consent:

- The preparation of a stormwater management plan for approval by GWRC. The management plan should be prepared and approved prior to completion of the runway extension so that it can be implemented once discharges commence. The management plan will set out site management practices to minimise contamination of stormwater, details of ongoing monitoring of discharges and trigger levels for contaminant concentrations (for discharges via a coastal outfall structure), and ongoing maintenance requirements (for discharges via a soakage pit). Wellington Water (on behalf of WCC) are currently in the process of developing Stage 2 Integrated Catchment Management Plans for 5 sub-catchments draining into Wellington Harbour and the south coast, these include an Integrated Catchment Management Plan for Lyall Bay. To ensure that the Airport stormwater management plan is consistent with the objectives of any Integrated Catchment Management Plan developed for Lyall Bay, the stormwater management plan for the airport extension should be developed in consultation with WCC.

422. A condition requiring that the discharge to the CMA not give rise to any of the following after reasonable mixing (as required by s107 of the Act); the production of any conspicuous oil or grease film, scums or foams, or floatable or suspended materials; any conspicuous change in the colour or visual clarity; any emission of objectionable odour; and any significant adverse effects on aquatic life. The reasonable mixing zone is to be set out in the stormwater management plan.

423. We note that the applicant may need to apply for additional minor consents relating to modifications or extensions to existing stormwater structures if this option is adopted.

Effects on Navigational safety

Effects of the proposal

424. The application outlines a preliminary construction methodology for the runway extension based on the conceptual engineering design undertaken. The methodology is based largely on land-based transportation, however, the application states that it is possible that land and/or marine fill material could be conveyed to the site by marine-based transport.

425. The following activities have the potential to impact on the movement of vessels around the construction site and within the Wellington Harbour entrance and the Harbour:

Barges

- Barge options involving the transfer of fill from quarry to barge (via road trucks) then on to the site could be selected as the preferred option by the final contractor. Should barges be used to transport fill material from quarries to the site, the applicant has predicted between 15 – 25 barges (i.e. 30 – 50 two way movements) will be required to operate each day (over an 18 hour period) over a 5 – 18 month period.

- While it is assumed that the prefabricated coastal defence units (such as the accropodes and wave wall components) will be delivered to the site by road and batched on site, it may be that these components are constructed off site, and barged direct to the site.

- Any fill won from the Wellington Harbour deepening project would transferred direct from the dredge to the site.

- Rock from the Nelson/Collingwood areas would be transported by sea.

- Machinery may need to operate from barges in order to place rock at the reclamation site.

Moorings

- Marine-based transportation methods will necessitate the installation of new mooring systems to allow marine equipment to securely anchor.

Construction of stone columns and rock dyke, protection structure over main outfall pipeline and Submerged Wave Focussing Structure

- The construction of any stone columns for the rock dyke will most likely be from a marine based jack up rig or equivalent. The installation of the remaining materials that make up the rock dyke can be undertaken using either land-based or marine-based construction equipment.

- Marine based equipment will be necessary for the construction of the protection structure over the Moa Point Wastewater Treatment Plant main outfall pipeline and construction of the SWFS.

Lighting

- Land based lighting will be required during construction of the runway extension. Lighting will be directed downwards and the sideways dispersal confined.

- Temporary lighting within the CMA may be required during construction of the runway extension. This will be managed so that it is directed toward the area of work to avoid unnecessary light spillage.

- Navigation and the required operational lighting will be provided for marine equipment.

Exclusion zones

- The applicant has requested two temporary exclusion zones during construction of the proposed runway extension and SWFS. For the runway extension site the exclusion zone is depicted as a 300m line that extends out from the existing breakwater around the reclamation site to the edge of the proposed beach remediation area on Moa Point Beach. The proposed

exclusion zone for the SWFS encompasses a small area around the proposed structure within Lyall Bay.

Avoiding, remedying and mitigating effects

426. The applicant has proposed conditions of consent requiring the preparation of a Construction Management Plan which will confirm construction methodologies, plant equipment and construction timeframes and identify measures to avoid, remedy or mitigate adverse effects from construction activities.

427. As currently worded, the applicant's proposed conditions require details on marine equipment and operational requirements including mooring requirements.

Assessment

428. Captain Pryce (Manager, GWRC Harbours Department) has reviewed the applicant's proposal and provided advice on the likely impacts on typical vessel movements. Captain Pryce advised that:

- The proposed barge movements fall within the Navigation Protection Areas. Key regular vessel movement transiting the harbour entrance include the Cook Strait ferry operations, commercial shipping movements to and from CentrePort berths, smaller fishing vessels and various recreational vessel movements. All barge movements would need to comply with existing Maritime Rules and requirements of Part 6 of the Navigation and Safety Bylaws which are specific to the Wellington Harbour. This includes radio communications and recommended tracks.

- The temporary moorings will not affect any current vessel movements or other moorings except the existing Airport Exclusion Zone marker buoys.

- Any lighting installed on the construction works must not be able to be confused with existing navigation aids. Barges and supporting vessels must display correct lighting and day shapes as defined in Maritime rules.

- The proposed exclusion zones do not affect known current vessel movements.

429. Captain Pryce recommends that a separate management plan be prepared to provide detail on marine based operations and avoiding, remedying and mitigating any adverse effects. The GWRC Harbours Department should be involved in the preparation of the management plan. The specific matters that Captain Pryce recommends be included in the management plan are outlined in the recommended conditions below.

430. Overall, we consider that the potential effects of the project on navigational safety can be appropriately mitigated through the preparation and implementation of a Marine Operations Management Plan as outlined below.

Recommended conditions

431. The following are recommended as conditions of consent to mitigate any potential effects of the proposal on navigational safety:

- The preparation of a Construction Management Plan which includes details of marine equipment and operational requirements.

- The preparation of a Marine Operations Management Plan in consultation with the Harbourmaster. The management plan is to include:

  - Route planning in and out of the harbour, including the loading points;
  - Weather limits (including swell) for each part of the operation;
  - Lay-up options for when the barges are not required or halted due to bad weather;
  - Contact details and radio procedures for marine vessels;
  - Construction, use and maintenance of any moorings laid for the project;
  - An assessment of the vessels to be used against Maritime Rule Part 90 (Pilotage) to establish if the Masters require Pilotage Exemption Certificates to operate. If the Masters require Pilotage Exemption Certificates to operate, details of how this will be achieved;
  - Details of proposed lighting at the construction site to demonstrate that once installed they cannot be confused with navigation aids;
  - Confirmation of Maritime NZ certification, where appropriate, for all vessels involved;
  - Confirmation of marine insurance (including wreck removal) for vessels involved;
  - Emergency and breakdown contingency plans.

- The management plans are to be approved by GWRC prior to works commencing and all works are to be undertaken in accordance with the approved management plans.

Effects on Moa Point Wastewater Treatment Plant Infrastructure

Effects of the proposal

432. The Moa Point Wastewater Treatment Plant Main Outfall Pipeline (WWTP MOP) passes through the area of the proposed reclamation (see Figure 4 of this report). The applicant proposes to construct a protection structure over the MOP in the early stages of construction. In addition, the pipeline that carries sludge to the southern landfill is located along the Moa Point Road alignment and an interceptor main is located beneath the southern end of the existing runway.

433. The applicant has outlined possible options for the protection of the MOP which include a bulkhead wall instead of the dyke toe extending out over the pipe; pile supported steel cage or concrete platform over the pipe; and, if necessary, performing ground improvements under the pipe.

434. Following a request for further information, the applicant stated that the MOP will either be protected in place or realigned so that it will not be impacted by

the reclamation. It will be up to the form of contract and the final construction programme whether moving (which will require additional consents) or protecting the outfall takes place prior to or concurrent with marine based reclamation works. The applicant has not provided details of options to protect the other infrastructure which could be affected by construction activities.

435. The construction of a protection structure over the MOP has the potential for adverse effects on the environment should the works result in damage to the MOP, specifically the discharge of treated wastewater into the CMA at the works location. Further, the runway extension construction works could impact the interceptor main and sludge pipeline.

Avoiding, remedying and mitigating effects

436. The applicant proposes the development of a Networks Utility Plan in consultation with Wellington City Council, Wellington Water and VEOLA to avoid, remedy or mitigate adverse effects arising from the construction of the project on the MOP.

Assessment

437. The application states that the effects of the reclamation construction on the MOP include loading stress on the pipeline and settlement of sediment/gravels under the pipeline. However, the application does not outline the consequences of damage to the pipeline and potential pollution of Lyall Bay of wastewater should this occur. Nor does the applicant recognise the potential for adverse effects on other infrastructure, specifically the interceptor main and sludge pipeline.

438. Wellington City Council (WCC) submitted on the resource consent application (submission number 360) with respect to:

- The reclamation where it encroaches over, and would permanently cover the MOP; and

- Construction activities that could affect the sludge pipeline (which carries sludge to the Southern Landfill) that generally follows Moa Point Road and the wastewater interceptor main under the southern end of the existing runway that carries sewage to the WWTP. The sludge pipeline is a high pressure pipeline and any damage or breach of it will result in significant adverse effects on the environment.

439. In their submission, WCC seek the protection of the pipeline, inceptor main and sludge pipeline in both their physical extents and their operational and maintenance capabilities. The submitter states that any damage to the outfall or restriction in being able to maintain and operate the outfall has the potential to cause significant costs to the community in both monetary and environmental terms.

440. The submitter states that they are not convinced that ‘burying’ the MOP under the runway reclamation is an acceptable result. A more detailed outline of the process to agree the mitigation and timing of its implementation is considered to be required in the consent conditions.

441. We consider it critical that the owner of the MOP asset is in agreement with any structure proposed to protect the MOP and the measures to protect the interceptor main and sludge pipeline. It is also important that measures to ensure damage to the infrastructure resulting in the discharge of wastewater and/or sludge are developed in consultation with the infrastructure owners and operators. Provided these are achieved we consider the risks of the proposal resulting in damage to the Moa Point WWTP infrastructure will be appropriately mitigated.

Recommended conditions

442. We recommend the following conditions to mitigate the potential adverse effects on the Moa Point WWTP infrastructure:

- The preparation of a report in consultation with Wellington City Council which sets out the methodology for developing a Network Utilities Management Plan. This was requested by the Wellington City Council in their submission. We consider this appropriate to facilitate the process for the development of an agreed option to protect the infrastructure.

- The development of a Network Utilities Management Plan in consultation with the asset owners and operators. With respect to the Moa Point WWTP infrastructure, the plan is to set out details of the options considered and consultation undertaken, detailed design of the agreed option, measures to mitigate any risks of damage to the infrastructure and contingency plans should damage occur. The network utilities management plan is to be approved by GWRC prior to construction commencing.

Effects from the maintenance of structures

Effects of the proposal

443. The resource consent application includes the ongoing maintenance of the toe of the reclamation within the coastal marine area, the SWFS and the protection structure over the Moa Point WWTP main outfall pipeline. Limited information has been provided in the resource consent application on what this maintenance would involve.

444. GWRC requested the following further information from the applicant (Refer to letter dated 20 May 2016):

- Details of ongoing maintenance requirements including what structures need to be maintained and details of the specific maintenance that will be required including the scale, methodology and frequency of these works; and
- Confirmation of what maintenance works will not meet or are unlikely to meet the permitted activity rules in the operative and proposed regional plans and therefore requires resource consent.

445. With regard to maintenance of the toe of the reclamation, the applicant provided further information (see letter dated 13 June 2016, response point 2.15) stating that the proposed design of the runway extension includes accropodes and rock armour of a size that will reduce the current maintenance

requirements for the southern end of the runway. The proposed armour units are considerably larger, more robust and interlink better than the current armour units. The proposed stone blanket layer under the rock dyke and secondary armour layer overlying the inner core of the rock dyke will provide additional scour protection for the toe of the dyke. However, the armour structure will require some maintenance over time. This will involve periodic inspection of the condition of the edge protection and replacement or reconfiguring of the armour units as required. The effort required in each inspection of edge protection will be more than currently because the length of edge structure to inspect will increase.

446. For the protection structure over the Moa Point WWTP MOP, the ongoing maintenance requirements will be dependent on the ultimate protection solution (see further information dated 13 June 2016 response to q. 2.12). If the outfall is to be protected in place, the maintenance programme is likely to change from a marine based diver condition inspection to a remote operated CCTV or laser profiling system of the internal pipe. Provided initial monitoring shows the protection system is not impacting the pipeline, the maintenance regime for this section of pipe would be similar to that for an equivalent underground pipe on land.

447. Ongoing maintenance requirements for the SWFS are expected to be minimal due to the scale of the material that will be used to construct the structure (see further information dated 13 June 2016 response to q.2.13). The applicant states that the structure will be designed to be robust with outer protection to minimise maintenance to the extent possible. Monitoring of the effectiveness of the SWFS during low surf conditions and following large storm events may identify the need for changes or modifications to the structure. Any work required will be described in the Surf Mitigation Adaptive Management Plan.

448. Maintenance activities will result in disturbance of the seabed, reduced water quality around the works area as a result of disturbance, and noise. It is our understanding that there will be no discharge of contaminants such as cement or sediment associated with ongoing maintenance works of any structures.

Avoiding, remedying and mitigating effects

449. The applicant has not proposed measures for avoiding, remedying or mitigating adverse effects from any maintenance activities. The applicant has stated that the Submerged Wave Focussing Structure Adaptive Management Plan will set out the details for maintenance activities on the structure.

Assessment

450. As outlined above, the applicant has provided limited information on maintenance activities. Ideally we would have been provided with more information on scale and nature of maintenance works to assess how adverse effects can be avoided, remedied or mitigated, although we acknowledge that some of this information cannot be provided until the detailed design is complete. However, based on the information provided and our understanding of the maintenance requirements of other coastal structures in the region it is considered that any effects are likely to be no more than minor. Any effects can

be mitigated through provision of information in maintenance management plans which need to be approved by GWRC. GWRC should also be notified prior to any maintenance works being undertaken so that compliance with the management plan can be assessed.

Recommended conditions

451. The following are recommended as conditions of consent to mitigate the effects of maintenance activities:

- The preparation of Maintenance Management Plan to be approved by GWRC. The Maintenance Management Plan is to set out the scope of maintenance activities that are to be undertaken on the toe of the reclamation and the Moa Point WWTP MOP. Maintenance requirements of the SWFS will be outlined in the Surf Mitigation Adaptive Management Plan. These plans will include details of the nature of all inspection and maintenance activities, the scale of maintenance works, frequency, methodology, exclusion areas and the measures that will be undertaken to mitigate adverse effects on the environment. It is important to note that any works outside the scope of those described will require a separate resource consent.

- The requirement for a maintenance methodology to be approved by GWRC prior to any maintenance works occurring to ensure compliance with the Maintenance Management Plan.

- We recommend standard conditions to minimise the release of contaminants to the CMA and to ensure that any disturbance to the CMA is minimised.

Economic effects

Effects of the proposal

452. The applicant commissioned Sapere Research Group (Sapere) to undertake a cost benefit analysis (CBA) to determine the likely economic impact as a result of the proposal (Technical Report 4). In addition, the applicant commissioned Ernst and Young to carry out a national Economic Impact Assessment (EIA) (Technical Report 27). The conclusions of these reports are outlined below.

453. The CBA estimates the value of the nation's resources which would be used up in expanding the runway and providing goods and services to additional visitors, and compares those costs with the additional economic value made feasible by the extended runway.

454. The major input to Sapere's analysis is a set of traffic forecasts – that is, passenger and aircraft movements. These forecasts were prepared by InterVISTAS. Using the 'business as usual' scenario, InterVISTAs predicts the most likely total passenger traffic at Wellington Airport to grow at an annual average rate of 2.3 per cent per annum to 2060, reaching 15.1 million passengers in 2060. By 2060, the most likely forecast of the runway extension scenario projects 1.13 million additional international passengers.

455. Using InterVISTAs traffic forecasts, Sapere conclude that the real economic value added by the runway would substantially exceed its economic costs. Extending the runway would produce a net economic benefit for NZ of around $2.3 billion in today's dollars. Sapere consider that the Wellington region might expect almost a third of the net benefits for the additional visitor expenditure as a result of the runway extension.

456. With construction costs excluded, the economic wellbeing of the Wellington region has been assessed to improve by $1 billion on the most likely scenario, even if that community were to fund the entire cost of the project through local and central taxes. The applicant acknowledges that how the runway extension would be funded is still to be determined.

457. The national EIA identified the direct economic impacts which are expected to occur to the Wellington region and NZ economy as a result of the increased aviation movements to Wellington enabled by the runway extension. The economic impacts identified in the EIA are: international tourism, business passengers, international students, freight and aviation and airports. Over the 40 year assessment period, the report concludes that there would be a net present value of direct economic benefits of between $714m and $1,751m at a national level, and $389m and $684m at a regional level.

Assessment

458. Mr Akehurst was engaged to review the economic assessment carried out by the applicant and matters raised in submissions. A brief summary of the findings of this review is outlined below. Mr Akehurst's full assessment is provided in Appendix 8 of this report.

459. The applicant's CBA captures costs and benefits across 4 main categories: airport, airlines, users and other sections of the community. Mr Akehurst agrees that this is an appropriate framework in which to assess the effects. After reviewing the CBA, Mr Akehurst advised that he agrees with most of the impacts estimated by the applicant. However, Mr Akehurst estimates differ from the applicant's in the following areas:

- Airport: Developers tend to under-estimate the costs to build projects (optimism bias), especially where the project is unique or non-standard. Mr Akehurst considers that the applicant's estimated costs to build the runway extension do not include sufficient optimism bias.
- Airlines: An increase in landing charges has not been identified in the applicant's assessment. It may be that landing charges do not increase. However, if the airport seeks to fund the extension through landing charges, then the distribution of costs changes.
- Users: The applicant has estimated the value of travel time for leisure travellers by translating the Australian values into New Zealand dollar terms ($57/hr). Mr Akehurst has adopted the NZ Transport Agency land based leisure travel cost and factored it up to reflect air travel ($31.36).
- Other sections of the community: The applicant has used an incremental approach to assessing the cost footprint of the net additional tourists attracted to Wellington. This assumes that the majority of tourism

infrastructure and assets already exist (sunk costs) and tourists only place a very small cost burden on NZ providers of goods and services. Mr Akehurst considers that this does not accurately reflect the totality of tourism costs in the long run and uses instead an average cost (rather than incremental) approach embodied in the Statistics NZ Tourism Satellite Accounts and Input Output tables.

460. The outcome of Mr Akehurst's review of the CBA is an increase in the applicant's estimated economic costs, and decrease in estimated economic benefits generated by the runway extension.

461. Mr Akehurst's review of the national EIA concludes that the assessment has a number of critical methodological issues that undermines its usefulness. Further, the EIA is based on an earlier set of passenger projections so it is not consistent with the CBA. Overall, Mr Akehurst concluded that the national EIA is of limited use.

462. To address the limited regional information provided in the national CBA and to address the shortage of a robust regional EIA, the applicant provided a breakdown from the national to regional level for the CBA and EIA. In essence, this regionalisation involved multiplication of the national expenditures by 31% to reflect the share of spending expected to be captured by Wellington's role as a gateway city.

463. Mr Akehurst's view is that the applicant's estimated regional impacts are overstated because even though at the national level there may be arguments for an incremental approach, at the regional level there are inter-regional imports to consider. This means that the regional effects will be lower than a simple ratio applied to the national figures.

464. After adjusting the input values and refining the information used in the national and regional CBA, Mr Akehurst's assessment is that the proposed runway extension will deliver the national and regional economic benefits outlined in Table 10 below. The assessment of regional benefits assumes that all of the costs of the runway extension fall within the Wellington Region.

465. Mr Akehurst concludes that even though his revised figures are lower than the applicant's, they show that the runway extension will deliver significant economic benefits both nationally and regionally.

Table 10: Summary of economic impact assessments

	Applicant's assessment (Net present value over 40 years)	Mr Akehurst's assessment (Net present value over 40 years)
National		
Cost benefit ratio	2.30	1.64
Total national net benefit	$2.32bn	$1.53bn

Regional		
Cost benefit ratio	3.80	2.01
Total regional net benefit	$1bn	$465.2m

466. Mr Akehurst acknowledges that submitters have presented alternative air traffic demand analysis (APAC as part of the BARNZ submission #688) that are materially different from the InterVISTA figures used by the applicant. Mr Akehurst has not assessed the alternative air traffic demand analysis as he does not have expertise in this area. However, the scale of the economic effects is directly linked to passenger growth materialising.

Summary of effects assessment

467. In summary, we consider that the majority of adverse effects can be mitigated to a level which is minor or less than minor. The positive economic effects of the proposal for Wellington Region (and NZ) have been identified as being significant.

468. We acknowledge that there will be significant adverse visual impacts from Moa Point embayment. There will at times, be more than minor effects on recreation users at Moa Point Beach and the breakwater during construction as a result of noise. There will also be more than minor adverse effects on recreation during construction as a result of public access restrictions (exclusion areas). These effects cannot be mitigated further. We also acknowledge that there is uncertainty in relation to a number of effects and have outlined where further information is required in relation to these effects throughout our assessment.

469. Table 11 below provides a summary of our effects assessment. It identifies whether effects can be mitigated, the level of effect after mitigation and where there is uncertainty and/or information gaps and therefore further information needed. The level of effect following mitigation is in relation to the mitigation proposed by the applicant as well as additional measures proposed by GWRC as outlined in the above sections.

Table 11: Summary of effects assessment

	Can effects be mitigated?	Level of effect following mitigation	Further information needed
Effects on coastal processes	From SWFS on Lyall Bay foreshore – uncertain	Uncertain	Yes
	Lyall Bay and Moa Point – Yes	Less than minor	No

Recreation	Yes	Surfing amenity - Uncertain	Yes
		Other – Less than minor effects of construction dust, noise and marine transport on recreational users. More than minor with regard to public access restrictions during construction.	No
Visual	No	Moa Point embayment – Significant	Yes
	Yes	Lyall Bay – Less than minor	
Landscape	Yes	Moa Point – Minor	Yes
		Lyall Bay – Less than minor	
Natural character	Yes	Moa Point – Minor	Yes
		Lyall Bay – Less than minor	
Natural hazards	Yes	Risks from natural hazards low	Yes
Coastal birds	Yes	Bird habitat – Minor	Yes
		Bird strike and culling – Uncertain	
Ecological and water quality	Yes	Minor	No

Tangata whenua and cultural values	Yes	Less than minor	No
Air quality	Yes	Within the construction site – Minor	No
		Outside the construction site – less than minor	
Noise and vibration	Yes	Moa Point Beach and the breakwater – More than minor	Yes
		Lyall Bay – Less than minor	
Heritage and archaeological values	Yes	Less than minor	No
Operational stormwater	Yes	Less than minor	No
Navigational safety	Yes	Less than minor	No
Moa Point WWTP infrastructure	Yes	Less than minor	No
Maintenance of permanent structures	Yes	Less than minor	No
Economic impacts	N/A	Significant benefit	No

470. Specific conditions in relation to managing the range of effects considered are discussed in the sections above. There are a number of other conditions which we would also like to specifically comment on:

- We recommend a condition of consent requiring that the physical construction works (i.e. outlined in Table 4-4 of the consent application which provides an indicative construction sequence) do not exceed a period of four years. The applicant has requested a 10 year consent duration which we consider reasonable to allow sufficient time for detailed design, preparation and development of management plans and to conduct recommended baseline monitoring, as well as commence the construction works. However in the consent application, the applicant states that the construction timeframe is anticipated to be in the order of three to four years taking into consideration the likely delays due to adverse weather conditions. The assessment of environmental effects outlined in this report is based on this anticipated timeframe and we, therefore, consider

restricting the time period for construction works (and therefore construction related effects) to four years is appropriate.

- The applicant has proposed a condition setting out a process for dispute resolution (proposed condition 20 in the applicant's assessment of environmental effects). The process includes decision making by a third party expert and states that dispute resolution process will be applied before any formal enforcement action is taken by the council. We do not consider this condition to be necessary or appropriate. It is the consenting authority's responsibility to assess compliance with consent conditions not the responsibility of a third party. The proposed condition would also preclude GWRC from undertaking their statutory role to undertake enforcement investigation. We understand that WCC share this view.

- Given the recommended Management Plans will identify the measures to avoid, remedy or mitigate adverse effects from construction activities we recommend they are submitted in draft for comment then final for certification by GWRC and WCC prior to construction works commencing, with the exception of the Landscape and Urban Design Management Plan and Maintenance Management Plan. The Landscape and Urban Design Management Plan and Maintenance Management Plan can be submitted at a later date (confirmed in the final construction sequencing programme) as they are not related to construction activities. The applicant has proposed submitting the Surf Mitigation and Adaptive Management Plan at least six months prior to the construction of the proposed runway and we consider this appropriate given the SWFS design is still very much conceptual.

Relevant planning instruments 104(1)(b)

471. Relevant to the assessment of the proposed development is the hierarchy of statutory planning instruments, each intended to give effect to the Purpose and Principles of the Act. In considering this application and the parts that relate to GWRC's jurisdiction we have had regard to provisions of the following higher order planning documents:

National planning instruments

- The New Zealand Coastal Policy Statement 2010
- Resource Management (National Environmental Standard for Air Quality) Regulations 2004

Regional planning instruments

- The Regional Policy Statement for the Wellington Region 2013
- The operative Regional Coastal Plan for the Wellington Region 2000
- The operative Regional Air Quality Management Plan 2000
- The operative Regional Plan for Discharges to Land in the Wellington Region 1999
- The Proposed Natural Resources Plan (PNRP) for the Wellington Region

472. We have deferred the assessment of the Wellington City Council District Plan to WCC. An assessment of the planning instruments outlined above (apart from the WCC District Plan) is provided below. The full text of all relevant provisions is included in Appendix 13 to this report.

National planning instruments:

The New Zealand Coastal Policy Statement 2010

473. The New Zealand Coastal Policy Statement 2010 (NZCPS) took effect on 3 December 2010. The preamble states that the New Zealand coastal environment is facing a number of key issues, including:

- *the ability to manage activities in the coastal environment is hindered by a lack of understanding about some coastal processes and the effects of activities on them;*
- *loss of natural character, landscape values and wild or scenic areas along extensive areas of the coast;*
- *demand for coastal sites for infrastructure uses and for aquaculture to meet the economic, social and cultural needs of people and communities;*
- *poor and declining coastal water quality in many areas as a consequence of point and diffuse sources of contamination;*
- *adverse effects of poor water quality on aquatic life and opportunities for aquaculture, mahina kai gathering and recreational use such as swimming and kayaking;*
- *loss of natural, built and cultural heritage from subdivision, use, and development;*
- *compromising of the open space and recreational values of the coastal environment, including the potential for permanent and physically accessible walking public access to and along the coastal marine area;*
- *continuing coastal erosion and other natural hazards that will be exacerbated by climate change and which will increasingly threaten existing infrastructure, public access and other coastal values as well as private property; and*

474. A consent authority, when considering an application for a resource consent, must, subject to Part 2 of the Act, have regard to, amongst other things, the relevant provisions of the NZCPS. An assessment of the objectives and policies of the NZCPS that are relevant to the proposal is provided below.

Objectives

Objective 1: *To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:*

- *maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;*

- *protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna;*

- *maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity.*

475. The hydrodynamic, sediment transport and morphological effects of the proposal including the effects of the SWFS within the coastal environment have been assessed in the coastal processes section of this report. Overall, it is considered that the current natural hydrodynamic, sediment transport and morphological processes will change as a result of the proposed runway extension, albeit not to a significant extent. However given the proposed runway extension will not maintain (or enhance) physical processes in the coastal environment this aspect of the proposal is inconsistent with Objective 1.

476. The level of effect the SWFS will have on the shoreline in the lee of the structure is uncertain because the validity of modelling is in question and a retreat of 15m plus natural variability is predicted. The assessment above describes the further information that is required to address this uncertainty. Provided the shoreline model is validated and the SWFS is designed and managed to minimise erosion/deposition on the foreshore, we consider that adverse effects on coastal processes could be appropriately mitigated. However, it is currently uncertain whether the proposed SWFS will maintain (or enhance) physical processes in the coastal environment.

477. The Wellington South Coast, including the area affected by the proposal, is listed as a habitat with significant indigenous biodiversity values for birds in Schedule F2 of the PNRP. We have recommended conditions of consent to mitigate effects on coastal birds. Overall, the effect of the proposal on coastal bird habitat after mitigation is considered to be minor. The proposed monitoring and mitigation will help protect the indigenous biodiversity values for coastal birds along Wellington's south coast as a whole and is consistent with Objective 1.

478. The proposal will have adverse effects on coastal water quality as a result of disturbance and discharge during construction and as a result of ongoing operational stormwater discharges. The effect on coastal water quality during construction will be temporary and it is considered that the effects on coastal water quality can be appropriately mitigated and therefore are consistent with Objective 1.

479. Overall, the proposed developed is in part consistent with Objective 1.

Objective 2: *To preserve the natural character of the coastal environment and protect natural features and landscape values through;*

- *recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution;*

- *identifying those areas where various forms of subdivision, use, and development would be inappropriate and protecting them from such activities; and*

- *encouraging restoration of the coastal environment.*

480. This is a high level objective about preserving natural character and features in the coastal environment. The waters of Lyall Bay have been assessed as having sufficient character to define the CMA as a natural (seascape) feature. Given the proposal involves a total loss of 10.8 ha of marine environment and its replacement with a terrestrial form, there will be adverse effects on landscape/seascape particularly at Moa Point embayment. Additional measures are required to mitigate landscape and natural character effects at the Moa Point embayment to an acceptable level. Further information on natural character mitigation measures has been requested to be provided prior to the hearing (i.e. the Moa Point natural character mitigation & restoration plan) and amenity works proposed by the applicant are recommended as conditions of consent.

481. Landscape/seascape effects as a result of the proposed development are expected to be low in western Lyall Bay. However, Dr Steven advises that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS. Conditions requiring monitoring and adaptive management have been recommended to address this data gap and mitigate effects from the SWFS.

482. Overall, it is considered that the effects on the natural character and the CMA as a natural feature could be appropriately mitigated and, therefore, the proposal consistent with Objective 2.

Objective 3: *To take account of the principles of the Treaty of Waitangi, recognise the role of tangata whenua as kaitiaki and provide for tangata whenua involvement in management of the coastal environment by:*

- *recognising the ongoing and enduring relationship of tangata whenua over their lands, rohe and resources;*

- *promoting meaningful relationships and interactions between tangata whenua and persons exercising functions and powers under the Act;*

- *incorporating mātauranga Māori into sustainable management practices; and*

- *recognising and protecting characteristics of the coastal environment that are of special value to tangata whenua.*

483. We consider the proposal is consistent with this objective. The applicant has recognised the relationship of tangata whenua with the application site and surrounds through their application documentation. The applicant has committed to an ongoing relationship with iwi through the process (through the development of an MoU). Recommended consent conditions reflect requests made through the cultural impact assessment and through submissions from Te Runanga o Toa Rangatira Incorporated and Hue te Taka Incorporated. Hue te Taka/Moa Point is an area of significance to Ngati Toa Rangatira which is located near the application site. The proposal will not directly adversely affect this area. The CMA and Cook Strait are identified as statutory acknowledgement areas in the Port Nicholson Block Claims Settlement Act and Ngati Toa Rangatira Claims Settlement Act respectively. The effects on these areas have been recognised and discussed in this report.

Objective 4: *To maintain and enhance the public open space qualities and recreation opportunities of the coastal environment by:*

- *recognising that the coastal marine area is an extensive area of public space for the public to use and enjoy;*

- *maintaining and enhancing public walking access to and along the coastal marine area without charge, and where there are exceptional reasons that mean this is not practicable providing alternative linking access close to the coastal marine area; and*

- *recognising the potential for coastal processes, including those likely to be affected by climate change, to restrict access to the coastal environment and the need to ensure that public access is maintained even when the coastal marine area advances inland.*

484. The coastal marine area at Lyall Bay and Moa Point are high use areas for public including recreation and this has been taken into consideration in our assessment. During construction of the runway extension and SWFS the public will be temporarily excluded from the area surrounding the construction site. Following construction, the proposal will result in the loss of public open space of that area which will be reclaimed. The Airport Rights surf break will be lost as a result of the proposal and therefore, recreational opportunities will reduce. The extent to which effects on surfing amenity will be mitigated by the SWFS is uncertain due inadequacies in modelling and presentation of results. There may be only a slight benefit to surfing amenity noticeable at Middle Beach.

485. With regard to public walking access to and along the CMA, public access around the southern end of the runway is currently difficult. As part of the runway extension proposal the applicant proposes to enhance public access to and along the coastal marine area along Moa Point Road and along the runway at Moa Point Beach. Although specific details of how this could be achieved have not been provided, this aspect may enhance public walking around the

CMA. Details of how public access will be enhanced will be included in the Landscape and Urban Design Management Plan.

486. We consider the proposal is only consistent in part with Objective 4.

Objective 5: *To ensure that coastal hazard risks taking account of climate change, are managed by:*

- *locating new development away from areas prone to such risks;*
- *considering responses, including managed retreat, for existing development in this situation; and*
- *protecting or restoring natural defences to coastal hazards.*

487. Given the current airport is low lying and located within a coastal environment it is considered that it would currently be prone to risks from coastal hazards. Given the applicant's proposal is to extend the current runway the new development will not be located away from an area of coastal hazard risk. The design of the proposed runway extension has taken into account coastal hazard risks including climate change. An assessment of these risks is discussed earlier in this report. Using the Ministry for the Environment Guidelines, an assessment of sea level and climate change effects for a 100 year return period demonstrates that in 2115 inundation of the airport runway is unlikely.

488. The assessment of natural hazard risk shows that there is a significant risk of the airport being inundated in a tsunami. However, overall it is considered that the risk from tsunami is low because: a) the probability of a tsunami occurring is low and b) the consequences from a tsunami at the site are low, because the area will not be inhabited, the area is an aircraft transit area only, the airport can have protocols to stop traffic in the event of a tsunami and the runway can be constructed to withstand a tsunami. We have recommended that the applicant undertake an assessment of the structural integrity of the proposed runway extension in the event of a tsunami and provide this to decision makers prior to or at a hearing to ensure the proposed development is consistent with this objective.

Objective 6: *To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:*

- *the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits;*
- *functionally some uses and developments can only be located on the coast or in the CMA;*
- *historic heritage in the coastal environment is extensive but not fully known, and vulnerable to loss or damage from inappropriate subdivision, use, and development.*

489. The public will be excluded from the proposed reclamation area during construction and permanently from the reclaimed area. There will also be exclusion zones around the reclamation and SWFS during construction to maintain public safety. The proposal will not affect any known heritage or archaeological sites. We have recommended that an archaeological assessment of the sea bed where the reclamation is proposed be required as a condition of consent to mitigate any potential effects on archaeological values. While the airport does not have a functional need to be located within the CMA, the proposal is for an extension to the existing runway constructed in the CMA some time ago. We consider the proposal is consistent with this objective.

Policies

490. In addition to the relevant objectives, the NZCPS outlines a total of 29 policies to guide the sustainable management of the coastal environment. Policies that we consider to be relevant to the assessment of the proposed runway extension are outlined below:

Policy 2: The Treaty of Waitangi, tangata whenua and Maori heritage

491. This policy sets out a list of considerations when assessing applications against the principles of the Treaty of Waitangi and kaitiakitanga. The assessment of objective 3 of the NZCPS above is relevant to the assessment of this policy. In addition, there is no relevant iwi resource management plan recognised by the iwi authorities that have an interest in the application area. We consider the proposal is consistent with Policy 2.

Policy 3: Precautionary approach

492. This policy requires a precautionary approach towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse. With respect to the proposed runway extension, there is a level of uncertainty around the following matters and therefore a precautionary approach is appropriate:

- The ability of the SWFS to mitigate adverse effects on surfing amenity to an acceptable level due to concerns about prediction modelling;
- The recession effects of the SWFS on the Lyall Bay shoreline;
- Whether the proposal will result in an increase in bird strike and the impacts of this on bird populations;
- Whether there is any archaeological evidence on the sea bed beneath the proposed runway extension.

As detailed throughout the effects assessment sections of this report, we have recommended the applicant provide further information on the first three matters for consideration at the hearing. We have recommended an archaeological survey of the sea bed as a condition of consent.

493. The second part of this policy requires a precautionary approach to use and development in the CMA vulnerable to the effects from climate change. As discussed above, the assessment of sea level and climate change effects for a 100 year return period demonstrates that in 2115 inundation of the airport runway is unlikely. In our view, a precautionary approach has been taken by the applicant.

Policy 4: Integration

494. This policy requires an integrated approach to the management of the coastal environment which crosses administrative boundaries. The proposal includes activities above and below mean high water springs and activities which have effects that need to be considered by both GWRC and WCC. The applicant applied for consent for all activities concurrently and the consent application was jointly notified. The technical experts who have assessed the application have been engaged by both councils and the application has been considered holistically with respect to the effects on the coastal environment. We consider the proposal is consistent with Policy 4.

Policy 6: Activities in the coastal environment

495. Points 1. a) and h) and 2. a), b) and d) are of relevance to the proposal.

496. With respect to the importance of the provision of infrastructure for the social, economic and cultural well-being of people and communities and the rate at which built development should be enabled, an assessment of the economic impacts of the proposal has been undertaken. The assessment concludes there are significant economic benefits from the proposal and therefore it contributes to the economic wellbeing of people and community.

497. Policy 6(1)(h) requires consideration of how adverse visual impacts of development can be avoided in areas sensitive to such effects as far as practicable and reasonable and apply conditions to avoid those effects. It is considered that the Moa Point embayment to the east of the proposed runway extension is sensitive to visual impacts from the proposed development. The assessment of visual effects outlined in this report concludes that the impacts on this area are significant and unable to be remedied or mitigated.

498. Point 2. a) of this policy requires recognition of the potential contributions to the social, economic and cultural wellbeing of people and communities from the use and development of the coastal marine area. The economic effects assessment concludes that the proposal will result in significant economic benefits for the region.

499. Policy 6 requires the maintenance and enhancement of public open space and recreation qualities and values of the CMA when considering activities in the coastal environment. There will be temporary adverse effects on public open space and recreation during construction of the runway extension as a result of construction activities, changes in water quality and exclusion areas to maintain public safety. In the long term the proposal will result in a loss of public open space and recreation opportunities in the reclamation area. The

proposal could potentially have long term adverse effects on the surf breaks in Lyall Bay due to the uncertainty of the SWFS in mitigating effects, which will impact on the recreational use of Lyall Bay.

500. Point 2. (d) of policy 6 states that when considering proposed activities in the coastal environment, it should be recognised that activities that do not have a functional need for location in the CMA generally should not be located there. While an airport does not have a functional need to be located within the CMA, the proposal is for an extension to an existing activity located in the CMA which is currently constrained with respect to available land to accommodate an extension.

501. Overall we consider the proposal is only consistent in part with Policy 6.

Policy 10: Reclamation and de-reclamation

502. This policy sets out a framework for assessing whether reclamation of land in the CMA is a suitable use of the CMA and where it is suitable, things to consider in the form and design of the reclamation. The first part of this policy requires that the reclamation of land in the coastal marine area is to be avoided, unless:

- Land outside the coastal marine area is not available for the proposed activity;
- The activity which requires reclamation can only occur in or adjacent to the coastal marine area;
- There are no practicable alternative methods of providing the activity; and
- The reclamation will provide significant regional or national benefit.

503. The Wellington airport is currently constrained at either end by the CMA. There is no land outside the CMA which could accommodate an extension to the airport. As such, we consider the first point above is met.

504. With respect to the second point, as stated above, due to the site constraints, an extension of the existing runway (the activity) would require a reclamation, irrespective of which end of the runway the extension occurred.

505. The applicant has assessed alternative methods of providing the proposed runway extension. This included providing an extension to the north of the runway or a combination of a north and south extension and constructing a platform over the CMA rather than a platform via reclamation. The assessment concluded that the most feasible option from an engineering and effects perspective is an extension via reclamation to the south of the existing runway.

506. The applicant engaged AIRBIZ to evaluate the potential for alternative airport sites within the Wellington Region which built on earlier work undertaken in 1992. The conclusion of this assessment was that the current location of the airport remains the most appropriate due to its close links to the Wellington CBD, and the existing investment and infrastructure already established at the site. The applicant concludes that the alternative sites are neither viable nor efficient. We consider that the proposal meets point 3 above.

507. With regard to whether the reclamation will provide significant regional or national benefit, it is the level of potential economic benefit from the proposal that we have considered in terms of this requirement. We engaged Mr Akehurst to review the applicant's economic effects assessment. The details of this assessment as discussed in detail earlier in this report and in Mr Akehurst's report (see Appendix 8). Mr Akehurst's assessment is that assuming that the basis upon which the national cost benefit analysis (CBA) has been carried out is accurate, and adjusting the regional CBA to account for errors and omissions he identified, the proposal will result in a net national economic benefit of $1.53bn and a net regional economic benefit of $465.2m (in total over 40 years). Mr Akehurst concludes that this is significant benefit at both the national and regional level.

508. Policy 10(2) requires that where a reclamation is considered to be a suitable use of the CMA, particular regard is to be given to a number of matters listed. We have considered all the matters listed in our effects assessment. With regard to point (e) and the ability to remedy or mitigate adverse effects on the environment we consider the noise effects on people using the CMA at Moa Point Beach during construction and the permanent visual effects on Moa Point embayment cannot be remedied or mitigated. There is also a level of uncertainty about the ability of the SWFS to mitigate effects on surfing amenity. We consider that all other effects could be appropriately mitigated.

509. Policy 10(3) requires regard to be given to the purpose of the reclamation to provide for the efficient operation of airports. The purpose of the proposal is to achieve efficiency gains by allowing "wide-bodied" aircraft to directly link Wellington with East Asia and western North America. In this sense, the proposal would provide for the efficient operation of the airport.

510. Overall, the policy is consistent with Policy 10 of the NZCPS.

Policy 11: Indigenous biological diversity

511. This policy aims to protect indigenous biological diversity in the coastal environment. With respect to (b)(ii), the south coast is recognised as being a significant habitat for indigenous birds in Appendix F2 of the PNRP. As discussed in this report, it is considered that the effects on this habitat can be appropriately mitigated through further information from the applicant and the recommended conditions of consent. With respect to (b)(iii), the proposal will result in the loss of approximately 0.28km of intertidal reef. The applicant and Dr Morrisey do not consider this to be a significant effect. The adverse effects of the loss of intertidal reef will be mitigated through ecological mitigation. We consider the proposal is consistent with Policy 11.

Policy 13: Preservation of natural character

512. This policy aims to preserve natural character and protect the coastal environment by avoiding adverse effects in areas with outstanding natural character, avoiding significant adverse effects and avoiding, remedying or mitigating adverse effects on natural character in all other areas of the coastal environment. As discussed in this report there are no areas of outstanding

natural character subject to the proposed development so Policy 13 (a) does not apply. With regard to effects on natural character at the Moa Point embayment, Dr Steven does not consider a low natural character rating post construction is acceptable and recommends natural character is maintained through appropriate mitigation. Provided ecological restoration and habitat enhancement is undertaken as recommended by Dr Morrisey and Dr Crisp and the applicant provides a Moa Point Natural Character Mitigation and Restoration Plan for consideration at the hearing, we consider the proposal will be consistent with Policy 13.

Policy 14: Restoration of Natural Character

513. This policy promotes restoration or rehabilitation of natural character in the coastal environment. Dr Steven has advised that the Moa Point embayment is an important location for the restoration of natural character. Rather than accepting a reduction in natural character, effort should be made to at least maintain the natural character of this area. We have recommended ecological mitigation is undertaken in order to mitigate any adverse ecological effects (for example through creating and enhancing habitat for indigenous species on the rock dyke and creating artificial reefs in Moa Point bay) and that the applicant provide a Moa Point Natural Mitigation and Restoration Plan so that initiatives are coordinated to ensure all aspects of natural character are mitigated and maintained post construction. Landscape/seascape effects as a result of the proposed development are expected to be low in western Lyall Bay. However, Dr Steven advises that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS. Erosion of the beach in the lee of the structure could also result in a loss of natural character. We have requested further information on this matter prior to the hearing. Conditions requiring monitoring and adaptive management have been recommended to address and mitigate effects from the SWFS. Provided this information is provided, we consider the proposal could be consistent with Policy 14.

Policy 15: Natural features and natural landscapes

514. This policy directs the protection of natural features and landscapes (including seascapes) in the coastal environment. Dr Steven considers Lyall Bay to be a natural seascape in terms of Policy 15(b) and advises that effects are not significantly adverse and can be mitigated to an extent through marine and terrestrial ecological restoration initiatives directed towards the restoration of natural character. Provided this is undertaken, we consider the proposal to be consistent with Policy 15.

Policy 17: Historic heritage identification and protection

515. This policy aims to protect historic heritage in the coastal environment. There are no known heritage or archaeological sites that will be affected by the proposal. Given the history of ship wrecks in the area it is recommended that a full archaeological assessment, including of the sea bed at the reclamation location, be undertaken prior to any works commencing. Provided this assessment is undertaken and either nothing is found or if found the steps

outlined by Ms Tanner are undertaken then we consider the proposal consistent with Policy 17.

Policy 18: Public Open Space

516. This policy aims to recognise the need for and provide for public open space in and adjacent to the CMA. With respect to the proposal, there will be temporary restrictions on the use of the CMA at the location of the reclamation and the exclusion areas during construction. There will be a permanent loss of public open space in that part of the CMA which is reclaimed. We have also recognised that the applicant has proposed enhancement to public space at Moa Point Beach, along the eastern side of the runway and along the western edge of Moa Point Road from eastern Lyall Bay to the western portion of the Moa Point Road underpass.

Policy 19: Walking Access

517. This policy aims to maintain and enhance walking access to and along the coastal marine area. Public walking access around the current airport runway is difficult. The applicant has proposed to enhance public access to and along the CMA at Moa Point Road and along the runway at Moa Point Beach. Provided improved access can be achieved, we consider the proposal is consistent with Policy 19.

Policy 22: Sedimentation

518. Policy 22 requires that development does not result in a significant increase in sedimentation in the CMA. The proposal will result in temporary sedimentation in the CMA during construction works. The effects of this have been assessed and mitigation recommended through consent conditions. Based on the assessment undertaken, the proposal will not result in a significant increase in sedimentation in the CMA. We consider the proposal is consistent with Policy 22.

Policy 23: Discharge of contaminants

519. Parts 1 and 4 of this policy are relevant to the application. Part 1 requires particular regard to be given to a list of matters when managing discharges to water in the CMA. With regard to discharges to the CMA during the construction of the project, the ecological and water quality effects assessment considers the matters listed. The assessment concludes that the adverse effects from the discharges on the receiving environment can be appropriately mitigated through the recommended conditions of consent. These conditions include an appropriate reasonable mixing zone and discharge limits and the requirement to cease the discharge should the limits be exceeded.

520. Point 4 of this policy requires consideration of a number of matters when managing discharges of stormwater. As discussed earlier in this report, the information presented in the application and further information in relation to effects from operational stormwater discharges does not support the applicant's statement that the contaminant levels from the current stormwater outfall (and

therefore contaminant levels in discharges from the runway extension) are negligible. It is considered that this information gap can be filled through monitoring of existing discharges prior to and while the runway extension is being constructed. This information can then be used to inform management of stormwater on site, including the design of the stormwater infrastructure (including treatment), and to inform the development of a stormwater management plan. Consent conditions have been recommended to reflect this. It is considered that these recommended conditions will appropriately mitigate the adverse effects of operational stormwater discharges.

521. Overall, we consider the proposal is consistent with Policy 23.

Policy 25: Subdivision, use and development in areas of coastal hazard risk

522. This policy sets out how activities in areas potentially affected by coastal hazards over at least the next 100 years are to be managed. With regard to point (a), risk is defined as a combination of consequences of an event and the likelihood of occurrence. The consequences of a natural hazard event could be increased as a result of the proposal due to an increase in the number of flights and therefore the number of people at the site. However, it is acknowledged that growth in flights and passenger numbers could occur irrespective of the runway extension.

523. The applicant has taken into consideration coastal hazards over the next 100 years in the design of the runway and the assessment concludes that the risk of inundation from extreme tides and storm surges, taking into account climate change, is unlikely.

524. In respect of point d), the runway extension is proposed to be located in an area of hazard risk. The applicant's assessment of alternatives concludes that it is not practicable to locate the airport at the alternative sites that were assessed.

525. Point f) requires consideration of the potential effects of tsunami and how to avoid or mitigate them. Dr Goring undertook a desktop assessment of the risk of inundation by tsunami and concluded that the risk is significant. The overall risk (probability and consequence) from a tsunami is considered to be low. The probability of a tsunami is low and the consequences are considered to be low because the area will not be inhabited, the runway extension will be an aircraft transit area only, the airport can have protocols to stop traffic in the event of a tsunami and the runway can be engineered to withstand a tsunami. We recommend the applicant provide further information for consideration at the hearing on this matter.

Summary on NZCPS

526. Overall, having considered the relevant provisions of the NZCPS, we consider that the proposal is consistent in part with the NZCPS.

Resource Management (National Environmental Standards for Air Quality) Regulations 2004

527. The Resource Management (National Environmental Standard for Air Quality) Regulations (NES-AQ) were introduced in 2004 to set a guaranteed minimum

level of health protection for all New Zealanders. The regulation prescribes technical standards, methods and other requirements for the management of ambient air quality. Regional councils and territorial authorities must enforce the NES-AQ.

528. The NES-AQ prescribes technical standards for the monitoring of air quality and the creation of airsheds. An 'airshed' is defined in the NES-AQ to refer to the distribution of a geographical area for the purpose of measuring air quality. In the NES-AQ a 'polluted airshed' is further defined as having more than 1.0 average exceedance of the ambient PM10 standard. The application site is located within the Wellington Airshed. The Wellington Airshed is not a polluted airshed under the NES.

529. Regulation 15 of the NES-AQ requires regional councils to monitor contaminant concentrations in airsheds where the ambient air quality standard for that contaminant is likely to be breached. It is not considered likely that any of the NES-AQ standards are breached in the Wellington airshed and therefore mandatory monitoring is not required.

530. Aircraft emissions are potentially significant sources of nitrogen dioxide (NO_2) emissions (which is controlled under the NES-AQ). Monitoring is carried out in the Wellington airshed (but not for the primary purpose of assessing compliance with the NES-AQ) and this monitoring data can be used to assess compliance with the NES-AQ. GWRC Team Leader for Air and Climate (Tamsin Mitchell) has advised that a desk top analysis of the monitoring data shows that there is minimal risk of the NES-AQ (1-hour average) being exceeded within the Wellington airshed under the current and future (based on predicted passenger and freight numbers to 2040) situations.

531. Regulation 17 of the NES-AQ requires a consent authority to decline an application for a resource consent to discharge PM10 if the discharge would be likely to increase the concentration of PM10 by more than 2.5 micrograms per cubic metre in any part of a polluted airshed. As outlined above, the application site is within the Wellington Airshed. The Wellington airshed is not polluted so Regulation 17 is not relevant to this application.

532. Regulations 20 and 21 relate to the discharge of other contaminants to air. Where a resource consent is required for the discharge of carbon monoxide, oxides of nitrogen, volatile organic compounds or sulphur dioxide a consent authority must decline an application for resource consent where the concentration of the contaminant is likely to cause a breach of the ambient air quality standard and (for carbon monoxide, oxides of nitrogen and volatile organic compounds) is likely to be a principal source of the contaminant in the airshed. As resource consent is not required for operational aircraft discharges from the airport, regulations 20 and 21 are not applicable to the application.

533. Compliance with the NES-AQ is required regardless of the proposed runway extension application. GWRC is required to enforce the NES-AQ. The applicant cannot undertake activities that result in an exceedance of the standards outside of their site, otherwise they may face enforcement action under the Act.

534. In conclusion, GWRC is required to undertake monitoring to ensure ongoing compliance with the NES-AQ. Any reductions in air quality will be identified through this monitoring and addressed under the NES-AQ.

Regional planning instruments

Regional Policy Statement (RPS)

535. The RPS outlines the resource management issues of significance to the region and provides a framework for managing the natural and physical resources of the region in a sustainable manner. Further to this, the RPS identifies objectives, policies and methods which are designed to achieve integrated management of the natural and physical resources of the whole region.

536. Section 4.2 of the RPS contains regulatory policies to be considered when processing resource consent applications. We have assessed the application against all relevant policies within the RPS (the full text of these provisions is included in Appendix 13). Those provisions which require specific comment are assessed below. We consider the application to be generally consistent with those policies that are included in Appendix 13 and not assessed below:

Policy 35: Preserving the natural character of the coastal environment

537. Policy 35 contains specific provisions that must be considered when assessing whether natural character in the CMA will be preserved. Points (c) and (d) of this policy warrant specific discussion with respect to the proposal. Point (c) requires amenity to be maintained or enhanced, such as open space, scenic values, opportunities for recreation and the enjoyment of the coast by the public. Firstly it is important to acknowledge that existing open space and scenic value in the area proposed for reclamation is limited. During construction of the project, amenity will be adversely affected by construction noise, sediment plumes and the exclusion zones. In the long term and following the implementation of the recommended mitigation the level of amenity may reduce for the following reasons:

- There is uncertainty about the impact the project will have on recreation activities, specifically the level at which the SWFS will mitigate adverse effects on surf breaks in Lyall Bay.
- The Airport Rights surf break will be lost;
- There will be adverse visual effects as a result of the extension area at the Moa Point embayment.

538. Policy 35 (c) requires any significant adverse effects on the use and enjoyment of the CMA to be minimised. As described above the proposal will result in permanent adverse effects on visual amenity to and from the CMA and the loss of the Airport Rights surf break.

539. For the reasons outlined above we consider the proposal is inconsistent in part with Policy 35.

Policy 36: Managing effects on natural character in the coastal environment

540. Policy 36 requires a determination to be made as to whether an activity may affect natural character in the coastal environment. With regard to the proposal, it is considered that there will be adverse effects on natural character. When determining whether an activity that will affect natural character is inappropriate, Policy 36 requires regard to be given to the nature and intensity of the activity, the degree that natural character will be modified, damaged or destroyed, the resilience of the area, opportunities to remedy or mitigate previous damage and the existing land uses on the site.

541. The assessment of effects on natural character considers the matters outlined in Policy 36. The nature and scale of the activity is a permanent 11ha reclamation of the CMA. The assessment on natural character concludes that natural character of the 'airport component area' will reduce from low to very low and these effects are acceptable. Natural character within Moa Point embayment will reduce from moderate to low. It is considered that the adverse effects within the Moa Point embayment would only be acceptable if mitigation is undertaken to maintain natural character. Further mitigation measures have been requested via a Moa Point Natural Mitigation and Restoration Plan. Provided this mitigation results in adverse effects which are acceptable, the proposal is consistent with Policy 36.

Policy 39: Recognising the benefits of regionally significant infrastructure

542. This policy requires regard to be given to the social, economic, cultural and environmental benefits of regionally significant infrastructure. The definition of regionally significant infrastructure includes Wellington International Airport. The economic benefits of the proposed runway extension have been assessed and this assessment concludes that there will be a significant positive economic benefit both nationally and regionally. The proposal will also result in amenity improvements at Moa Point Beach and along Moa Point Road from the eastern end of Lyall Bay to the underpass.

Policy 46: Managing effects on historic heritage values

543. This policy requires regard to be had to a number of matters when considering an application for resource consent and determining whether the activity is inappropriate. It is considered that the proposal will not have adverse effects on the historic heritage or archaeological items in the vicinity of the project. However, it is considered that there may be archaeological evidence on the seabed within the area proposed for reclamation. To avoid or mitigate any potential effects on archaeological values it is recommended that a full archaeological assessment be undertaken and the assessment provided prior to a hearing and if any evidence is found the steps set out by Ms Tanner be undertaken. Provided this is undertaken, we consider the proposal is consistent with Policy 46.

Policy 50: Managing effects on outstanding natural features and landscapes

544. Policy 50 requires that when considering an application for a resource consent a determination is to be made as to whether the activity may affect an outstanding natural feature or landscape. Dr Steven has assessed the area affected by the proposal and has advised that the landscape/seascape environs are not considered to be outstanding. As such, an assessment against the matters listed in Policy 50 is not required.

Policy 51: Minimising the risks and consequences of natural hazards

545. This policy requires regard to be had to a number of matters when considering an application for resource consent, minimising the risks and consequences of natural hazards and determining whether the activity is inappropriate. As already outlined, the assessment of coastal hazard risk (taking into account climate change) demonstrates that in 2115 inundation of the airport runway is unlikely. There is a significant risk of the airport being inundated in a tsunami, however, overall this risk is considered to be low for the reasons already outlined. It is recommended that the applicant undertake an assessment of the structural integrity of the proposed runway extension in the event of a tsunami. Details of the materials that can be used and how the extension will be engineered to withstand a tsunami as well as any other mitigating factors should be provided prior to a hearing. The applicant's seismic design criteria for the proposed runway extension in 500 year and 2,500 year earthquake events are set out in the natural hazards section. We also recommend that the applicant provide further seismic assessment in relation to the importance of the role of the airport in a post-disaster response.

Summary on RPS

546. We have reviewed the application against the relevant policies of the RPS and consider the proposal to be generally consistent with the relevant objective and policies of the RPS.

Operative Regional Coastal Plan (RCP)

547. The RCP contains objectives and policies aimed at avoiding, remedying or mitigating the potential adverse effects of use and development in the coastal marine area. We have assessed the proposed activities against the relevant objectives and policies in the RPS (see Appendix 13 for the full text of these provisions). Those provisions that require specific assessment or comment are outlined below. It is considered that the proposal is consistent with the relevant provisions of the RCP included in Appendix 13 but which are not specifically assessed below.

Section 4 – general objectives and policies

Environmental

Objective 4.1.9 and Policy 4.2.19: Amenity values in the coastal marine area

548. These provisions aim to recognise the importance of amenity values in the coastal marine area. Policy 4.2.19 requires adverse effects on amenity values to be avoided and where avoidance is not practicable, they are to be remedied or mitigated. Objective 4.1.9 requires amenity values in the CMA to maintained and enhanced. The proposal will result in adverse effects on amenity values in the area, in particular during the construction phase. The construction related adverse effects cannot be avoided, however, measures to mitigate effects have been included in the recommended conditions of consent, in particular with respect to noise, visual effects and air quality. Noise effects in the CMA at the Moa Point embayment cannot be mitigated however. In the long term there is the potential for adverse effects in relation to recreational use of the Lyall Bay area if the SWFS does not mitigate adverse effects on surfing amenity. There will also be permanent adverse effects on visual amenity, those effects on the Moa Point embayment cannot be remedied or mitigated. The proposal includes amenity improvements at Moa Point Beach and along Moa Point Road. Overall, we consider that, where possible, adverse effects on amenity values will be mitigated and amenity values could be maintained.

Objective 4.1.11 and Policy 4.2.21: Any adverse effects from natural hazards.

549. These provisions require use and development in the CMA to take into account the effects from natural hazards. An assessment of natural hazard risks is provided earlier in this report and has been outlined with respect to various other policies. It is recommended that the applicant provide an assessment of the structural integrity of the runway extension to withstand a tsunami prior to or at a hearing. Overall, we consider that the adverse effects from natural hazards can be reduced to an acceptable level but require further information from the applicant to confirm this can be achieved.

Policy 4.2.2: To encourage appropriate new development only in areas where natural character has already been compromised.

550. It is recognised that natural character particularly on the eastern side of Lyall Bay has been highly modified from previous developments at the Airport. Dr Steven considers neither the terrestrial nor the marine components of Lyall Bay and Moa Point have a very high natural character. We therefore consider the proposal is consistent with Policy 4.2.2.

Policy 4.2.5 To adopt a precautionary approach, particularly where it is difficult to predict adverse effects.

551. This policy is relevant to the proposal with respect to the following matters where a precautionary approach is appropriate:

- The ability of the SWFS to mitigate adverse effects on surfing amenity to an acceptable level due to concerns about prediction modelling.

- The recession effects of the SWFS on the Lyall Bay shoreline.

- Whether the proposal will result in an increase in bird strike and the impacts of this on bird populations;

- Whether there is any archaeological evidence on the sea bed beneath the runway extension.

As detailed throughout the effects assessment section of this report, we have recommended the applicant provide further information on these matters for consideration at the hearing.

Policy 4.2.8: To recognise existing lawful commercial and recreational users in the coastal marine area.

552. The applicant has assessed the impacts of the proposal on commercial fishers and has stated that the only known commercial fishing operations are confined to the headlands of Moa Point and adjacent to Te Taputeranga Marine reserve. However, a submission received from Power Squadron Marine Management raises concerns about effects on lobster fishing operations. This assessment is outside the area of expertise of GWRC and should be addressed by the applicant prior to the hearing.

Policy 4.2.18: To recognise that the coastal marine area is an area of public open space.

553. The proposal will result in the restriction of public open space during construction and the permanent loss of public open space where the reclamation will be located. The applicant is proposing mitigation which will improve accessibility along the CMA along Moa Point Road and along the eastern side of the runway. Policy 4.2.18 requires the interests of the public now and in the future are given a high priority when making decisions. The application was publicly notified and submissions have been considered in our assessment.

Policy 4.2.20: To recognise the importance of the coastal environment to recreational activities.

554. This policy requires adverse effects on recreational values in the CMA to be avoided where practicable and where avoidance is not practicable, to remedy or mitigate adverse effects. The area affected by the proposed activity is a high use area for recreational activities. There will be adverse effects of the proposal on recreational activities during construction, however, these will be temporary. There is uncertainty about whether the SWFS will mitigate the adverse effects on surf breaks once the reclamation is constructed. Consent conditions have been recommended to monitor the effectiveness of the SWFS in meeting the key performance indicators and where these are not achieved further mitigation is required. However, as discussed above there is uncertainty

about whether the SWFS will mitigate effects because of inadequacies in modelling and presentation of results and the difficulty in understanding actual effects until the runway extension and SWFS are constructed. Further information has been requested to address this uncertainty.

Section 5 – Reclamation and draining of foreshore and seabed

Environmental

Objective 5.1.2: All reclamations are fully justified having regard to available alternatives, properly designed, use appropriate material, and constructed only for activities consistent with the sustainable management of natural and physical resources.

555. As discussed on a number of occasions in this report, the applicant has undertaken an assessment of alternatives to the proposed reclamation and concluded that the alternatives are neither practicable nor viable. With regard to the design of the reclamation and materials used, the applicant has demonstrated that the runway design will withstand coastal hazards, including climate change and sea level rise, however, information on the structural integrity of the runway extension to withstand a tsunami is required.

Policy 5.2.1: The adverse effects from reclamations must be balanced against any possible positive effects.

556. An assessment of the applicant's economic assessment has been undertaken and has concluded that there will be significant economic benefits for the Wellington Region and nationally. In undertaking an assessment of the application against the purpose of the Act, these economic benefits have been considered.

Policy 5.2.3: To not allow reclamation if there are practicable alternatives, either within or outside of the coastal marine area, which, on balance, have less significant adverse effects.

557. The applicant has undertaken an assessment of alternative airport sites and alternatives to the current proposal for the runway extension. On balance of the matters considered it was determined that the current airport location was the most appropriate. Following an assessment of viability and construction requirements for extending the existing runway to either the north or south or a combination of the two it was considered that the proposed extension to the south was financially the only viable option. We consider the application is consistent with this policy.

Policy 5.2.4: Subject to Policy 5.2.3, to only allow reclamation of the foreshore and seabed only if it is for one of the purposes listed.

558. Airport purposes is listed in policy 5.2.4. The proposal is therefore consistent with Policy 5.2.4.

Policy 5.2.8: To ensure that adequate allowance is made for rising sea levels, waves and currents, storm surges and major earthquakes.

559. The risks of natural hazards are addressed earlier in this report. We consider that adequate allowance has been made for rising sea levels, waves and current, and storm surges. We consider the applicant should provide further information in relation to the structural integrity of the proposed runway extension to withstand a tsunami and large earthquake prior to the hearing.

Section 6 - Structures

Environmental

Policy 6.2.1: Appropriate structures in the coastal marine area

560. This policy states that the following are considered appropriate in the CMA:

- use and development of structures in the coastal marine area for:
  - activities which are functionally dependent upon a location in the CMA or
  - which support and services those which must locate within the CMA
- the development of structures for network utility operations.

The airport is not functionally dependent upon a location within the CMA and does not meet the definition of a network utility operator. An extension to the airport runway is somewhat dependant on a location in the CMA by virtue of the location of the existing airport and the lack of viable alternatives; therefore we consider the proposal is appropriate in the context of Policy 6.2.1.

Policy 6.2.2: To not allow the use or development of structures in the coastal marine area where there will be certain adverse effects.

This policy states that the use and development of structures in the CMA should not be allowed where there will be significant adverse effects on, amongst other things, coastal processes, including waves, tidal currents and sediment transport, amenity values, natural character, views to and from the CMA and recreational uses unless than can be satisfactorily mitigated or remedied. There will be significant adverse effects on views to and from the CMA at Moa Point Beach as a result of the proposal. This effect cannot be mitigated or remedied. There is also some uncertainty about the effects on shoreline morphology that may result from the SWFS and we recommend further information be provided on this. The proposal is therefore inconsistent with Policy 6.2.2.

Policy 6.2.5: To ensure that adequate allowance is made for sea level rise, waves and currents, storm surges and major earthquakes.

561. The risks of natural hazards are addressed earlier in this report. We consider that adequate allowance has been made for rising sea levels, waves and current, and storm surges. It is recommended that the applicant provide further

information in relation to the structural integrity of the proposed runway extension to withstand a tsunami and large earthquake at the hearing.

Section 7 - Destruction, damage or disturbance of foreshore or seabed

Environment

Policy 7.2.1: To allow activities involving damage or disturbance to any foreshore or seabed, where the adverse effects are short term, reversible, or minor; and to allow other activities where adverse effects can be satisfactorily avoided, remedied or mitigated.

562. This policy allows activities involving damage or disturbance to any foreshore or seabed where the effects are short term, reversible or minor. Other activities can be allowed where adverse effects can be satisfactorily avoided, remedied or mitigated. The policy sets out criteria for determining whether an activity is deemed to have minor adverse effects. It is considered that the proposal will not meet the criteria listed. It is considered that the proposal will be consistent with the second part of this policy. Adverse effects from the damage and disturbance of the foreshore and seabed can be mitigated, particularly through ecological mitigation as set out in the recommended conditions of consent.

Policy 7.2.4: To not allow any activity which results in the destruction of any foreshore or seabed unless there are no practicable alternatives and any adverse effects are mitigated or remedied.

As discussed earlier, the applicant's assessment of alternatives concludes that the current proposal is the most viable and practicable. Extending the existing runway to the north would have also resulted in destruction of the foreshore and seabed. We consider that the effects of the destruction to the foreshore and seabed will be appropriately mitigated.

Section 8 – Deposition of substances on foreshore or seabed

Environmental

Policy 8.2.1: To allow the deposition of natural material if the purpose is to combat beach or shoreline erosion or to improve the amenity value of the foreshore.

563. This policy states that the deposition of material on areas of foreshore and seabed for the purposes of combating beach or shoreline erosion or to improve amenity values is appropriate provided the criteria listed is met. The deposition of material on Moa Point Beach is to reinstate the beach post construction but also to improve amenity values. It is considered that the recommended conditions of consent in relation to landscape and urban design will ensure that the criteria listed in policy 8.2.1 are met.

Section 10 – Discharges to land and water

Environment

Policy 10.2.1 and policy 10.2.3: To manage water for shellfish gathering purposes.

564. The waters around Moa Point are identified in the RCP as having to be managed for shellfish gathering purposes. Appendix 6 of the RCP sets out the criteria for managing water for shellfish gathering purposes. After reasonable mixing it is considered that the discharge from the project will meet the criteria set out in Appendix 6 at Moa Point.

Policy 10.2.2 and policy 10.2.3: To manage water for contact recreation purposes.

The waters within Lyall Bay and all along the Wellington South Coast are identified in the RCP as having to be managed for contact recreation purposes. Appendix 6 of the RCP sets out the criteria for managing water for contact recreation. It is considered that a plume outside the reasonable mixing zone during construction may be visible under certain conditions. As such, the guideline in Appendix 6 requiring no conspicuous change in colour may not be met and the proposal is inconsistent Policies 10.2.2 and 10.2.3 on this matter. However, this would be limited to certain conditions during the construction period only.

Policy 10.2.4: Discharges that do not meet policy 10.2.1, 10.2.2 and 10.2.3

565. This policy allows discharges which do not meet policy 10.2.1, 10.2.2 and 10.2.3 under certain circumstances. As the discharge from the reclamation will be temporary, in particular a discharge that results in a conspicuous change in colour beyond the reasonable mixing zone, the activity is consistent with Policy 10.2.4.

Section 11 – Discharges to Air

Environment

Policy 11.2.2: To not allow the discharge of contaminants to air where it will result in certain effects.

566. This policy states that discharges are not to be allowed where they are likely to cause a significant decrease in the existing air quality at the site, result in unacceptable degradation of existing amenity or adversely affect the health or welfare of any persons. The construction activities will result in discharges to air of dust and vehicle emissions. Ms Wickham has reviewed the applicant's assessment of effects on air quality and considers it necessary to manage activities so that adverse effects beyond the site boundary are minimised. This approach is consistent with this policy and conditions of consent have been recommended to manage effects with this intent.

Section 12 – Taking, use, damming or diversion of water

Environmental

Policy 12.2.1: To allow the diverting of water in the CMA where there are no discernible adverse effects on the natural and physical values of the CMA.

567. This policy states that activities involving the diversion of water in the CMA are to be allowed provided the activity has no discernible effects on the natural and physical values of the CMA. The assessment of effects on coastal processes concludes that the proposal will have a less than minor effect on hydrodynamic and sediment transport processing in Lyall Bay and Moa Point. However, there is uncertainty about the level of effect the SWFS will have on the Lyall Bay shoreline. It is recommended that the applicant address this information gap and provide an assessment for consideration.

Summary on RCP

568. We have considered the application against the relevant objectives and policies of the RCP and consider the application to be generally consistent with the RCP.

Regional Air Quality Management Plan (RAQMP)

569. The RAQMP contains objectives and policies aimed at avoiding, remedying or mitigating the potential effects from discharges to land. We have assessed the proposal against all the relevant provisions in the RAQMP, the full text of these provisions are included in Appendix 13. Those provisions which require specific comment are assessed below.

Objective 4.1.2, policy 4.2.1

570. Objective 4.1.2 requires discharges to air to be managed to enable people and communities to provide for their social, economic and cultural well-being and for their health and safety while ensuring that adverse effects are avoided, remedied or mitigated. Policy 4.2.1 requires regard to be had to the Ambient Air Quality Guidelines in the RAQMP. An assessment of effects on air quality has been undertaken and this assessment took into account a number of factors including the air quality guidelines. We have recommended conditions of consent to ensure that adverse effects are mitigated. We consider the proposal to be consistent with Objective 4.1.2 and Policy 4.2.1.

Policy 4.2.4 and Policy 4.2.7

571. Policy 4.2.4 requires the adverse effects of discharges of contaminants to air that are noxious, dangerous, offensive or objectionable to be avoided, remedied or mitigated and policy 4.2.7 requires that adverse effects of the discharge of contaminants to air on amenity values be avoided, remedied or mitigated. We have proposed limits on discharges to air from construction activities and have recommended a condition of consent requiring that there are no offensive or objectionable discharges beyond the construction site boundary. Ms Wickham has also recommended further conditions for the onsite management of

discharges to ensure that the consent conditions are met. The proposal is consistent with Policy 4.2.4 and 4.2.7.

Summary on RCP

572. We have considered the application against the relevant objectives and policies of the RAQMP and consider the application to be consistent with these provisions.

Regional Plan for Discharges to Land (RPDL)

573. The RPDL contains several objectives and policies aimed at avoiding, remedying or mitigating the potential adverse effects from discharges to land. We have considered the application against the relevant objectives and policies of the RPDL and consider the proposal to be consistent with these.

Proposed Natural Resources Plan for the Wellington Region (PNRP)

Background

574. The operative regional plans for the Wellington Region are currently under review. A new single integrated plan, the Proposed Natural Resources Plan (PNRP), is to replace the existing regional plans for coast, air quality, freshwater, discharges to land and soil.

575. The PNRP was publicly notified by the GWRC on 31 July 2015. The submissions and further submission periods on the PNRP have closed. WIAL submitted on the PNRP. WIAL's key submission points were in relation to a need to better support the development and growth of regionally significant infrastructure, the significant indigenous bird habitat in the CMA bordering the southern end of the Airport is considered inappropriate, and the inappropriate level of protection to regionally significant surf breaks.

576. GWRC's Environmental Policy Department are currently holding pre-hearing meetings on issues that may be resolved or where greater clarity can be provided. Hearings on the PNRP are scheduled to commence in March 2017.

577. In accordance with s104(1)(b) we have assessed the proposal against the relevant objectives and policies in the PNRP. Many of the objectives and policies of the PNRP relate to the significance of particular sites as set out in the appendices of the plan. As set out earlier in this report, the application site is identified in the following appendices of the PNRP:

- Schedule B: Nga Taonga Nui a Kiwa. Raukawa Moana (Cook Strait) - Taranaki Whanui kit e Upoko o te Oka.
- Schedule D: The CMA is a Statutory acknowledgement in the Port Nicholson Block Claims Settlement Act 2009.
- Schedule D: Cook Strait is a Statutory acknowledgement in the Ngati Toa Rangatira Claims Settlement Act 2014.
- Schedule F2c: Habitats for indigenous birds in the coastal marine area.

- Schedule K: Significant surf breaks.

- Wellington Airport Height Restriction Area

The following significant sites are located near the proposed runway extension.

- Hue te Taka (Wellington South Coast) is a site of significance to Ngati Toa Rangatira located near the site of the proposed activities.

- Moa Point is identified in Schedule J as a regionally significant geological feature.

578. The full text of all relevant objectives and policies of the PNRP is included in Appendix 13 of this report. Those provisions which require specific comments are assessed below. The application is considered consistent with those provisions which have not been specifically assessed below but are included in Appendix 13.

Policy 3: Precautionary approach:

579. This policy is relevant to the proposal with respect to the following matters where there is uncertainty about effects and where a precautionary approach is appropriate:

- The ability of the SWFS to mitigate adverse effects on surfing amenity to an acceptable level due to concerns about prediction modelling.

- The recession effects of the SWFS on the Lyall Bay shoreline.

- Whether the proposal will result in an increase in bird strike and the impacts of this on bird populations;

- Whether there is any archaeological evidence on the sea bed beneath the runway extension.

As detailed throughout the effects assessment section of this report, we have recommended the applicant provide further information on these matters for consideration at the hearing.

Objective O9: Recreational values of the coastal marine area

Policy P133: Recreational values

580. Objective 9 requires that recreational values in the CMA be maintained and enhanced. The assessment of effects on recreational values concludes that effects during construction are likely to be more than minor and long term effects on surfing could be more than minor (given the uncertainty around whether the SWFS will achieve the outcomes stated by the applicant and the loss of the Airport Rights surf break). The proposal may therefore not maintain the current level of recreational values and is therefore inconsistent with O9.

581. Policy 133 requires the adverse effects on recreational values to be managed by providing a diverse range of recreational opportunities. The proposal will not impact the range of recreational opportunities available and is therefore consistent with Policy 133.

Objective O12 and Policy P12: Benefits of regionally significant infrastructure

Policy 13: Existing regionally significant infrastructure

582. Objective 12 and Policy 12 require the benefits of regionally significant infrastructure to be recognised by having regard to, amongst other things, the location of existing infrastructure, and the operational requirement of maintaining and upgrading regionally significant infrastructure. Policy 13 states that the use, operation, maintenance and upgrade of regionally significant infrastructure are beneficial and generally appropriate. The location of the existing airport and the site constraints mean that extending the runway requires the activity to extend out into the CMA. The benefits of the proposed extension, as outlined in the economic impacts section of this report and the operational needs of the airport have been taken into consideration.

Objective O17 and policy 25: Natural character of the coastal marine area.

583. Objective 17 requires that natural character of the CMA be preserved and protected from inappropriate use and development. In determining whether development is inappropriate, policy 25 states that significant adverse effects on natural character shall be avoided and other adverse effects are to be avoided, remedied or mitigated. The assessment of effects on natural character concludes that effects will be more than minor in Moa Point embayment and less than minor elsewhere. The adverse effects on natural character at the Moa Point embayment can be mitigated to an acceptable level. Landscape/seascape effects as a result of the proposed development are expected to be low in western Lyall Bay. However, Dr Steven advises that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS. An assessment by the applicant prior to the hearing has been recommended to address this information gap. In undertaking this assessment the matters listed in a) to c) of policy P25 have been considered. Overall, the we consider that the proposal could be consistent with O17 and P25.

Objective O19 and Policy 26: Interference from use and development on natural processes.

584. Objective 19 and Policy 26 requires the interference from use and development on the integrity and functioning of natural processes to be minimised. The proposal will result in less than minor effects on hydrodynamic and sediment transport processes in Lyall Bay and Moa Point. There is uncertainty, however, about the level of effects the SWFS will have on the shoreline in Lyall Bay. It is recommended that the applicant undertake this assessment and provide information for consideration at the hearing. This information will need to demonstrate that effects on natural processes are minimised to ensure consistency with this policy.

Objective 20: The risk, residual risk and adverse effects from natural hazards and climate change on people, the community and infrastructure are acceptable.

Objective O21: Inappropriate use and development in high hazard areas is avoided.

Policy 27: High hazard areas

Policy 29: Climate change

585. These objectives and policies relate to activities affected by natural hazards and the potential for climate change to cause or exacerbate natural hazard events. A high hazard area is defined as all areas within the CMA. While the finished reclamation would not be considered a high hazard area, it is being built within the CMA so Objective 21 and Policy 27 are considered relevant. To determine whether an activity in a high hazard area is inappropriate, Policy 27 states that use and development in these areas is to be avoided except in certain circumstances.

586. Point a) of policy 27 requires that the activity has a functional need or operational requirement or there is no practicable alternative to its location. While an airport does not have a functional or operational need to locate in a high risk area, an extension to the existing runway would require development in a high risk area because of the location of the existing airport. The applicant's assessment of alternatives concludes that there is no practical alternative to the current proposal.

587. Point b) requires the risk to the development and/or residual risk after hazard mitigation measures, assessing using a risk-based approach, is low. The assessment of effects from natural hazards demonstrates that in extreme tides and storm surges (taking into account climate change), in 2115 inundation of the runway is highly unlikely and therefore the risks are low. With regard to tsunami, our desktop assessment concludes that there is a significant risk of inundation of the runway in a tsunami. However, it is considered that risks (probability and consequence) from a tsunami are low for the following reasons: the probability of a tsunami occurring is low, the runway extension area is not going to be inhabited, the runway extension will be an aircraft transit area, the airport can have protocols to stop traffic in the event of a tsunami and the runway extension can be constructed and engineered to withstand tsunami (this needs to be confirmed by the applicant).

588. Point c) of policy 27 requires that development does not cause or exacerbate natural hazards in other areas. The proposal is consistent with this point.

589. Point d) requires that interference with natural processes is minimised. The assessment of coastal processes concludes that the runway extension will have less than minor effects on hydrodynamic and sediment transport processes. However, the level of effect on the shoreline as a result of the SWFS is uncertain. It is recommended that the applicant provide information to validate the shoreline model for consideration by decision makers.

590. Point e) of policy 27 requires that natural cycle and erosion and accretion and the potential for natural features to fluctuate in position over time are taken into account. The effects of the proposal on coastal processing concludes that the effects will be less than minor.

591. Overall, the proposal is largely consistent with policy 27.

592. With regard to Policy 29 and having particular regard to the potential for climate change this is addressed above. The application is consistent with Policy 29.

Objective O35: Ecosystems with significant indigenous biodiversity values.

Policy 36: Effects on indigenous bird habitat

Policy 40: Ecosystems and habitats with significant indigenous biodiversity values

Policy 41: Managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values

593. Objective 35 requires ecosystems and habitats with significant indigenous biodiversity values to the protected and restored. Policies 36, 40, 41 and 42 give effect this this objective.

594. Policy 36 requires adverse effects on the habitat of indigenous birds in the CMA and their margins for breeding, roosting, feeding and migration to be minimised. The proposal will result in adverse effects on the habitats of indigenous birds in the CMA, specifically from noise, vibration, sediment plumes which will affect their ability to forage, culling and bird strike. Effects on bird habitat are considered to be minor and effects from increased culling and bird strike could potentially be significant but needs to be determined. Monitoring, mitigation measures have been proposed to minimise the potential effects of the proposal. We consider the proposal is therefore consistent with Policy 36.

595. Policy 40 requires ecosystems with significant habitats for indigenous birds (as identified in Schedule F2 of the PNRP) to be protected and restored. The Wellington South Coast is identified in Schedule F2 of the PNRP. Policy 41 sets out how this habitat is to be protected and restored. In the first instance, activities shall avoid these ecosystems and habitats. An extension of the airport runway cannot be undertaken while avoiding the significant indigenous bird habitat. A runway extension to the north would also result in effects on significant habitat for indigenous birds.

596. Policy 41 requires that more than minor adverse effects are to be avoided, where they cannot be avoided they are to be remedied and where they cannot be remedied they must be mitigated. The adverse effects on bird habitat as a result of noise, vibration, and sediment plumes cannot be avoided or remedied. These effects can be mitigated. Recommended conditions of consent require appropriate mitigation for these effects. It should be noted that the suggested mitigation requires the applicant to seek approval from and work with

Wellington City Council (as landowner). The applicant should consult with WCC on this matter prior to the hearing and if agreement cannot be reached the applicant should propose alternative mitigation.

597. Policy 40 requires that where residual adverse effects remain it is appropriate to consider using biodiversity offsets. The potential effects of the proposal on bird strike cannot be avoided, remedied or mitigated. The applicant has not proposed biodiversity offsets and we consider the applicant should provide further assessment on effects from increased culling and bird strike and propose biodiversity offsets prior to the hearing. Should this information gap not be filled, we have recommended conditions of consent to monitor the effects from culling and bird strike to determine appropriate offsets for these effects.

598. Provided the applicant confirms mitigation for the effects on bird habitat (either the recommended mitigation with the agreement of WCC or alternative mitigation) and provides an assessment of effects from culling and bird strike and proposes biodiversity offsets or the recommended conditions are adhered to then the proposal will be consistent with Policy 40 and 41. Policy 41 states that where the adverse effects on ecosystems and habitats cannot be avoided, remedied, mitigated or redressed through biodiversity offsets, the activity is inappropriate.

Objective O37 and Policy 51: Significant surf breaks.

599. Objective 37 requires significant surf breaks to be protected from inappropriate use and development. The Airport Rights, Clubrooms and The Corner surf breaks within Lyall Bay are identified as significant surf breaks within Lyall Bay. Policy 51 requires use and development in and adjacent to significant surf breaks to be managed to minimise adverse effects on:

- Natural processes, currents, seabed morphology and swell corridors that contribute to significant surf breaks; and
- Access to significant surf breaks within the CMA on a permanent and ongoing basis.

600. The proposal will result in less than minor adverse effects on natural processes. However, with respect to recreational use of the surf breaks, the adverse effects are more than minor. To mitigate these adverse effects the applicant has proposed a SWFS. However, it is uncertain whether the SWFS will mitigate adverse effects to an acceptable level. It is considered that an adaptive management approach is necessary to ensure that the applicant can respond to actual effects post construction to maximise the certainty of mitigating adverse effects. It should be noted that there is still a level of risk that the SWFS will not mitigate adverse effects to an acceptable level. The applicant's commitment to the proposed SWFS along with the recommended conditions of consent will minimise adverse effects on the Clubrooms and Corner surf breaks. The proposal will result in the permanent loss of the Airport Rights surf break. Overall, the proposal is inconsistent with respect to the Airport Rights surf break and partly consistent with respect to the Clubrooms and The Corner surf breaks.

Objective O24: Coastal water suitable for contact recreation and Maori customary use

Policy 72: Zone of reasonable mixing

601. Objective 24 requires coastal water to be suitable for contact recreation and Maori customary use by maintaining and improving water quality. During the construction period the proposal will have adverse effects on water quality, particularly within the reasonable mixing zone. Effects of water quality are unavoidable and temporary. It is considered that the recommended conditions will ensure that any effects on water quality beyond the reasonable mixing zone will be no more than minor. Policy 72 requires that a zone of reasonable mixing shall be minimised and determined on a case-by-case basis. Matters to consider when determining a reasonable mixing zone are set out in Policy 72. Dr Morrisey has considered the applicant's proposed zone of reasonable mixing and considers it appropriate. The proposal is considered to be consistent with Objective 24 and Policy 72.

Objective O53 and Policy 132: Functional need and efficient use

602. Objective 53 requires use and development in the CMA to have a functional need or operational requirement to be located there. Policy 132 sets out criteria for activities within the CMA. Use and development within the CMA must have a functional need or operational requirement to locate within the CMA or it shall have no reasonable or practicable alternatives to locating in the CMA. The runway extension does not have a functional need or operational requirement to be located within the CMA. The applicant has undertaken an assessment of alternatives and concluded that there are no reasonable or practicable alternatives to locating within the CMA so the proposal meets point c) of this policy. With respect to the other matters listed in Policy 132, the reclamation is the minimum size necessary for the proposal, it is inappropriate for the area to be made available to the public, there are no redundant structures which will be removed and the proposal is an extension of an existing activity.

Objective O55: Public open space in the coastal marine area

Policy 134: Public open space values and visual amenity

603. Objective 55 requires the need for public open space in the CMA to be recognised. Policy 134 requires that the adverse effects of new use and development on public open space and visual amenity viewed within, to and from the CMA to be minimised. The provisions within the WCC District Plan in relation to public open space and visual amenity have been assessed in a separate report prepared by Mr Daly from WCC. Point b) of policy 143 requires development to be of a scale, location, density and design which is compatible with the natural character, natural features and landscapes and amenity values of the coastal environment. The assessment of effects on visual amenity, natural character and landscape concludes that effects on all three of these will be more than minor at Moa Point, however it is intended that the recommended conditions of consent will mitigate effects on landscape and

natural character. Elsewhere the effects are considered to be less than minor. Overall, the proposal is considered to be partly consistent with objective 55 and policy 134.

Policy 145: Reclamation, drainage and destruction

604. Policy 145 requires that reclamations and destruction in the CMA are to be avoided unless the criteria listed are met. The reclamation is associated with the upgrade of regionally significant infrastructure so meets point a) of this policy. Point b) requires that there be no other locations outside the CMA for the activity associated with the reclamation and destruction. There is no location outside the CMA for an extension of the current airport. An extension to either the north or south would require a reclamation. The applicant has assessed alternative methods for engineering feasibility and determined that there are no practicable alternatives to the proposed reclamation. The proposal is consistent with Policy 145.

Policy 150: Noise and lighting

605. Policy 50 requires noise in the CMA to be managed by applying the general noise conditions in the PNRP or by adopting the best practicable option to ensure that the emission of noise does not exceed a reasonable level. The applicant requires consent for noise in the CMA because the proposed activities will exceed the general noise conditions. The noise assessment concludes that effects on users of the CMA in Lyall Bay will be less than minor and effects on users of the CMA at Moa Point will likely be more than minor at times given the close proximity to the construction site. Overall, the proposal is partly consistent with this policy.

Summary on PNRP

606. We have considered the application against the relevant objectives and policies of the PNRP and overall, consider the proposal to be partly consistent with these provisions.

Conclusion on policy assessment

607. Having considered the relevant objectives and policies in the NZCPS and the operative and proposed regional plans, we consider that the proposal will be generally consistent with the direction set out in these documents. We acknowledge that there are some provisions which the proposal is inconsistent with, these provisions are:

NZCPS

- Objective 1 – safeguarding the integrity, form, function and resilience of the coastal environment
- Objective 4 – maintaining and enhancing public open space qualities and recreation opportunities of the coastal environment
- Policy 6 – activities in the coastal environment

RCP

- Policy 35 - preserving natural character
- Objective 4.1.9 and policy 4.2.19 – amenity values in the CMA

- Policy 6.2.2 – activities in the CMA with significant adverse effects unless satisfactorily mitigated or remedied.

PNRP

- Objective 9 – recreational values in the CMA
- Objective 37 and policy 51 – significant surf breaks
- Objective 55 and policy 134 – public open space values and visual amenity
- Policy 150 – noise in the CMA

608. As outlined in our effects assessment, there are a number of areas where there is uncertainty about the proposal and further information is required. Where this information is relevant to the assessment of the provisions in the relevant statutory documents this has been identified in the assessment above.

District Plan

609. An assessment of the proposed runway extension against the relevant district plans has been completed by WCC in their s87F assessment.

Other matters for consideration under the Act

Section 105 of the Act

610. Section 105 of the Act sets out the additional matters that a consent authority must have regard to when considering a resource consent for a discharge permit. Under s105(1) The consent authority must have regard to:

e) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and

f) the applicant's reasons for the proposed choice; and

g) any possible alternative methods of discharge, including discharge into any other receiving environment

611. The nature of the discharges to water is sediment laden water from the removal of a hillock on land and from dewatering of the reclamation area. The discharges will enter the CMA beyond the reclamation area. The sensitivity of the receiving environment has been considered in the ecological and water quality effects assessment section of this report. There are no significant or particularly sensitive ecosystems or habitats within the area that will be affected by the discharges. The applicant has chosen to discharge the sediment laden water to the CMA because there is no practicable alternative, including discharging into another receiving environment. Any methods of discharge and how the discharge will be managed to ensure the effects will be minimised will be set out in the Erosion and Sediment Control Plan. The methods chosen will need to ensure that the discharge limits are complied with.

612. The nature of the discharges to air is dust and vehicle emissions from construction activities. The receiving environment includes a number of particularly sensitive receptors, particularly residential properties. The applicant has considered the use of marine based fill as an alternative to or supplementary to land based fill. Should marine based fill become available

discharges to air from vehicle emissions will likely be less than if land based fill was used. There are no other possible alternative methods of discharge. Consent conditions are recommended by GWRC to ensure that discharge beyond the construction boundary will be less than minor.

613. Section 105(2) requires that when considering a resource consent application for a reclamation a consent authority must consider whether an esplanade reserve or esplanade strip is appropriate and, if so, impose a condition on the resource consent. We consider the intent of section 105(2) is to provide public access to and along the CMA where appropriate. We do not consider that imposing a condition requiring an esplanade reserve or strip is appropriate in this case. It is currently difficult to walk around the southern end of the airport runway. Accommodating a esplanade reserve/strip that is safe for people to use is likely to require further reclamation of the CMA. The applicant has proposed amenity enhancements and improvements to public access along Moa Point Road and at Moa Point Beach. We consider that this will ensure that, where it is practical and safe to do so, public access will be provided and that requiring such amenity improvements and provision for public access via the recommended consent conditions is appropriate.

Section 107 of the Act

614. Section 107 of the Act outlines restriction on grant of certain discharge permits.

Section 107(1) of the Act states:

(1) Except as provided in subsection (2), a consent authority shall not grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A allowing—

(a) the discharge of a contaminant or water into water; or

(b) a discharge of a contaminant onto or into land in circumstances which may result in that contaminant (or any other contaminant emanating as a result of natural processes from that contaminant) entering water; or

(ba) the dumping in the coastal marine area from any ship, aircraft, or offshore installation of any waste or other matter that is a contaminant,—

if, after reasonable mixing, the contaminant or water discharged (either by itself or in combination with the same, similar, or other contaminants or water), is likely to give rise to all or any of the following effects in the receiving waters:

(c) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(d) any conspicuous change in the colour or visual clarity:

(e) any emission of objectionable odour:

(f) the rendering of fresh water unsuitable for consumption by farm animals:

(g) any significant adverse effects on aquatic life.

615. The application includes discharges of sediment laden water to the CMA during construction, discharges of dust and vehicle emissions to air during construction and the ongoing discharge of operational stormwater. Section 107(1) is relevant with respect to the discharges of sediment laden water to the CMA and ongoing discharges of operational stormwater.

616. With respect to the ongoing discharge of operational stormwater from the runway extension, we have recommended a condition of consent requiring that the operational discharge not result in any of the effects listed in section 107(1) after reasonable mixing. As such, the granting of resource consent for this discharge will not be restricted by section 107(1).

617. With respect to discharges of sediment laden water during construction, the assessment of effects concludes that, in certain conditions, the discharge plume is likely to be visible beyond the reasonable mixing zone. The discharge will therefore result in a conspicuous change in the colour or visual clarity in the receiving waters after reasonable mixing. In this case, Section 107(2) of the Act is relevant.

Section 107 (2) of the Act states:

(2) A consent authority may grant a discharge permit or a coastal permit to do something that would otherwise contravene section 15 or section 15A that may allow any of the effects described in subsection (1) if it is satisfied—

> *(a) that exceptional circumstances justify the granting of the permit; or*
>
> *(b) that the discharge is of a temporary nature; or*
>
> *(c) that the discharge is associated with necessary maintenance work—*
>
> *and that it is consistent with the purpose of this Act to do so.*

618. Section 107(2) (b) of the Act allows temporary discharges that contravene section 15 or 15A of the Act and create the effects in section 107(1).

619. The discharge of sediment laden water to the coastal marine area from an area of bulk earthworks (the removal of the hillock) and during the dewatering of the reclamation area will occur over a 5 – 18 month period. We are satisfied that the discharges proposed during the construction period are temporary. Monitoring, discharge limits and the requirement to cease discharges when the discharge limits are met have been recommended as conditions of consent to manage the effects of these temporary discharges to an acceptable level over the construction period (as detailed in the ecological and water quality effects assessment of this report).

Ngati Toa Rangatira Settlement Act 2014

620. In April 2014 the Ngati Toa Rangatira Settlement Act 2014 came into effect. The Crown and Te Runanga o Toa Rangatira signed a Deed of Settlement of 7 December 2012. In the settlement Ngati Toa have a statutory acknowledgement with respect to the Cook Strait.

621. This legislation requires GWRC to have regard to the statutory acknowledgement in forming an opinion as to whether the Trustees are persons who may be adversely affected by the granting of resource consents for resource consents for activities within, adjacent to, or directly affecting the statutory areas. GWRC notified Ngati Toa Rangatira Incorporated directly of the application. The submission on the application from Ngati Toa Rangatira Incorporated has been considered above in the tangata whenua and cultural values effects assessment.

Port Nicholson Block (Taranaki Whanui ki Te Upoko o Te Ika) Claims Settlement Act 2009

622. Taranaki Whanui cultural associations with the area have been formally recognised in a Deed of Settlement and set out in the Port Nicholson Block (Taranaki Whanui ki te Upoko o te Ika) Claims Settlement Act 2009. In the Taranaki Whanui have a statutory acknowledgement with respect to the coastal marine area from Mukamukaiti in Palliser Bay to Pipinui Point near Boom Rock.

623. As above, the legislation requires GWRC to have regard to the statutory acknowledgement in forming an opinion on affected party status. The Port Nicholson Block Settlement Trust were directly notified of the application. No submission was received from the iwi authority. The effects of the proposal on the coastal marine area have been considered throughout this report.

Marine and Coastal Area (Takutai Moana) Act 2011

624. The Marine and Coastal Area (Takutai Moana) Act 2011 (MCAA), applies to the coastal marine area, and provides for legal recognition and protection of customary interests through protected customary rights (PCR) and customary marine title (CMT). There are no confirmed or known applications for CMT or PCR relevant to this application, or within the Wellington Region.

Part 2 evaluation

625. Consideration of an application under section 104 of the Act is subject to Part 2 (sections 5, 6 and 7). Part 2 sets out the purpose and principles of the Act. “subject to” gives primacy to Part 2 and is an overriding consideration when applying the provisions of the Act. In achieving the purpose of the Act, Part 2 requires the consent authority to recognise and provide for matters of national importance (section 6); have particular regard to other matters (section 7); and take into account the principles of the Treaty of Waitangi (section 8).

Section 5 – Purpose

626. The purpose of the Act as stated in section 5 is *"to promote the sustainable management of natural and physical resources"*. Section 5(2) goes on to state that sustainable management means:

> *"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for health and safety while –*
>
> *a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
>
> *b) safeguarding the life-supporting capacity of air, water, soil and ecosystems; and*
>
> *c) avoiding, remedying, or mitigating any adverse effects of activities on the environment"*

627. We have provided an overall assessment of the proposal in relation to the purpose of the Act later in this report. The paragraphs below first provide an assessment of the matters of national importance which are to be recognised and provided for and the matters which a consent authority must have particular regard to in achieving the purpose of the Act.

Section 6 – Matters of National Importance

628. In relation to managing the use, development, and protection of natural and physical resources, Section 6 sets out the matters of national importance which are to be recognised and provided for in relation to all decisions under the Act, including this resource consent application. We consider that the following provisions of section 6 are relevant to the proposal and provide our assessment and reasoning of each on these provisions accordingly:

> *(a) The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development*

629. The subject site is located within a modified coastal environment. Current natural character levels for different components of Lyall Bay range from low to high. Two component areas of the coastal environment will exhibit consequent reductions in natural character as a result of the proposal, these are:

- The natural character of the Airport component area will be reduced from low to very low; and
- The natural character of the Moa Point embayment will be reduced from moderate to low.

630. The reduction in natural character for the Airport component is considered acceptable provided the mitigation recommended by GWRC as conditions of

consent is implemented. The reduction in natural character from moderate to low at the Moa Point embayment is an unacceptable outcome for this area in Dr Steven's opinion. It is considered feasible that the current moderate natural character rating of the Moa Point embayment can be maintained through ecological restoration and habitat creation and enhancement. Ecological restoration and habitat creation is recommended as conditions of consent by GWRC and additional measures to mitigate effects on natural character in Moa Point have been requested via a Moa Point Natural Character Mitigation and Restoration Plan. Overall, we consider that, subject to satisfactory mitigation provided through a Moa Point Natural Character Mitigation and Restoration Plan, natural character of the coastal environment will be preserved.

(d) The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

631. The Lyall Bay and Moa Point Beach are popular areas for public use and recreation. The proposal will result in the reduction of public space in the CMA, specifically the area to be reclaimed will no longer be available to the public. Public access to and along all other areas of the coastal marine area in Lyall Bay and Moa Point Beach will be maintained except during the construction phase when exclusion zones are in place around the proposed runway extension and SWFS. The proposal will result in the enhancement of public access to and along the coastal marine area at Moa Point Road, the eastern side of the runway and Moa Point Beach through proposed landscape and visual amenity improvements. Overall, it is our view that the proposal will maintain and may enhance public access to and along the coastal marine area.

(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga.

632. Recognition of the significance of the CMA and the surrounds has been provided for through consultation with relevant tangata whenua and the statutory acknowledgements of the coastal marine area and Cook Strait. The cultural values report supports the assessment that the adverse effects of the proposal on the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga will be limited. This relationship will be provided for if the runway extension is constructed through our recommended conditions of consent and an MoU to be developed between the applicant and tangata whenua. Overall, it is our view that the proposal will be consistent with section 6(e).

(f) The protection of historic heritage from inappropriate subdivision, use, and development.

633. Particular regard has been had for the protection of historic heritage from inappropriate use and development. The proposal will not directly affect any known heritage items (including archaeological sites). The full archaeological assessment of the proposed area of the reclamation of the sea bed may potentially offer opportunities to record and investigate unknown archaeological sites. We recommend this assessment be undertaken prior to a hearing. The proposed accidental discovery protocol condition will mitigate

adverse effects on known archaeological sites on land. In our view, this will ensure historic heritage will be protected from inappropriate subdivision, use and development.

Section 7 – Other Matters

634. Section 7 includes matters that the consent authority shall have particular regard to in relation to all decisions under the Act, including this resource consent application. We consider that the following provisions of section 7 are relevant and provide our assessment and reasoning on each of these provisions accordingly.

(a) Kaitiakitanga
(aa) The ethic of stewardship

635. The applicant has consulted with the Port Nicholson Block Settlement Trust and Te Runanga O Toa Rangatira. Te Runanga O Toa Rangitira submitted on the consent application and made a number of requests for consent conditions. It is considered that all the requests have been appropriately provided for in our recommended consent conditions. The applicant has also committed to the development of a MoU with the relevant iwi authorities to provide the bases for iwi to work in partnership with the applicant through the course of the project. Tangata Whenua will continue their kaitiaki relationship to the site in this regard.

(b) The efficient use and development of natural and physical resources

636. The proposal promotes the efficient use and development of natural resources by reducing the need for travellers and freight to require connecting flights before going on to their final destination. The runway extension could also promote efficiency through enabling more technically and economically efficient aircraft. We acknowledge that some submitters have issues with the passenger projections used by the applicant and therefore the need for the runway extension and whether it is an efficient use and development of natural and physical resources. GWRC do not have expertise in assessing passenger projections and highlight this as a matter that needs to be addressed.

(c) The maintenance and enhancement of amenity values

637. 'Amenity values' is defined under section 2 of the Act as "*those natural and physical qualities or characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*". We acknowledge that the construction of the proposed runway extension will result in an adverse impact on the amenity gained from this part of the CMA both temporarily and permanently. This is particularly the case with respect to surfing amenity, and the visual and noise impacts from Moa Point Beach. There is some uncertainty about the level of mitigation the SWFS will provide for the effects on surfing amenity. It is considered that the provision of further information on this matter could reduce this uncertainty and ongoing adaptive management of the SWFS could ensure that adverse effects on surfing amenity are mitigated to an acceptable level. The proposal will result in more than minor permanent adverse effects on visual amenity at

Moa Point which cannot be mitigated. The proposal will also result in more than minor effects on amenity (albeit temporary) for those using Moa Point Beach and the breakwater as a result of noise during construction activities. Even though these effects will be on transient users of the CMA, the amenity improvements and ecological mitigation recommended may not balance out these effects and therefore we consider that overall amenity values may not be maintained or enhanced.

(d) Intrinsic values of ecosystems

638. The Act defines 'intrinsic values' as those aspects of ecosystems and their constituent parts which have value in their own right, including –

h) their biological and genetic diversity; and

i) the essential characteristics that determine an ecosystem's integrity, form, functioning and resilience.

The proposal is likely to have adverse effects on the intrinsic values of indigenous bird ecosystems at and near the airport. This area is identified as a significant habitat for indigenous birds in the PNRP. In particular there is the potential for increased bird strike and culling to result in a decrease in regional bird populations of threatened and at risk species. We have had regard to how this would impact the intrinsic values of the ecosystem, in particular its integrity, form, functioning and resilience. We have recommended further information be provided by the applicant and conditions of consent to appropriately mitigate and off-set the effects of the proposal on significant indigenous birds.

(f) Maintenance and enhancement of the quality of the environment

639. Under the Act, 'environment' is broadly defined to include (a) ecosystems and their constituent parts (including people and communities); (b) all natural and physical resources; and (c) amenity values. Environment also includes the social, economic, aesthetic and cultural conditions which affect matters (a) to (c) or which are affected by those matters. Some aspects of the environment will not be maintained and enhanced as a result of the proposal. These aspects largely relate to visual amenity from the Moa Point Beach, construction related impacts, and potentially surfing amenity. The amenity improvements along Moa Point Road and at Moa Point Beach and public access along the eastern side of the runway constitute an enhancement of the quality of the environment. As the consideration of environment encompasses people and communities, we have considered the benefit of the runway extension to enable people better to access international destinations and the economic benefit the proposal could provide regionally and nationally. Overall, we consider that our recommended consent conditions will ensure that the quality of the environment is maintained.

(g) any finite characteristics of natural and physical resources

In assessing the proposal we have had particular regard to the impacts on finite resources, specifically the CMA. The proposal will result in a loss of approximately 11ha of CMA to land. The adverse effect of the loss of this resource and the habitat which it currently provides for is not considered to be significant. Airport Rights is a significant surf break and will be lost as a result of the extension, however it is intended that this loss will be mitigated by surfing opportunities provided by the proposed SWFS, once the details of that are refined.

(i) The effects of climate change

640. The effects of climate change and the potential effects on natural hazards have been considered as part of the assessment of this application. Regard has been had to the effects of climate change including taking into account potential sea level rise and storm surges. We consider that, based on the assessment outlined in this report, the effects of climate change have appropriately been considered in the design of the proposed runway extension.

Section 8 – Principles of the Treaty of Waitangi

641. Section 8 states that all persons exercising functions and powers under the Act shall take into account the principles of the Treaty of Waitangi. The Treaty and its principles are an important part of the cultural and constitutional identity of New Zealand. The principles of the Treaty interpret the treaty as a whole, its underlying meaning, intention and spirit to provide further understanding of the expectations of the signatories.

642. The applicant has consulted with the relevant tangata whenua and effects of the proposal on tangata whenua and cultural values have been considered as part of this application. Te Runanga o Toa Rangatira Incorporated have a neutral position on the proposal and requested particular conditions be included on any consents granted. The recommended conditions and the proposed MoU to be developed between the applicant and relevant iwi authorities will ensure the on-going participation by the relevant iwi groups as the proposal progresses. The proposal is not inconsistent with the principles of the Treaty of Waitangi in our opinion.

Overall assessment of Part 2

643. We have outstanding concerns in relation to a number of uncertainties and adverse effects of the proposal. We consider that there is a pathway to work through these critical matters and subject to a satisfactory outcome in relation to the matters below, we consider the proposal could promote the sustainable management of natural and physical resources in accordance with the purpose of the Act, and in accordance with Part 2 of the Act more generally. The critical matters identified in our assessment that require further information and assessment are:

<u>Shoreline retreat as a result of the SWFS</u>

- Validate the DHI shoreline model using evidence of shoreline retreat in Lyall Bay to provide certainty to decision makers that model outputs can be relied upon.

- Address the following concerns raised by Dr Goring regarding predicted retreat as a result of the SWFS:

  - Natural variability has been excluded from the model but it is unclear how this was done;

  - Shoreline movement may not be a simple calculation of adding natural variability to shoreline retreat predictions as sediment transport process are non-linear, they result from complex interactions between process. It is unclear how linearity can possibly be applicable for shoreline movement.

  - Assuming the 15m retreat from the SWFS can be added to the 20m natural retreat during winter means a total retreat of 35m. With such a large retreat in shoreline, waves could impinge on the dune system and the road. This matter needs to be assessed and remedial action or mitigation options (if at all possible) proposed in the event the predicted recession occurs.

Surfing amenity

- Respond to the information requested by GWRC in the letter dated 19 July 2016 regarding wave spectra used in the surf impact assessment (Technical report 11 of the application).

Recreation survey

- Complete further survey work on recreational use in Lyall Bay during 2016 (agreed by applicant in letter dated 1 July 2016 response to q.4).

Noise

- Establish appropriate vibration limits, monitoring and reporting requirements to specify in consent conditions.

Landscape, visual and natural character

- Detail on how the proposed runway extension will be integrated into Moa Point Beach to mitigate landscape effects (i.e. around the junction of the proposed extension and Moa Point embayment beach); and

- Detail on how public access to the CMA will be provided around the structure whilst providing for public safety in a high hazard zone (wave exposure).

- Provide a Moa Point Natural Character Mitigation and Restoration Plan that addresses natural elements, natural patterns and natural processes in a coordinated way to maintain natural character post construction of the runway at Moa Point.

- Validate visual assessments with community opinion rather than relying on a professional assessment of the scale of effects.

Natural hazards

- Demonstrate the engineering design of the airport extension has the structural integrity to withstand a tsunami.

- Provide an assessment of the importance of the airports function post a disaster and whether the proposed design of the runway extension will ensure it can perform this function following a large earthquake (2500 year event) is needed. This assessment needs to consider the building importance categories in NZS 4219:2009 *Seismic Performance of Engineering Systems and Buildings.*

Coastal birds

- Consultation is needed to confirm if habitat improvement and predator control at nearby locations is supported by Wellington City Council.

- Provide detail on the airports current protocol for recording numbers and species of birds killed through birdstrike and culling and whether the monitoring recommended to address this matter is achievable from an operational perspective. If the applicant considers that what is proposed is not achievable then alternative monitoring, mitigation and biodiversity off-setting should be presented.

644. We acknowledge that submitters have concerns about the air traffic forecasts used by the applicant to undertake their economic assessment. The economic impacts of the proposed runway extension are dependent on the predicted traffic growth materialising. This is something that needs to be considered by decision makers.

645. To potentially narrow the scope of outstanding issues we recommend the applicant addresses the critical matters outlined above as soon as possible but certainly prior to a hearing.

646. Subject to the satisfactory outcome to the matters outlined above, our overall conclusion in respect of Part 2 matters is that the proposed runway extension could promote the sustainable management of natural and physical resources. Providing direct long haul flights to destinations around the globe will enable people and communities to provide for their social and economic wellbeing and for their health and safety. Although there are a number of adverse effects on the environment, provided there is a satisfactory outcome to the matters outlined above we consider that the adverse effects would not outweigh the benefits. We also consider that the adverse effects could be avoided, remedied or mitigated to an acceptable level.

Conclusion

647. In summary, we have highlighted a number of uncertainties and information gaps with respect to the effects of the proposal (as outlined above). However, provided these critical matters are satisfactorily addressed we consider that adverse effects could be appropriately remedied or mitigated, the proposal will

be generally consistent with the direction in the relevant statutory planning documents, and the proposal could promote the sustainable management of natural and physical resources in accordance with the purpose of the Act. Therefore, it is GWRC's view it would be open to decision makers to grant resource consents for the application.

648. Should consent be granted, we have recommended consent conditions in Appendix 11 of this report. These conditions are identical to the set of conditions included in Mr Daly's s87F report for WCC.

649. The applicant has requested a 15 year lapse period for all consents. While we acknowledge that it is a complex project which will require time to resource, undertake detailed design and appoint a contractor we consider that a lapse period of 10 years is more appropriate. This will help minimise uncertainty for the community about when the project will take place.

650. The applicant has requested a 10 year duration for all construction related consents and 35 year duration for all ongoing activities (occupation and maintenance of permanent structures and operational stormwater discharges). If consents were granted we consider the following consent durations to be appropriate:

- Reclamation consent [34044] - unlimited duration

- All construction related consents [34045, 34047, 34048, 34049 and 34050] – 10 years. However, the application states that the overall construction timeframe is anticipated to be three to four years. This timeframe takes into account likely delays due to adverse weather conditions. We therefore, recommend a condition of consent limiting construction works to 4 years. This recommended condition has been included in the recommended conditions in Appendix 11.

- Ongoing activities, specifically the occupation consent for permanent structures including ongoing maintenance [34046] – 35 years. We consider a long term consent is particularly important for the monitoring and maintenance of the SWFS so that any effect on surfing amenity can be mitigated through adaptive management.

- Operational stormwater discharges [34051] – 5 years. The PNRP requires resource consent for operational discharges from large sites. The applicant has only applied for resource consent for stormwater discharges from the runway extension area. Discharges from the existing airport site can continue as an existing use right (under s20A of the Act) until the PNRP rule becomes operative. Once operative, a consent for discharges from the whole airport site will need to be sought so that the activities on the site can be considered holistically as intended by the PNRP.

Appendix 1 – 9: Expert evidence given to GWRC

Appendix 1

Wellington International Airport Runway Extension

REVIEW OF COASTAL PROCESSES: VERSION 3

INTRODUCTION

1. My full name is Derek Garard Goring. I work as a consultant in coastal processes and hydro science for Mulgor Consulting Limited.

QUALIFICATIONS AND EXPERIENCE

2. I graduated from University of Canterbury with Bachelor of Engineering (Civil) with First Class Honours in 1969. I attended California Institute of Technology (Caltech) from 1974 to 1978 and gained Master of Environmental Engineering Science and Doctor of Philosophy in Civil Engineering. My thesis was on propagation of tsunami.

3. I worked for 25 years as a research scientist for NIWA and its predecessors in the fields of eco, river, and coastal hydraulics. In 2003, I left NIWA to set up my own consulting company in partnership with my wife.

4. I work as a consultant for ports, oil companies, and councils on tides and waves, developing real-time monitoring systems, analysing data, and assessing the environmental effects of development on coastal hydraulics.

5. I have worked on a number of projects with similar issues as this application, including:

    5.1 Northland Regional Council: Crest Energy application for Tidal Turbines in Kaipara Harbour: review of hydrodynamics;

    5.2 Lyttelton Port Company: Port Recovery Plan: effect of development on hydrodynamics and waves;

    5.3 Lyttelton Port Company: Capital Dredging: effect of development on hydrodynamics and waves;

    5.4 WestPac Mussels: Mussel Farm at Stephenson Island: effect of development on waves;

    5.5 Meridian Energy: Mokihinui hydro power development: effect of development on tidal hydraulics.

6. I am a member of the NZ Coastal Society and the NZ Hydrological Society.

INVOLVEMENT WITH THE PROPOSAL

7. My involvement with the Wellington Airport Extension proposal has been to review the coastal processes analysis, in particular the hydrodynamic and wave modelling that has been carried out by consultants to Wellington International Airport Limited (**WIAL**).

8. I visited the site on 30 June 2016 in the company of other experts providing advice to the Greater Wellington Regional Council (**GWRC**).

ASSESSMENT

9. I have assessed the following WIAL reports:

   9.1 Technical Report 11: Surf Break Impact Assessment, DHI;

   9.2 Technical Report 14: Preliminary Shoreline Assessment, DHI

   9.3 Technical Report 15: Coastal Processes Assessment, NIWA;

   9.4 Technical Report 17: Coastal Hydrodynamics and Sediment Processes in Lyall Bay, NIWA;

   9.5 Technical Report 7, Appendix D: 100-year Design Waves for Extension, AECOM.

10. I have also assessed the proposed conditions (Section 8.5 of the AEE) related to coastal processes, as well as the surf mitigation and adaptive management plan (Appendix F of the AEE).

11. In this report, I will address coastal processes (Technical Reports 15 and 17), then the surf break impact assessment and shoreline assessment (Technical Reports 11 and 14) which follow on from the coastal processes work. The design waves report and coastal hazards (from Technical Report 15) follow. Finally, I consider the proposed conditions and the submissions.

Coastal Processes

12. Report 17 provides the details of the work that was carried out to prepare Report 15. It contains a description of the field work that was carried out and details of the various models that were run including the computational grid, the boundary conditions, the validation against measurements, and the results.

Technical Report 17

13. Field work is an important part of the modelling because it provides the information to verify that the model is operating correctly. This process is called validation. The field work carried out by NIWA included the deployment of a Dobie wave gauge. The burst duration for the wave gauge was only 3.41 min or 205 s at 5 Hz (5 times per second). Usually, the sampling would be for 20 minutes at 2 Hz. The 205 s burst duration means

that for swell waves of 15 s, there would be only 13 waves in the sample. The wave height is calculated by taking the mean of the upper third of these waves, but for 13 waves in the sample, this means only 4 waves were used for calculating the wave height. This is not statistically robust. I would expect to have at least 20 waves in the sample. Therefore, the validity of these measurements must be questioned, reducing the quality of the model validation

14. Unfortunately, a second ADCP that was deployed in outer Lyall Bay alongside the Dobie wave gauge was lost in a southerly storm, so only the low quality wave data from the Dobie gauge were available for validation at this site.

15. Modelling hydrodynamic flow and sediment transport was done using a depth-averaged 2D model on a curvilinear grid. The domain of the model extended out into Cook Strait and included Wellington Harbour. Validation of the model by NIWA indicates that it accurately produces tidal amplitudes and currents, but not wind driven circulation (0.05 m/s from the model vs 0.007 m/s measured at Site 1). However, currents as small as this are problematic, both for measurement and modelling, and in any case, they have very little effect on sediment transport.

16. The 2D model was used in conjunction with the SWAN (**S**imulation of **Wa**ves **N**earshore) wave model to provide input to a 3D sediment transport model. Instead of conducting an extensive (and expensive) field survey programme to establish the parameters needed by the model, default parameters were used and relative changes were examined. Thus, the absolute results from the model are not important; it is the differences between before and after scenarios that must be considered. This is a valid approach considering the proposed extension is a relatively small alteration to the coastline. Indeed, the very small changes in seabed height that were found by the model over a 7 week simulation period justify this approach.

17. The SWAN spectral wave model was used to determine the wide scale wave climate that was then used for detailed wave modelling in Lyall Bay. The same curvilinear grid used for the hydrodynamic modelling was used. The boundary conditions of the model were from NIWA's in-house large-scale weather and wave models. For validation, the Baring Head wave record (which is inside the model domain), and the short-term ADCP and Dobie deployments were used. The model shows good agreement with the data, indicating the model is valid.

18. A high-resolution wave model was used to determine the detailed effects of the extension on the wave patterns in Lyall Bay. The finite element mesh, which appears to be rectangular has a grid spacing of 5 m. To achieve such detail from the available bathymetry required linear interpolation. The model runs monochromatic waves, so in a sense it is like a spectral model, except that nonlinear effects (such as wave breaking) are included. The changes in wave heights along transects clearly show that the main effect of the extension will be in reduced diffraction (sideways spreading of energy) in the vicinity of 'The Corner' at the eastern end of Lyall Bay, but little change elsewhere.

19. A suspended-sediment plume model was used to assess the effect of discharge of decant water on the suspended sediment concentration (**SSC**) in Lyall Bay. There are three discharge points: two at the southern end of the extension (D2 and D3) and one near the southern end of the existing runway (D1). Simulations were run for southerly and northerly wind forcing and with discharge rates of 1 and 2 kg/s. The results show that in high winds (either northerly or southerly), the plume will disperse further, but the SSC will be less; whereas, in calm weather the plume will disperse less, but the SSC will be greater. For a discharge of 1 kg/s, the extent of the plume is restricted to a few hundred m from the discharge point, whereas for 2 kg/s the plume extends into Lyall Bay, especially for discharge points D1 and D2. Thus, to confine the plume to the close proximity of the construction site, the discharge would need to be restricted to 1 kg/s.

20. The main purpose of Report 17 was to provide the background for Report 15 in which the results of the models along with information from other sources is used to provide a comprehensive description of the coastal processes of the area and how they will be impacted by the proposed development.

Technical Report 15

21. In the paragraphs that follow, a review is presented of the assessment in Report Report15 of the effects of development on hydrodynamic flows, sediment transport, waves, and suspended sediment.

22. A depth-averaged 2D hydrodynamic model was used for tides. It showed that tidal currents in Lyall Bay are very small and that the extension of the runway will have a minor effect on them. Indeed, in measurements using an ADCP, the tidal currents were so small, they were not able to be detected within the accuracy of the ADCP.

23. The airport extension will have a minor effect on residual circulation from winds and tide. However, under strong southerly wind conditions, the model shows that there will be some weakening in the currents in Lyall Bay, though such conditions are rare (a few times a year).

24. A spectral wave model was used to assess the changes in the wave climate (wave heights, periods, and directions) as a result of the development. The results show that the main effect will be on the east side of the Bay, near The Corner, where there will be reductions of up to 0.8 m, depending upon the incident wave height and period. These results appear to conflict with the findings by DHI in Technical (Report 14), where the wave heights at The Corner during three selected events were found to exhibit little change.

25. Sediment transport modelling was undertaken using a suite of Delft models. As pointed out in Report 15, the results of sediment transport modelling need to be used with caution. The results need to be used in comparative, not absolute, analyses, because model validation is not practicable. Having said that, the models are probably the only way of assessing whether the effect of development on erosion and deposition of sediment will be significant. The results show that there is likely to be little change in

erosion and deposition of sediment, except in localised areas in the vicinity of the extension. Most importantly, there is likely to be little changes at Lyall Bay and Moa Point beaches.

26. The effect of construction is examined using a plume model. Under calm or northerly conditions, the Lyall Bay environment is naturally clear, with median SSC ~ 2mg/L. Sea birds stop foraging when SSC exceeds 25 mg/L (James et al. 2016). The modelling shows that at ~ 150 m from the discharge, the 25 mg/L limit is only exceeded at the northwest discharge point for a discharge rate of 2 kg/s. However, if the discharge rate were reduced to 1 kg/s, the 25 mg/L limited would not be exceeded at any of the sites. This suggests that to ensure the limits on SSC are not exceeded and the effect is less than minor, the discharge rate should be limited to 1 kg/s.

27. Overall reports 15 and 17 provide a comprehensive assessment of the effects of the extension of the runway on coastal processes. A set of state-of-the art models have been used, validated using a limited set of field data. The loss of one ADCP and the poor data from the wave gauge detracts from the validation of the wave models. However, the comparison between waves before and after development is still valid.

Surf Break Impact

28. Report 11 by DHI takes the results described in the NIWA reports (Technical Reports 15 and 17) and refines them by conducting an examination of the effect of development on surfing waves. In the NIWA reports, the waves were modelled by SWAN and ARTEMIS. These models solve the wave field for each wave period (or frequency, which is the inverse of period) in turn, assuming no interaction between waves with different periods. This is a simplification of the real world which is widely used by modellers for assessing the effects of development on the wave climate. However, as waves propagate into shallow water, the assumption that there is no interaction between waves of different periods breaks down and a different model is required.

29. One of these is the Boussinesq model used by DHI. In the ARTEMIS model, comparison between before and after is straightforward because for each period, a set of model runs can be carried out for a sequence of wave heights at the boundary. However, for the Boussinesq model, the boundary conditions involve the whole range of periods, called the wave spectrum, from periods of a few seconds up to 25 s. For their boundary conditions, DHI used a JONSWAP wave spectrum. JONSWAP stands for Joint North Sea Waves Project, a research project involving researchers from UK, USA, Netherlands, and Germany in 1969. These spectra are used widely for modelling, but usually only where measured wave spectra are not available and only for situations that are similar to the enclosed area of the North Sea.

30. Lyall Bay is not all like the North Sea, being exposed to the unlimited fetch of the Southern Ocean. Furthermore, there is a wave buoy record from nearby Baring Head that could have been used instead of assuming a JONSWAP spectrum.

31. I carried out a comparison between the Baring Head spectra and the JONSWAP spectrum using 15 large storms from 2015 where the wave height exceeded 4 m and that analysis indicated that use of the JONSWAP spectrum over-estimates the wave periods by up to 2 s. In terms of surfability, this is a significant difference in period. I understand from surfers that waves of 12 s period provide a different ride to waves of 10 s period. Whether this has any effect on the conclusions from the modelling is not clear and further modelling has been requested to clarify this. In particular, an additional model run was requested for one of the events listed in the DHI report with the measured spectral shape and the results compared with the JONSWAP run. If the results do not agree, then all of the Boussinesq modelling will need to be repeated.

32. The following assessment assumes that the existing DHI modelling results are proved to be valid (which is yet to be confirmed).

    32.1 Three representative wave scenarios were chosen from 2014: one a rare event, but with excellent surf; and two more common events with good surf (referred to as Scenario 1, 2 and 3 in the consent application). The wave fields were then calculated using the Boussinesq model and the results were passed in to a surf break quality model that provides surfing amenity parameters of height, length of ride, and number of waves that can be used to assess the surf quality.

    32.2 Surfing quality is a subjective matter that depends on a number of personal parameters including the skill of the rider. This modelling is an attempt to quantify the effects of development and thereby make the assessment process objective.

    32.3 The modelling shows that the development will not affect the wave height to any large extent, but the length of the ride and the number of rides is likely to reduce depending:

        32.3.1 on the location, with Western and Middle beaches affected more than The Corner; and

        32.3.2 on the period, with the rare long-period swell affected at all locations more than the common shorter-period swell.

    32.4 DHI explain that the reason the surfing amenity will be reduced is that the development will reduce the diffraction, or sideways spreading of wave energy as it enters the Bay. This explanation seems entirely plausible, but it is an effect that occurs as a result of complex interactions that are not simulated by models such as SWAN and ARTEMIS used by NIWA. Nor are the effects easily extracted from the results or measured, so the results are to some extent uncertain Nevertheless, the development is likely to reduce the surfing amenity to some degree and of course at Airport Rights, the surf break will disappear altogether.

33. Having demonstrated that the surfing amenity is likely to be reduced by the development, DHI proposes the construction of a submerged wave focusing structure

(**SWFS**) in the middle of Lyall Bay. This could have the effect of mitigating the reduction in surfing amenity, and perhaps even enhancing it.

34. The preliminary design for the SWSF is 2 ha in area situated 450 m off Middle Beach, built of rock with sizes up to 1.5 m in diameter. The estimated cost of construction is about $3 million.

35. The efficacy of the structure was assessed using the Boussinesq and surf break and surf quality models. The results indicate slightly increased surfing amenity in terms of wave height at Middle Beach, but a small reduction at The Corner. Unfortunately, the lack of detail in the presentation of the results by DHI prevents quantitative comparison of the length and number of rides. Considering the expense of the SWFS, the expected enhancement of surfing amenity is quite small in my opinion.

36. I have some concerns about the design of the proposed structure:

    36.1 At Baring Head, the 100-y return period significant wave height is 10.5 m, but for the design of the SWFS a wave height of 5.5 m has been assumed, being the limiting height before waves would break. In an event of 10.5 m waves at Baring Head, waves could break offshore from the SWFS, subjecting the structure to surges with velocities much higher than those under non-breaking waves. The structure needs to be designed to withstand such surges by using rocks that are large enough to withstand the forces, otherwise the structure could be destroyed, resulting in large rocks being strewn along the beach.

    36.2 An alternative to the SWFS, which appears not to have been considered, is to re-design the runway extension structure in a way that reduces its effects on the surfing waves in Lyall Bay. This may involve changes to the shape and slope of the structure without changing the footprint of the runway extension. Such changes could be modelled using the methods used for the SWFS.

37. The analysis of the effects of the runway extension on surf quality carried out by DHI is satisfactory and follows best practice, except for assumptions about the shape of the wave spectrum which was assumed to follow spectra in the North Sea, not at Baring Head, as referred to earlier.

38. I have some concerns about the design of the SWFS. Firstly, the resulting wave enhancement appears to be quite small and only at Middle Beach; indeed, wave heights at The Corner will reduce as a result of the SWFS. Secondly, the design wave height of 5.5 m based on depth-limited waves needs to be reviewed and the design of the structure needs to be assessed for waves 10.5 m in height offshore.

Shoreline Assessment

39. Report 14 assesses the effect of the proposed SWFS on the transport of sediment at the Lyall Bay shoreline.

40. The data available for the study were rather sparse, especially the bathymetry, which is a 25 m grid offshore and limited nearshore data. There are significant discrepancies between surveys of 1979 and the present. It is not clear from the report whether these discrepancies are due to survey errors or represent significant changes to the bathymetry over the 36 years. Information on sediment sizes was also lacking, with sampling at only 13 sites within the Bay and none of those close to the surf zone.

41. Measurements from 1979 indicate that there is a natural annual cycle to the pattern of the shoreline position, with a 20 m retreat over winter and recovery over summer. This corresponds to more high-energy wave events in winter and calmer conditions in summer.

42. A suite of models (called modules) was used to simulate the movement of the shoreline, including a wave module, a hydrodynamic module, and a sand transport module, all providing input to a shoreline model. Each of the modules was validated as far as possible with the available data. However, there is no evidence that the ultimate model (i.e., the shoreline model) was validated at all. Yet we have evidence from 1979 that the shoreline retreats in winter and recovers in summer by 20 m. If the shoreline model cannot reproduce this effect, then all the modelling that follows must be called into question. Therefore, the model needs to be properly validated and the results presented to the decision makers.

43. Subsequent modelling by DHI shows that the airport extension has no effect on the shoreline, but with the SWFS installed, a retreat of the shoreline opposite the SWFS by about 15 m can be expected. Report 14 claims that this retreat will be on “top of the natural variability”. In other words, the effect of the SWSF can be superposed on the natural conditions. This raises a couple of issues:

    43.1 Natural variability must have been excluded from the model (otherwise the 15 m of retreat would include natural variability), but it is not clear how this was done.

    43.2 Superposition implies the process is linear (i.e., processes can be simply added together), yet most sediment transport processes are nonlinear – they result from complex interactions between processes. It is not clear how linearity can possibly be applicable for shoreline movement.

    43.3 Assuming the 15 m of retreat from the SWFS can be added to the 20 m of natural retreat during winter means a total retreat of 35 m. With such a large retreat in the shoreline, waves could impinge on the dune system and the road, but this does not seem to have been addressed by DHI.

44. I have significant questions about the validity of this shoreline modelling because it does not reproduce the observed winter/summer effect and it assumes shoreline processes can be simply added together. This means that the effect of the SWFS on the shoreline has not been determined adequately in my opinion.

Design Waves (Report 7, Appendix D)

45. The 16-year record from the Baring Head wave buoy was used by AECOM for routine extreme-value analysis. After removing obvious data errors, annual maxima were extracted and a Generalised Extreme Value (GEV) probability distribution was fitted. Confidence intervals were calculated using a Monte Carlo method. The results indicate a Weibull probability distribution, as expected from a wave record like this. Fitting a theoretical distribution to the data enables the 16-year record to be extrapolated to 100 years, thereby allowing an estimate of the 100-year wave height to be calculated.

46. Unfortunately, the results are plotted on linear graph paper, not semilog paper, which makes extraction of the return period wave heights impossible. Furthermore, the parameters of the fitted Weibull distribution are not provided. The report lists the 100-year recurrence interval significant wave height as 10.5 m, within 95% confidence bounds of 8.4 to 12.5 m. Though the presentation of the results is not adequate, the analysis by AECOM follows best practice and is satisfactory.

Coastal Hazards

47. Coastal hazards, including sea level rise and climate change, are covered in NIWA's Report 15. However, there is some confusion about this because the Executive Summary states that coastal-hazard extremes are not considered here, but in the AECOM Feasibility and Design Report (Technical Report 7). Yet, that report only deals with extreme waves, as described in the previous section, not extreme sea levels. Nevertheless, the NIWA report presents the data on extreme sea levels, quoting Lane et al. (2012)[1] which gives the 100-y return period sea level as 1.71 m above WVD-53 datum. Thus, it appears that no further work has been done on extreme sea levels for this project, in spite of an extra four years of sea-level data being available

48. To assess the effect of the extra four years of data I downloaded the sea-level data from Jan-2012 to Aug-2016 at Queen's Wharf and extracted the highest sea level from the record. This occurred on 21-Jun-2013 and was 2255 mm above Chart Datum which translates to 1165 mm above WVD-53 datum. The figure below extracted from Lane et al. (2012) shows the annual maximum sea levels with the best fit Generalised Extreme Value (GEV) curve through them. Such curves are used to determine the 100-y return period (AEP of 0.01) sea level by extrapolation. I have overplotted the event of 21-Jun-2013, indicating that it had an AEP of 0.33 (3-y return period). Inclusion of this and the other smaller additional points from the four extra years of data would not have affected the result significantly, therefore the 2012 results can be used with confidence.

49. To the 100-y return period level of 1.71 m for extreme tides, storm surge and wave set-up, NIWA adds sea-level rise and climate change effects as follows:

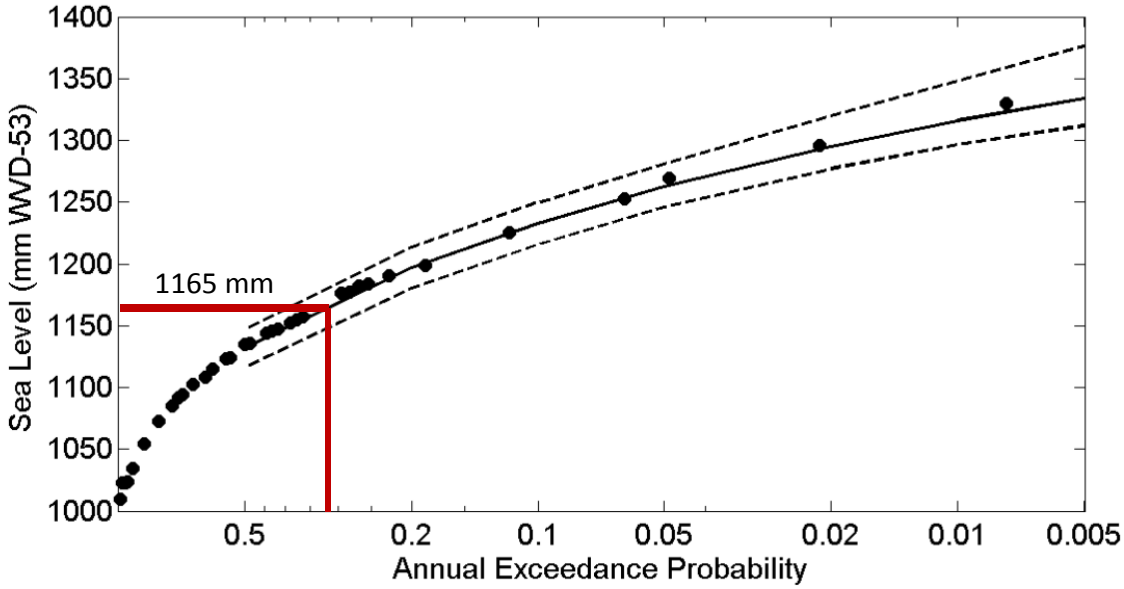
[1] Lane, E.; Gorman, R.; Plew, D.; Stephens, S. 2012: Assessing the storm inundation hazard for coastal margins around the Wellington region. *NIWA-Client Report CH2012-073* prepared for Greater Wellington Regional Council.

49.1 1 m for sea-level rise to 2115, as per the MfE guidance;

49.2 0.2 m for the present observed subsidence of the land extrapolated over the next 100 years; and

49.3 0.15 m for increases in swell waves resulting from increased winds induced by climate change.

49.4 Resulting in a total of 3.05 m elevation in 2115.



50. Figure A-4 from Lane et al. (2012) augmented to show the event of 21-Jun-2013 which had a height of 1165 mm.

51. The total sea level of 3.05 m needs to be compared with the minimum level of the existing runway, which is 4.6 m at 1300 m from the northern end of the present embankment, meaning that inundation of the runway is highly unlikely.

52. There appears to have been no analysis of the threat from tsunami. Usually, for a large development such as this, a desktop tsunami study using existing information would be carried out to assess the risk and if that risk proved high, a more detailed study would be undertaken. Indeed, the New Zealand Coastal Policy Statement 2010, Policy 24(f) states that in areas potentially affected by coastal hazards over the next 100 years, the potential effects of tsunami must be considered.

53. To address this gap in the assessment by the applicant, I reviewed a recent report by Mueller et al. (2015)[2]. The report presents the results from tsunami modelling for a wide

[2] Mueller, C.; Poer, W.; Wang, X. 2015: Hydrodynamic inundation modelling and lelineation of tsunami evacuation zones for Wellington Harbour. *GNS Science Consultancy Report 2015/176.*

range of tsunami sources around the Pacific and for various earthquake slip scenarios. These are then used to delineate various inundation zones around Wellington Harbour. The report indicates that for a magnitude 9.0 earthquake, the Lyall Bay- Southern Airport region was inundated in 75 to 100% of the scenarios considered in the study. Furthermore, this area falls into the "Yellow Zone for self-evacuation", meaning that in the event of a strongly-felt or long-duration earthquake, or when a forecast of a distant-source tsunami of above a specific threat level is issued, the area must be evacuated (MCDEM guidelines 2008)[3]. Thus, there is a significant risk of inundation in a tsunami and the engineering design of the airport extension needs to be assessed for its integrity in the event of such inundation.

54. The analysis of coastal hazards by NIWA is generally satisfactory. While there is a lack of inclusion of additional sea-level data from the past four years, the record shows that the results would not have been affected significantly if those data had been included. However, there is no assessment by NIWA of the risk of inundation by tsunami. In a desktop sudy of this risk, I found it is significant.

Conditions (section 8.5 of the AEE)

55. Condition 60 requires that a bathymetric survey similar to the one carried out in 2014 be carried out in eastern Lyall Bay two years after construction. However, the 2014 survey was for the western part of Lyall Bay, as illustrated in the figure below (extracted from Report 15) which has the caption "Extent of Lyall Bay infill bathymetry survey (black dashed line) shown against grey area collected from previous surveys".

Figure 3-2 from Technical Report 15.

[3] MCDEM 2008: Tsunami Evacuation Zones, Director's Guidelines for Civil Defence Emergency Management Groups. *Published by the Ministry of Civil Defence and Emergency Management (MCDEM).*

56. Thus, there appears to be some misunderstanding in the Condition about what was surveyed in 2014. Furthermore, there are numerous references in Reports 11, 14, 15 and 17 to the paucity of bathymetry data available and the resulting difficulties that caused with the modelling. Therefore, it makes more sense to carry out a bathymetric survey of the entire bay that is more detailed than the earlier surveys which still allows the comparison to be made. Such a survey is hinted at in Condition 70b and specified in more detail in Condition 71. A re-draft of Condition 60 could look like this:

> The Consent Holder shall undertake an assessment of the change in bathymetry over the whole of Lyall Bay two years following the construction of the rock dyke. The data from bathymetric surveys specified in Condition 71 shall be processed to provide depths on a 25 m grid compatible with earlier surveys. A hydrographic survey report shall be prepared comparing the survey results with the results from the 2014 and earlier surveys and ascertain any anomalous changes in seabed heights or accretion/deposition patterns. A copy of the survey shall be supplied to the Manager GWRC.

57. Condition 63 specifies the conditions for turbidity monitoring and the data processing, but the number of sensors that will be deployed is not specified. In my opinion there should be at least three monitoring sites (at 150 m from each of the discharge points) and at least 5 control sites at various locations in Lyall Bay.

58. Conditions 66 to 79 specify a comprehensive set of conditions for the wave focusing structure, with measurements of waves, bathymetry, and surfing amenity before and after construction of the SWFS. While the measurement of waves and bathymetry will be scientific and reliable, the measurement of surfing amenity will not. It will involve at least 10 surfers with tracking devices attached to their boards for a period of 3 months. There are so many variables involved in this study that before and after comparison will be difficult to quantify. These include: the weather: in one 3-month period good waves may occur every weekend, but in another there may be none; the disposition of the surfer will vary from one day to another, let alone one season to another, just as a golfer can putt everything one day and miss them the next. As an additional, more scientific assessment of surfing amenity, the mathematical modelling described in Report 11 should be carried out using the before and after wave and bathymetry data.

59. In Report 14, DHI recommend that: (i) coastal profiles be surveyed at 5 profiles along the beach and (ii) bed sediment grab samples be collected from three transects along the beach, but these recommendations have not carried through to the conditions. Therefore, I suggest that the following be added to Condition 70:

    59.1 Bed sediment grab samples collected between +2 m and -5 m depths at 1 m interval depth contours for three transects along the beach.

    59.2 Coastal profiles be surveyed at 5 locations evenly spaced along the beach.

60. There appears to be a lack of coordination in the specification of bathymetric surveys between Condition 60 (survey after 2 years), Condition 70 (survey every quarter for the first year) and Condition 76b (survey 6 months after completion of the SWFS). To

resolve this I suggest that Condition 71 be amended to cover survey every quarter for the first year to establish a seasonal baseline, then at 6 month intervals until two years after completion of the rock dyke.Condition 76 specifies the monitoring required once the SWFS has been established, but only in relation to the effects of the structure on the waves, morphology and surfing amenity. There is no proposed monitoring of the structural integrity of the SWFS. Such monitoring should be carried out after each major wave event over a threshold of, say, the 10-y return period wave height at Baring Head.

SUBMISSIONS

Wellington Boardriders Club (WBC)

61. The WBC proposes changes to Condition 75 so that the SWFS construction is started immediately after Stage B of the airport extension construction is finished, and the revised conditions also specify this. Unfortunately, the DHI modelling only covers the situation when the airport extension construction has been completed. It does not cover the effects of various stages of construction. Thus, there is no information on what it is in the airport extension that will cause the deterioration of surfing in Lyall Bay and no way of knowing which stage of construction the SWFS should be started so as to avoid deterioration of the surfing. However, there is way to pinpoint the cause of the deterioration and that would be to repeat the DHI modelling for each stage of construction. This would also assist in determining whether there are any design changes that could ameliorate the effects on surfing. In my opinion, with the information available at present, the WBC proposal to begin construction of the SWFS after completion of Stage B is reasonable, unless modelling is undertaken to show that a different construction stage is more appropriate.

62. In Condition 68aii, the WBC requests that the SWFS results in rides of at least 50-100 m in length. DHI in their presentation of the modelling results in Chapter 11 show how the ride length varies between before and after construction of the airport extension, but do not show it in the same detail for the SWFS, as indicated by the plots below which are for the situation after airport extension and with the SFWS. Discerning ride lengths from these plots is difficult, if not impossible. Therefore, because of the limited results that have been presented, I cannot discern whether the SWFS as modelled will meet the 50-100 m wave requirement or not. My overall qualitative impression is that as a result of construction of the SWFS, ride lengths will be lengthened at Middle Beach, but shortened at The Corner and West Beach.

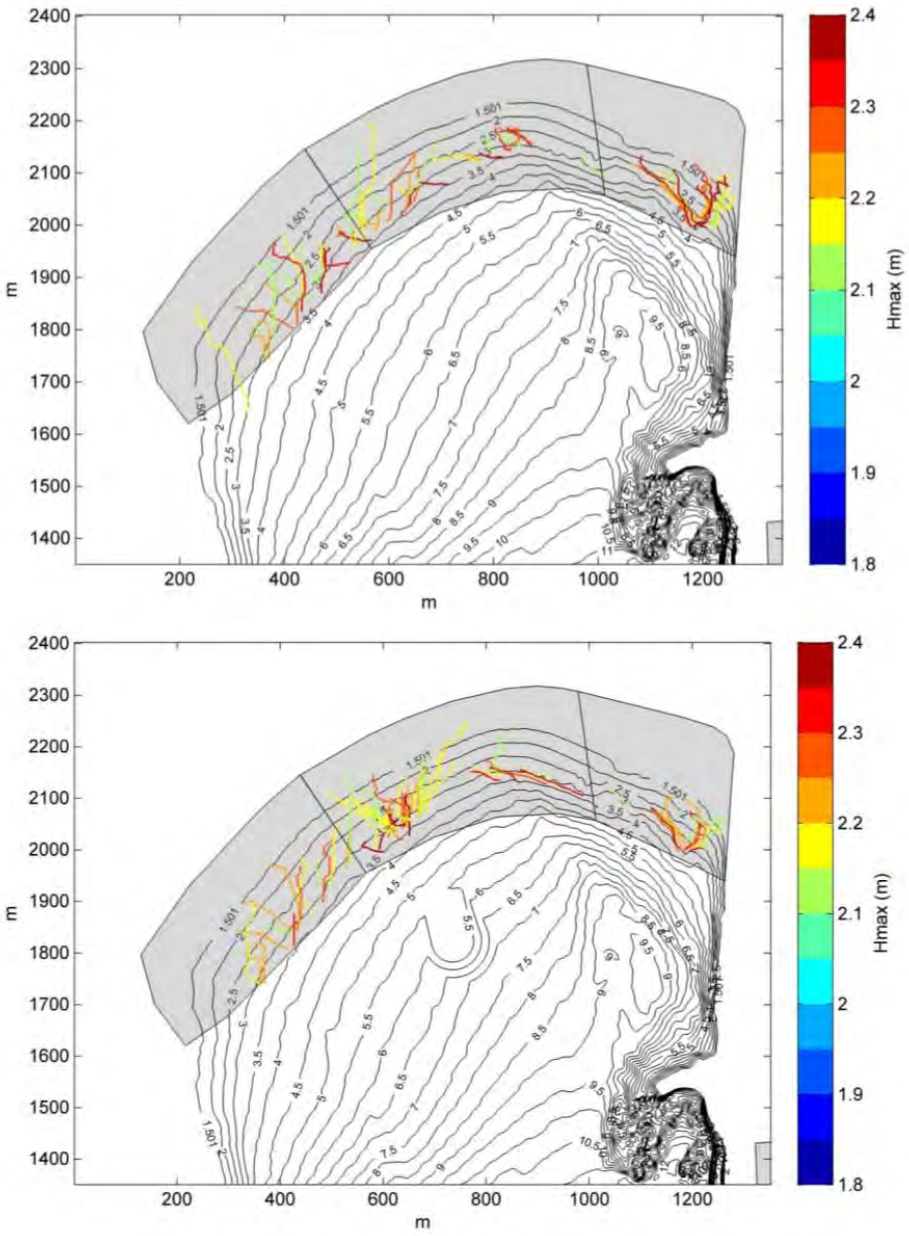
63. In Condition 68d, the WBC requests that there will be negligible adverse effects at The Corner. However, the DHI modelling indicates that the SWFS will cause “a slight reduction in ride number and wave height in The Corner”. They go on to say that this will be addressed in “further revisions of the placement of the structure”.

64. In Section 44c of their submission the WBC asks that “a large wave spot is integrated within the design of the SWFS itself, to offset the loss of Airport Rights”. I am not familiar with the terminology “wave spot”, but assume it means an enhancement of

wave heights. DHI modelling shows that this will indeed occur at Middle Beach, but the increases in wave height will only be a decimetre or two.

Wellington Underwater Club (WUC)

65. WUC contends that wave size and frequency will increase as a result of the airport extension. However, the models show that waves at Lyall Bay and Moa Point will mostly decrease, not increase. The frequency of occurrence will not change because that is governed by the waves propagating into the area, which will not be affected by the airport extension.



Figures 8-8 and 8-9 from Technical Report 11.

66. WUC contends that the SWFS will add to beach erosion. The DHI shoreline model (Report 14) indicates that this correct, especially in the lee of the SWFS where the shoreline is expected to recede by 10-15 m. However, I have doubts about the validity of the model, as addressed in Clause 44.

Guardians of the Bays (GOTB)

67. In submission point 11 GOTB claims that there is a lack of regard to sea level rise and storm surge on the project. This matter is covered in Section 5.2.5 of Report 15. It was written by Dr Rob Bell, one of the leading researchers on sea level rise in New Zealand.

68. In submission point 15 on the SWFS, GOTB makes the point that the SWFS "requires a more detailed shoreline design study". I agree with this, as pointed out in Clause 44 of this report.

Lyall Bay Surf Life Saving Club

69. In submission point 11, the Club expresses concern about the level of statistical certainty of the models. From my experience over more than 40 years working with models, the certainty of models varies considerably. Hydrodynamic models of tides are highly accurate, but when the tidal currents are applied to the transport of sediment, the accuracy drops off to the extent that the results can only be used in a comparative, not absolute, sense. This means we can make statements about how a change in bathymetry will affect the sediment transport rate, for example, with some confidence but we cannot say with any certainty what the actual rate will be.

70. In Clause 12, the Club points out that no examples of a working SWFS have been cited. I share this concern.

Wollerman

71. Mr Wollerman makes some interesting comments about waves from a surfer's point of view. He advocates using of the money that would be spent on an SWFS to modify the steel wall lining the runway extension to improve the waves in The Corner. This is a practical application of my suggestion in Clause 36.2 above to re-design the extension to avoid the deterioration in surfing waves.

Tervoort

72. Mr Tervoort has similar comments to Mr Wollerman on the effect of the wall of the extension on waves at The Corner. His comments are based on observations of the effect that modifications to the existing walls have had on waves. These observations will provide valuable input to re-design of the extension, as suggested above.

McLaren

73. Ms McLaren contends that the applicant has not properly considered the effects of sea level rise and storm surges. This matter is covered in Section 5.2.5 of Report 15. It was written by Dr Rob Bell, one of the leading researchers on sea level rise in New Zealand.

Surfbreak Protection Society (SPS)

74. The SPS has commissioned Dr Shaw Mead of eCoast Ltd to provide advice on the surfing amenity impacts (Appendix 2) and the impact of the shoreline by the SWFS (Appendix 3). Dr Mead has extensive experience in the design, construction, and use of artificial reefs for enhancement of surfing, so I consider his advice to have high value in the assessment of the SWFS.

75. The main points of Dr Mead's reports are:

    75.1 There are significant uncertainties in the modelling of the effects of the airport extension and the efficacy of the SWFS, so an adaptive management approach needs to be taken, backed up by an extensive monitoring campaign.

    75.2 The shoreline model used by DHI is applicable to shorelines affected by waves approaching at an oblique angle. This is not the case for Lyall Bay – the waves are coming straight in to the beach. Therefore, the use of this model is not appropriate for Lyall Bay.

76. I concur with Dr Mead in these matters.

CONCLUSIONS

77. Reports 17 and 15 prepared by NIWA provide a thorough examination of the effects of the development on coastal processes using state-of-the-art models backed up by field measurements. More field data would have been helpful to the modellers, but the unfortunate loss of the ADCP at the entrance to the bay precluded this. Changes in the hydrodynamics are shown to be minor. Changes in waves with periods between 10 and 15 s (i.e., the best waves for surfing) are generally minor, except at The Corner where the wave models indicate the wave heights will reduce by .up to 23%.

78. Report 11 prepared by DHI refines the wave modelling carried out by NIWA and uses the results to estimate changes in the surf quality as a result of the runway extension. In contrast to the NIWA results that indicated wave heights would reduce at The Corner, the DHI model indicates that the wave heights will not change significantly, but for surfing the length and number of rides will reduce, especially at Middle Beach, and under some wave conditions at West Beach.

79. As mitigation for the reduced surfing amenity and for possible enhancement of the amenity, DHI has proposed a submerged wave focusing structure. However, I consider the design of the structure to be inadequate to cope with large seas and alternatives that would not require the construction of a separate facility do not appear to have been

considered. In my opinion, the expected enhancement of wave height by a few decimetres only at Middle Beach is a small benefit considering the cost of the SFWS and the risk of failure. I also consider that it is uncertain whether it will provide the mitigation suggested.

80. Modelling of the shoreline after installation of an SWFS appears to be invalid because it does not reproduce the observed natural variability of retreat in winter and advance in summer.

81. The 100-y return period significant wave height for design has been calculated using routine methods and found to be 10.5 m. This is the wave height that has been used in the engineering design of the extension structure.

82. Coastal hazards in the form of sea levels, sea-level rise and effects of climate change indicate there is little likelihood of inundation of the runway in the next 100 years. My desktop study to assess the risk of inundation by tsunami indicates that in the event of a strong earthquake, there is a significant risk of inundation of the Lyall Bay – Southern Airport area.

83. A comprehensive set of conditions for coastal monitoring has been proposed, but additional bathymetric surveying (Conditions 60 and 71), mathematical modelling (Condition 76), collection of grab sample of bed material and survey of coastal profiles (Condition 70), and inspection of the SWFS (Condition 76) should be included.

84. Two of the Submitters (Wollerman and Tervoort) make the point that the money used for the SWFS would be better spent designing the wall linings of the airport extension to enhance the waves, rather than attenuate them. I agree with these Submitters and suggest that this could be done using the DHI models to assess the effect on waves of each stage of construction of the airport extension.

Date: 7 October 2016

.. . .
Dr Derek Garard Goring

Appendix 2

Review of the assessment of marine ecological effects of the reclamation and extension to Wellington Airport runway

Introduction

1 My full name is Donald James Morrisey. I am currently a Senior Coastal Scientist at the Cawthron Institute, Nelson and have held this position since December 2014.

Qualifications and experience

1 I have a BSc (Honours) and a PhD in Zoology and a Post-graduate Diploma in Environmental Monitoring and Assessment.

2 My current role includes assessments of the ecological effects of human activities, such as dredging and construction, on the coastal environment, with particular expertise in soft-sediment habitats.

3 Prior to my current role, I worked as a Marine Ecologist at NIWA, Nelson for 12 years, at the Associated British Ports Marine Environmental Research Ltd (United Kingdom) for one year, and at NIWA, Hamilton for 6 years.

4 My experience relevant to the present proposal includes:

- assessments of ecological effects of capital dredging in the Port of Picton and Port Shakespeare, Marlborough
- dredging to remediate sediment contamination in Port Nelson
- advice to Gisborne District Council on a request to vary consent conditions to discharge stormwater from logyards.
- assessment of contamination and associated environmental risk for Devonport Naval Base, Auckland and
- ecological assessment for a management plan for disposal of dredge spoil from Cairns Harbour, Australia.

Involvement with the proposal

5 I have been engaged by Greater Wellington Regional Council (GWRC) to review and provide advice on the marine ecological assessment of environmental effects for the construction and operation of the Wellington International Airport (WIAL) proposed runway extension and associated structures.

6 I visited the site of the proposed runway extension, and adjacent areas of coast, on 30 June 2016, in the company of GWRC staff and other advisors.

Assessment

7 I have reviewed the following documents, which relate to characterisation of the marine environment and marine ecological effects associated with the proposed runway and wave-focussing structure:

- Ecological characterisation of Lyall Bay (Technical Report 18, NIWA, March 2016)
- Assessment of ecological effects of the reclamation and extension to Wellington Airport (Technical Report 19, Aquatic Environmental Sciences Ltd, revision of February 2016)
- Ecological assessment of a proposed wave focussing structure in Lyall Bay, Wellington (Technical Report 20, NIWA, September 2015)
- Proposed consent conditions to monitor and mitigate adverse effects on the marine environment (Mitchell Partnerships, April 2016, with particular reference to chapter 8.5 and Appendix E).

In undertaking this review I have also referred to the following documents:

- Wellington International Airport runway extension: Coastal processes assessment (Technical Report 15, NIWA, March 2016)
- Wellington International Airport runway extension: Marine sediments and contaminants (Lyall Bay) (Technical Report 16, NIWA, February 2015, revised 2016)

- Wellington International Airport runway extension: Technical report on coastal hydrodynamics and sediment processes in Lyall Bay (Technical Report 17, NIWA, March 2015, updated March 2016)

- Further information on the assessment of environmental effects provided by Mitchell Partnerships to GWRC 13 June 2016 (letter sent by email from John Kyle, Mitchell Partnerships to Jude Chittock, GWRC, 13 June 2016)

- Questions of clarification on Technical Reports 18 – 20 relating to effects of the extension on marine ecology, submitted with the Wellington International Airport Limited's application for resource consents: Review undertaken by Donald Morrisey – Cawthron Institute[1] and responses provided by NIWA and Aquatic Environmental Sciences, dated 28 July 2016 (sent by email from John Kyle, Mitchell Partnerships to Kirsty van Reenen, GWRC, 29 July 2016).

Ecological characterisation of Lyall Bay (Technical Report 18)

8 Technical Report 18 provides what I consider to be a thorough and adequate description of the ecological features of Lyall Bay, including optical water quality. Water quality (turbidity, transmissivity, photosynthetically-available radiation) were measured continuously for a month by instruments attached to a buoy moored at the mouth of the bay. One-off measurements of turbidity, water clarity, and concentrations of chlorophyll-*a* and suspended solids were also made at 12 stations in the eastern half of the bay. Zooplankton and phytoplankton assemblages were surveyed at six stations throughout the bay on one occasion in September 2014. Biological surveys of intertidal and subtidal rocky reefs and soft-sediment habitats were made on one occasion in October 2014.

9 The composition of the plankton assemblages was typical of those in the Cook Strait region. Soft-sediment habitats consisted predominantly of fine sand with low organic matter content and low biomass and diversity of larger animals ('macrofauna'). A depauperate fauna is expected of such a high-energy, naturally disturbed environment. The species present are typical of similar habitats along the adjacent coast. Burrows visible in video images of the

[1] Morrisey, D 2016. Review of the assessment of marine ecological effects of the reclamation and extension to Wellington Airport runway. Prepared for Greater Wellington Regional Council. Cawthron Report No. 2887. 14 p.

seabed suggested that a burrowing shrimp, *Biffarius filholi*, was a dominant member of the macrofauna. In contrast to the macrofauna, the abundance of smaller animals ('meiofauna') was typical of similar habitats elsewhere. The biological assemblages on rocky reefs in Lyall Bay are similarly diverse to those of shallow-reef habitats along the adjacent coast. They include a range of macroalgae, invertebrates and fish, including kai moana species. Based on records of ad hoc sighting, recorded and collated by the Department of Conservation, only a small proportion of marine mammal species that occur in Cook Strait have been recorded around the site of the proposed runway extension. The report concludes that there is no evidence that the site is of special significance as feeding or breeding areas for these groups.

10 The composition of the demersal, pelagic and reef-associated fish fauna was predicted using a habitat-use model based on very large datasets of fish abundance and environmental data. I consider that this approach is appropriate, given the unavoidable biases and imprecision of one-off fish surveys by, for example, diver counts. The reef-fish community of the bay was assessed as "moderately diverse", including 27 species, none of which are nationally threatened. Of the 44 species of demersal fish predicted to occur in the bay, only 11 were likely to be common.

Assessment of ecological effects of the reclamation and extension to Wellington Airport (Technical Report 19)

11 This report contains a summary of Technical Report 18, describing the biological resources present in Lyall Bay and a brief description of the proposed activity. The effects of the different activities on the ecology of Lyall Bay are then considered under the categories listed below. I note that some aspects of the assessment of effects are unavoidably constrained by lack of detailed information about the nature of the construction process at the time the assessment was made. These aspects include how the rock dyke will be placed, whether stone columns will be required to anchor the dyke, and the nature of fill material used to create the reclamation. An appendix to the report discusses options for mitigating loss of intertidal hard-substrata habitats through the design of the rock dyke around the reclamation. In my opinion the report considers all the relevant potential effects of the proposed activity, of which loss of habitat and dispersion of sediment are the most important.

12 I discuss the key conclusions of Technical Report 19 in terms of the assessment of ecological effects on the marine environment, and my views on these, below.

Physical disturbance and loss of habitat

13 The area of soft-sediment habitat lost as result of extension of the runway will be 5.9 ha, representing approximately 3% of the 189 ha of such habitat in Lyall Bay. Given the absence of any species or habitats of particular ecological or conservation importance, and the presence of the same habitats elsewhere in Lyall Bay and the adjacent coast, the loss of soft-sediment habitat was not considered ecologically significant by the applicant. This assessment is reasonable in my opinion.

14 The reclamation will result in the loss of 5 ha of subtidal reef (including natural rock and the existing rock dyke), representing 5% of the 99 ha of subtidal reef in Lyall Bay. A further 0.28 km of intertidal hard habitat will be lost (much of it artificial) representing 7% of the total length of coastline bordered by reef in the bay. However, the proposed new rock dyke would result in a net gain of 0.6 km of hard coastal habitat bordered by reef and a net loss of 2.3 ha (< 3%) of the total subtidal reef habitat in the bay. Given the absence of any species or habitats of particular ecological or conservation importance, and the presence of the same habitats elsewhere in Lyall Bay and the adjacent coast, the loss of hard-substrata habitats was not considered ecologically significant by the applicant. In my opinion this is a reasonable conclusion.

15 Although birds, mammals and fish can be adversely affected by construction noise and light, the area of the proposed reclamation is subject to existing noise and light from airport operations. These animals are able to avoid areas of disturbance and, consequently, adverse effects on them during the construction phase were not considered likely to be significant by the applicant. In my opinion this is a reasonable conclusion. However, it is noted that noise from pile-driving poses a particular risk to marine mammals and the proposed ecological monitoring plan should give consideration to avoiding or mitigating these risks (see paragraph 17, below).

16 The report does not specifically consider risks to marine mammals from collision with vessels working on the reclamation, or entanglement with structures during construction. In reply to

my request for clarification, the authors noted that "…mammal presence and actions will be included in the construction plan based on best practice" (email from John Kyle, Mitchell Partnerships to Kirsty van Reenen, GWRC, 29 July 2016, cited above).

17 I suggest that a wildlife management plan for the construction activities should developed in consultation with the Department of Conservation, giving particular attention to minimising risks of noise from pile-driving, boat-strike and entanglement. Proposed condition 81 b) (v) requires that an Ecological Mitigation and Monitoring Plan (EMMP) shall be developed that will include "How construction activities will be managed if marine mammals (dolphins or whales) are present within 100m of the Project site". This can be achieved by including the wildlife management plan as part of the EMMP. The wildlife management plan should include the following:

- Record and report the type and frequency of any marine mammal sighted before, during or after transiting to or from the reclamation site.

- Minimise the risk of vessel collisions with any marine mammal and aim for zero mortality by:

    - Adoption of best boating guidelines for marine mammals, including speed limits, to further reduce any chances of mortality from vessel strikes.

    - Consider establishing a designated observer on the vessel and maintain a watch for marine mammals during any vessel-based reclamation activities during daylight hours.

    - Liaison with the Department of Conservation over the project period to help anticipate and mitigate potential seasonal interactions with any whale species sighted.

- Minimise the avoidance (attraction) to, or potential for injury of marine mammals by, pile-driving activities by:

- Establish a monitoring plan with designated safety zone and trained marine mammal observers on the vessel to maintain a watch prior, during and post any pile driving activities during daylight hours only.

- Adoption of soft-start procedures and consider other noise dampening techniques.

- Consider seasonal restrictions on activities during whale migration periods, when practical, and / or between stages of the project.

- Minimise entanglement and aim for zero mortality by:

  - Avoid loose rope and / or nets (i.e. keep all ropes and nets taut).

  - Minimise potential for loss of rubbish and debris from vessels and activities with proper waste management plans in place.

- Minimise or lower the risk of exposure to any contaminated sediments by:

  - Use of cleanfill material for construction of the reclamation.

Effects of sediments suspended by construction activities

18 Construction of the reclamation and extension will give rise to temporarily increased concentrations of suspended sediments in the water column as a result of disturbance of the seabed and de-watering and stormwater runoff from the infill. This may have adverse ecological effects through reduction in the amount of light underwater and clogging of the respiratory and feeding organs of animals in the water column and seabed. Light reduction can affect the ability of predators to find their prey and the ability of prey to evade predators. It also affects primary production by algae (there are no other types of plants, such as seagrass, present in intertidal and subtidal areas of Lyall Bay). There are also potential associated effects from dispersal of sediment-associated contaminants and from smothering when sediments are subsequently re-deposited.

19 Technical Report 16 establishes that concentrations of contaminants in the existing seabed sediments of Lyall Bay are very low, as would be expected of relatively coarse sediments in a high-energy environment. There is potential for the introduction of contaminants associated with fill material used in the construction of the reclamation, but information on the source of the fill is not available at present. Proposed consent condition 58 stipulates that all imported fill material will conform to the Ministry for the Environment's 'clean-fill' requirements (see paragraph 47, below). Consequently, it can be assumed that the risk from suspension and dispersal of sediment-associated contaminants during construction will be negligible.

20 Given the small proportion of fine material (silts and clays) in the sediments of Lyall Bay, the amount of sediment suspended during placement of the rock dyke is likely to be very limited, short-lived and, therefore, I consider it unlikely to disperse very far or have significant ecological effects.

21 Dispersal of suspended sediments generated by dewatering and runoff from the infill used in the reclamation was modelled numerically for two rates of discharge (1 kg/s and 2 kg/s) and for three proposed discharge locations around the perimeter of the reclamation, under different wind conditions (see Technical Report No. 17). The results suggest that maximum concentrations of total suspended solids (TSS) at the edge of a 150-m mixing zone around each discharge point would be 15 mg/L and 34 mg/L for discharges of 1 kg/s and 2 kg/s, respectively. For most of Lyall Bay, concentrations would be < 8 mg/L under all modelled scenarios. These concentrations are comparable to those generated by wave action during storms and from swells entering the bay from Cook Strait. Technical Report No. 19 reviewed studies of effects of suspended sediments on biological assemblages and habitats equivalent to those present in Lyall Bay, and concluded that they are likely to be tolerant of the predicted concentrations during construction. Consequently, the conclusion reached was that adverse ecological effects are unlikely, particularly after 'reasonable mixing' (as explicitly allowed for in the Resource Management Act 1991). This conclusion seems reasonable in my opinion.

22 The predicted spatially-limited, short-term increases in concentrations of suspended sediment as a result of construction, and their comparability to increases caused by natural wave action, suggest that adverse effects from subsequent re-deposition of these sediments are unlikely. Sedimentation was not modelled as part of the assessment of environmental effects under the reasonable assumption that storm-generated waves and swell would rapidly disperse any

deposited fine sediments. Any adverse effects are likely to be localised (particularly in the relatively sheltered area east of the proposed reclamation) and short term. This conclusion seems reasonable in my opinion.

Effects of construction and operation of the reclamation on the Taputeranga Marine Reserve.

23 The Taputeranga Marine Reserve lies immediately to the west of Lyall Bay, occupying 854 ha and extending 2.3 km from the coast. The wave-exposed reefs and sandy habitats contain particularly diverse invertebrate, fish and macroalgal assemblages (source of information: Department of Conservation, http://www.doc.govt.nz/parks-and-recreation/places-to-go/wellington-kapiti/places/taputeranga-marine-reserve/). The area is also inhabited by several species of birds, including reef heron, and marine mammals.

24 The principal far-field effect of construction of the reclamation is a temporary increase in the concentration of suspended sediments in the water column, and possible re-deposition of this material in sheltered areas. Modelling of the sediment plume (see Technical Report No. 17) has shown that the plume would not reach the marine reserve under any of the scenarios modelled (the minimum concentration of sediment depicted in the model output was 3 mg/L, well within the range of natural concentrations recorded at the nearby entrance to Lyall Bay). Consequently, adverse effects of suspended or re-deposited sediment on the marine reserve are very unlikely to occur in my opinion.

25 Adverse effects on the marine reserve from underwater noise during construction are also unlikely given that the construction site is ca 1.5 km away from the eastern boundary of the reserve, and construction will be intermittent and of relatively short duration (construction of the seawall is expected to take ca 18 months; Technical Report 7: Concept feasibility and design report).

Ecological assessment of a proposed wave focussing structure in Lyall Bay, Wellington (Technical Report 20)

26 This desk-top assessment of possible ecological effects concludes that the main adverse effect is likely to be the loss of soft-sediment habitat caused by placement of the structure. Given the low abundance and diversity of the fauna of this habitat (as identified in Technical Report 18),

this loss is not considered significant from an ecological or conservation perspective. The total loss of soft-sediment as a result of construction of the runway reclamation and the wave-focussing structure would represent 4% of that occurring in Lyall Bay. More general environmental effects, such as generation of noise and light, are likely to occur during the construction process and will be dependent on methods of construction. Technical Report 20 explicitly did not consider such effects because construction details had not yet been specified.

27 Within the constraints imposed on the assessment by the preliminary nature of the available information on the design and construction of the structure, the conclusions of the report seem reasonable in my opinion. I do not believe that effects of loss of soft-sediment habitat are likely to change should the size, design and location of the structure be different from that assumed in the assessment of effects. I consider that any effects of noise will be comparable to those of construction of the reclamation, discussed in paragraphs 15 and 17, above. Risks to marine mammals are addressed by the wildlife management component of the EMMP (see paragraph 17).

Proposed consent conditions relating to monitoring of suspended sediments

28 The applicant's proposed consent conditions 17 and 61 specify that an Erosion and Sediment Control Plan (ESCP) and an Ecological Mitigation and Monitoring Plan (EMMP) shall be developed and submitted in final form to the Council at least 10 working days before commencement of the construction phase. These plans "are not required to include all details for every construction stage at the time the plan is submitted for certification [by GWRC]".

29 The ESCP will address details of monitoring methodology for suspended sediments / turbidity in the waters of Lyall Bay to confirm that sediment control methods meet the proposed limits proposed in condition 64, and the response should limits be exceeded. Proposed condition 64 suggests that during construction work and de-watering, total suspended solids (TSS) concentrations at the edge of a 150-m mixing zone around each outfall shall not exceed 25 mg/L when the concentration at a reference station in Lyall Bay is less than 15 mg/L, and shall not exceed the reference concentration by more than 10 mg/L when the reference concentration is ≥15 mg/L. These values are based on 48-hour rolling medians derived from continuously-monitored, telemetered turbidity sensors and the data are to be processed on a daily (24-hour) basis.

30 Setting environmental limits for suspended sediments / turbidity is always difficult because effects are highly dependent on the nature of the sediment and on background concentrations. The limits proposed in Technical Report 19 are based on information on effects of suspended sediment on visual foraging by terns and gannets, limits developed for management of dredging effects for the Port of Melbourne and subsequently adopted for Port Otago. Technical Report 19 does not provide much detail on how the limits were derived and I have not been able to obtain all of the original sources used for the Port of Melbourne study. The information on tolerances of suspended sediment provided in Technical Report 19 suggests that protection of visual foraging by birds is also likely to be protective of organisms living on hard substrata and sediments. This assumption seems reasonable to me, with the caveat that it does not necessarily protect birds that feed underwater using different methods to terns and gannets. Terns and gannets feed by 'plunge-diving', whereas others, notably shags in the context of Lyall Bay, feed by pursuing their prey underwater. One of the references cited in the Port of Melbourne study[2] points out that water clarity may affect these two groups of birds differently. Based on the information presented, I believe that the proposed limits are reasonable.

31 Note that conversion of turbidity data (which are amenable to continuous, remote monitoring) to concentrations of TSS requires calibration of turbidity values against known TSS concentrations (in the laboratory). This should be done using the sediment responsible for the TSS because turbidity (attenuation of light penetration) is dependent on the nature of the suspended material in addition to the concentration. In the present case this can only be done once the identity of the infill material is known (and this material may be derived from more than one source). The consent condition setting out the TSS limits should therefore require that the ESCP specifies how turbidity values from monitoring will be converted to concentrations of TSS.

32 The Ministry for the Environment's (MfE) *Guidelines for the management of water colour and clarity* (1994[3]) recommend that guidelines for protection of visual water clarity should be used in preference to suspended solids concentrations or turbidity. Avoidance of optical effects of suspended sediments are also likely to protect against non-optical effects, such as clogging of feeding and respiratory organs (see MfE's *Guidelines for the management of water colour and*

[2] Haney JC, Stone AE 1988. Seabird foraging strategy and water clarity: are plunge divers really in the clear? Marine Ecology Progress Series 49: 1-9.

[3] MfE 1994. Water quality guidelines No. 2. Guidelines for the management of water colour and clarity. Ministry for the Environment, Wellington. 44 p plus appendices.

clarity, 1994). Visual clarity is particularly relevant in the present case, given that the proposed limits are intended to protect the ability of seabirds to hunt visually. However, in the present situation there is no information to indicate what an appropriate minimum water clarity would be to protect bird feeding (i.e. that corresponds to 25 mg/L TSS). In addition, section 107 of the Resource Management Act 1991 states that a consent authority shall not grant a discharge permit or coastal permit if, after reasonable mixing, the contaminant or water discharged is likely to give rise to any conspicuous change in colour or clarity of the receiving waters. MfE's 1994 guidelines recommend that for waters other than those where visual clarity is an important characteristic, the visual clarity should not be changed by more than 33–50% depending on site conditions. I recommend that visual clarity (as transmissivity) also be measured during the calibration of turbidity and TSS, referred to in paragraph 31, to determine the relationships between visual clarity and turbidity and between visual clarity and TSS. Clarity (as transmissivity) should be monitored in conjunction with turbidity during construction of the reclamation and a condition should be added that clarity should not be reduced by more than 50% of background (i.e. the value at the reference monitoring station) as a result of the discharge. Breaching of either the clarity or the TSS limit would require the same management response (see paragraphs 33, 35 and 44).

33 Whatever variables are used to set compliance limits for the effects of sediments suspended by construction activities, I agree with Gregor McLean that it would also be sensible to have additional, management triggers. These would identify when water clarity is decreasing sufficiently early so that mitigation measures can be put in place before compliance breaches occur, rather than just responding after a breach has occurred.

34 The modelling of sediment plume dispersion was based on maximum rates of sediment discharge from the reclamation (1 kg/s and 2 kg/s) that were consistent with meeting the proposed TSS limits at the edge of a 150-m mixing zone. The size of mixing zone proposed by the applicants is reasonable given the size of the mixing zone relative to that of Lyall Bay and the fact that the area within the zone consists predominantly of soft-sediment seabed, artificial hard substrata (the existing sea wall), or will be incorporated into the reclamation. Modelling suggested that concentrations of suspended sediment would exceed 25mg/L at the edge of the mixing zone under certain combinations of wind direction and point of discharge.

35 From a compliance perspective, the rate of discharge is not important as long as the TSS limit at the boundary of the mixing zone is not breached. However, proposed condition 65 requires that in the event of a breach of the TSS limits, the Consent Holder shall audit "…all erosion and sediment control measures within the construction area, including discharge or seabed disturbance locations, discharge rates and discharge method". In the event of a breach, information on the rate of discharge leading up to the breach would help identify the cause (i.e. whether it was the result of excessive discharge rates or of conditions downstream of the discharge. Because the assumed rate of discharge of suspended sediment is integral to the modelling of the extent of the sediment plume, I suggest that if TSS concentrations exceed the proposed management triggers (see paragraph 33, above), the actual rate of discharge (as concentration times flow rate) should be measured at the discharge point(s) in order to verify the assumptions of the model. This requirement should be added to proposed condition 65 or included in the condition specifying the response to breaching of the management conditions if these are added. Continuous monitoring of concentration of suspended sediment is probably not feasible because it requires taking discrete samples of the discharge and analysing them in the laboratory.

36 I would support a proposal to use methods, such as silt curtains, to reduce the risk (spatial scale) of adverse effects of suspended sediments. I am not qualified to comment on which methods might be most effective and feasible in the present context (including ability to stand up to sea conditions in the bay). However, silt curtains will concentrate the effects on habitats within each curtain because the sediment will be dispersed to a much smaller degree and much of it will settle out within the curtain, potentially smothering the seabed around the reclamation, including soft-sediments and reefs. Therefore, rather than surrounding the entire working area, the optimal arrangement would be to have silt curtains just around the discharge point(s). I would not expect the associated loss of habitat (i.e. the area within the curtain) would adversely affect birds, fish or marine mammals because of its limited size relative to the rest of the bay. Nor would I expect that the curtain would be a hazard to marine mammals because the curtains are substantial, stationary objects that could be detected and avoided and this risk would be minimised by the requirements of the wildlife management component of the EMMP (see paragraph 17). It would be appropriate to include measures to reduce the extent of sediment released from the reclamation in the ESCP.

37 The objectives of the EMMP shall be “to achieve a similar level of habitat and species diversity along the rock dyke post-construction of the Project comparative to communities on other reefs in Lyall Bay” (proposed condition 81).

38 It is proposed (consent condition 84) that mobile macroinvertebrates (including paua, kina, starfish and large gastropods) shall be collected from reefs within the reclamation area prior to the start of construction. These will be held in suitable seawater facilities on land and transferred back to new hard substrata once construction is completed.

39 Proposed condition 81 b) (iv) requires that the EMMP shall include “[m]ethods to determine whether remedial or mitigation measures have been successfully achieved”. As part of the response to this requirement, I suggest that, if feasible, molluscs collected from reefs under consent condition 84 should be tagged before release and their retention and survival on the new reef be monitored to assess the effectiveness of this mitigation measure. The proposed methods should be included in the EMMP. Without such an assessment, it will not be known whether any mitigation was achieved. This monitoring would need to be done within a shorter time-span of completion of the reclamation than the monitoring described in the following paragraph. A mechanism will also be required for obtaining information on any transplanted animals that are subsequently collected by recreational or commercial fishers.

40 It is further proposed (condition 85) that surveys of the reef and benthic environment along the rock dyke and other reefs in Lyall Bay be made three years after completion of construction, to determine the degree of recolonisation. This will provide an assessment of the success of the mitigation measures incorporated into the design of the rock dyke (condition 83). The details of these surveys should be set out in the EMMP, as required by proposed condition 81 b) (iv).

41 Given the relatively low diversity and abundance of macrofauna in the soft-sediment habitats of the bay, the design of post-construction surveys of these habitats around the rock dyke should give consideration to the inclusion of meiofauna. As noted in Technical Report 18 Ecological Character Report, meiofauna are more abundant and diverse and are potentially better indicators of environmental change than the macrofauna in the present context. The inclusion of meiofauna in the monitoring should be specified in the EMMP, as required by proposed condition 81 b) (iv)

Submitters' comments on the assessment of marine ecological effects

Department of Conservation

42 The submitter proposes an alternative limit for suspended sediment concentration:

> *When the sensor-calibrated suspended sediment concentration at the control site/s, using a 48-hour rolling mean, are less than 15 mg/L, then the maximum suspended concentration allowable at the compliance site/s shall be no more than 15 mg/L above the sediment concentration at the control site, up to a maximum concentration of 25 mg/L.*

43 The submitter also proposes that, should compliance conditions be exceeded for more than 48 hours, sediment discharge should cease, to prevent continued discharge of high concentrations while the actions required by proposed consent condition 65 are carried out. Monitoring of suspended sediment concentrations should also be done at stations along a gradient away from the discharge site(s) and at the boundary of the Taputeranga Marine Reserve.

44 The first of these proposals would constrain suspended sediment concentrations to less than the currently proposed maximum of 25 mg/L during periods when background concentrations are low (specifically, less than 10 mg/L). This seems a reasonable suggestion but I do not have a strong opinion on it because the current limit applies within the mixing zone, which is a relatively small area (150 m diameter) and modelling suggests that concentrations decline fairly rapidly beyond this (see Technical Report No. 17). Gregor McLean has proposed that discharge should cease if the 25 mg/L is breached and I agree that this would be suitably protective of ecological values in Lyall Bay. The number of monitoring stations has been discussed by Derek Goring and Gregor McLean in their reports.

45 The submitter proposes a condition requiring that any rocks on which is growing an undescribed red foliose alga, referred to in Technical Report No. 18, should be moved from the area that will be disturbed by the proposed work to an undisturbed area nearby before work begins. This follows a recommendation by NIWA[4] and I agree that this alga should be included

[4] Memo from Wendy Nelson (NIWA) to Mark James (Aquatic Environmental Services), 18 January 2016.

in proposed consent condition 84 to collect selected types of organisms within the reclamation area and (in this case) move them to a suitable undisturbed site where practical.

Friends of Taputeranga Reserve

46 The submitter (FoTR) notes that the composition of the fill for the reclamation currently unknown and raises concerns that it could be contaminated. Section 4.4.4.4 of the resource consent application5 states that the "[A]ll material used for the construction of the stone blanket and rock dyke will meet the Ministry for the Environment definition for "cleanfill…". Proposed consent condition 58 says that "[A]ll imported fill material to be used in the reclamations, rock dykes, groynes and temporary fill/surcharge shall be in accordance with the Ministry for the Environment "cleanfill" definition, as detailed in Publication ME418 'A Guide to the Management of Cleanfills, 2002' or subsequent updates".

47 The Ministry for the Environment (MfE) guide defines material as acceptable for cleanfill if it is "free of contamination". Contaminated soils are defined as "…all soils with contaminant concentrations greater than natural background levels at the cleanfill site". On this basis, it can be assumed that the material used for the reclamation would have no significant adverse ecological effects as a result of the presence of contaminants. However, there is some discretion allowed in the definition of acceptable material in the case of soils, dredging spoils, sand, gravel, rock, etc. with low levels of contamination. Soils, etc. with contaminant concentrations greater than background may be acceptable but should "…only be accepted at a cleanfill if specifically allowed by a resource consent or by a rule in the regional plan applicable to the area in which the cleanfill is operating…" and "…if the consent authority was satisfied that the effects would be minor".

48 I suggest that proposed condition 23, referring to the Construction Management Plan CMP), should specify that material used for the reclamation should meet the Ministry for the Environment's (MfE) cleanfill requirements and the CMP shall state that this can be achieved using an appropriate combination of information from previous contaminant testing, the history of the source location, and testing specifically for the proposed use (which should follow MfE guidelines).

[5] Mitchell Partnerships 2016. Wellington International Airport Ltd Proposed runway extension. Resource consents application. 28 April 2016.

49 FoTR are concerned about the possibility of deposition of sediment on rocky-reef and soft-sediment communities along the Lyall Bay shoreline. The relationship between the dispersion of suspended sediments discharged from the reclamation and their subsequent deposition is unpredictable. However, based on the modelling of sediment transport, I believe that any risk of significant deposition will be spatially and temporally limited. It is most likely to occur during periods of calm weather and in and around the mixing zone. Because of the exposed nature of Lyall Bay, any deposition will be temporary and will be removed by water movement during the next period of strong wave action. The potential ecological effects of this temporary deposition would be minor in my opinion.

50 FoTR also raise the potential issue of biosecurity risk associated with altered patterns of vessel activity in Lyall Bay. This was not discussed in Technical Report 19 and is a valid concern. The main sources of risk, in the form of introduction of non-indigenous species, are (1) biofouling on the hull of vessels and other equipment used in the construction of the reclamation and (2) organisms attached to material used to construct the rock dyke and possibly (through spillage into the surrounding marine environment) (3) the material used to infill the reclamation.

51 Construction of the proposed reclamation may create a biosecurity risk through: i) introduction of new harmful marine organisms (HMOs) in ballast water or as biofouling on barges and other construction vessels brought from outside the Wellington region, including from overseas and; ii) introduction of HMOs in material used as fill for the reclamation and other construction materials brought from outside the Wellington region. I recommend that a biosecurity management plan be developed (as part of either the EMMP or CMP) and should include measures to manage the biosecurity risk from biofouling on vessel hulls and equipment, and from construction materials. It should describe measures to be taken, to the satisfaction of GWRC, to prevent the introduction of species that are not native to the Wellington region:

- Compliance of vessels from overseas with the Ministry for Primary Industries' border standards, i.e. the mandatory Import Health Standard for ballast water[6] and

[6] Import health standard: ballast water from all countries. Ministry for Primary Industries, 16 December 2015. 8 p. Available at: https://mpi.govt.nz/document-vault/1167

the Craft Risk Management Strategy for vessel biofouling[7] (currently voluntary but due to become mandatory in 2018).

- Biosecurity risk assessments for all vessels, construction equipment and materials that will come into direct or indirect (e.g. via surface runoff) contact with the marine environment.

- Mitigation measures to address any risks identified.

52 FoTR's suggestion that monitoring of sediment plumes should include trigger levels that would result in management actions is discussed in paragraph 33, above.

Wellington Recreational Marine Fishers Association

53 The submitter (WRMFA) contends that Technical Report 18 "lacks basic information a report describing marine life should contain". I disagree with this assessment. The submitter lists a number of fish species that apparently occur in Lyall Bay, are caught by fishers (some in large numbers) and, in some cases, spawn in the bay.. The submitter also comments that "the NIWA report showing a lack of fish in Lyall Bay and supports our view presented throughout the marine reserve proposal that the marine reserve is in the wrong place", which seems to contradict the information they provide about the abundance of various fish species in the area.

54 The WRMFA's statement that "the marine species that live in the holes in the sand that NIWA had in a photo were not identified by NIWA" is not strictly correct, since it is very likely that the holes were made by the ghost shrimp *Biffarius filholi*, as demonstrated by their occurrence in samples reported in Technical Report 18.

55 WRMFA mention that Technical Report 18 "has failed to mention paddle crabs or describe why they are in Lyall Bay in great numbers". Mobile sandy sediments are suitable habitat for

[7] Craft Risk Management Standard: Biofouling on Vessels Arriving to New Zealand. Ministry for Primary Industries, Wellington, New Zealand, 15 May 2014. 8 p. Available at: http://www.biosecurity.govt.nz/files/regs/ships/crms-biofouling-standard.pdf.

this species, and their presence in the bay has been recorded previously (e.g., Wear & Haddon 1987[8]).

56 WRMFA point out that beds of bladder kelp (*Macrocystis pyrifera*) occur on some of the hard substrata that will be affected by the proposed reclamation. Technical Report 18 also notes the occurrence of this species, among other macroalgae. The submission says that "this forest cannot be cut down…", but I am not aware that this has been proposed. Some areas of bladder kelp would be covered by the proposed reclamation, and other areas within the mixing zone of the proposed discharge outfall from the reclamation may be adversely affected by suspended sediment. The latter area would be small (150 m diameter). In my opinion, bladder kelp is likely to colonise subtidal hard substrata provided by the proposed rock dyke, compensating for some of that lost beneath the reclamation, and the effect of that loss would be minor.

Te Ngaru Roa ā *Maui*

57 The submitter expresses concern about the possible presence of "toxins and DDT" in the material used to infill the proposed reclamation and the possibility that sediment plumes may reach the Taputeranga Marine Reserve. In my opinion neither of these is likely for the reasons given in paragraphs 47-48 and 24, respectively.

Paua Industry Council Ltd

58 The submitter suggests that any species present in the area of hard substratum that would be buried beneath the proposed reclamation, where possible and practical, should be translocated to Hue te Taka peninsula, to the east of the proposed reclamation. They also suggest that juvenile paua and kina should be translocated to the proposed new rock dyke to provide founder populations to accelerate recolonisation. I recommend that these suggestions should be considered in the EMMP as an alternative to the collection of larger invertebrates, holding and subsequently placing on the new structures, proposed by the applicant as mitigation of habitat (proposed consent condition 84). Consideration would need to be given to the source of paua and kina translocated to the rock dyke, and issues of genetic compatibility related to this (i.e.,

[8] Wear RG, Haddon M 1987. Natural diet of the crab *Ovalipes catharus* (Crustacea, Portunidae) around central and northern New Zealand. Marine Ecology Progress Series 35:39-49.

the introduction of non-local genetic stock). The source of the transplanted animals should be specified in the EMMP and in discussion with the Department of Conservation.

59 The submitter also proposes that extra artificial reefs be created in the middle of Moa Point Bay to provide a reef-like pathway to encourage recolonisation of the proposed new rock dyke and increase the amenity value for fishers and divers. I suggest this is also considered as part of the mitigation for the loss of hard habitat in the EMMP by, for example, modifying proposed condition 81 b) (i) to read "Habitat creation or enhancement along *and around* the rock dyke for selected species….".

Conclusion

60 In my opinion, the assessment by the applicant and their advisors of potential environmental effects on marine ecology is reasonable.

61 I agree with the overall conclusion that predicted adverse effects of the proposal are likely to be minimal from an ecological and conservation perspective.

62 However, there are residual ecological risks, particularly those resulting from uncertainties about construction design and methods at the time the assessment was made. These include effects resulting from suspension of sediments and the effectiveness of design of the dyke wall to encourage colonisation by animals and plants. Consequently, environmental monitoring during and after construction of the reclamation is important to ensure that predictions of limited adverse effects were accurate, and to trigger remedial action if necessary.

63 I consider that the conditions proposed address these risks as far as practical and I note that the recommendations that I have made in this report would assist in improving the conditions proposed by the applicant and further reducing any (marine) ecological risks.

Date: 7 October 2016

Donald Morrisey

. . . . . .

Donald James Morrisey

Appendix 3

Wellington International Airport proposed runway extension

Erosion and Sediment Control Assessment

Introduction

1 My full name is Gregor John McLean. I am a Director and Environmental Consultant at SouthernSkies Environmental Limited (SEL).

Qualifications and experience

1 I hold a Bachelor of Arts (Geography/Environmental Planning) from Massey University and a Post Graduate Diploma in Natural Resource Management from Lincoln University.

2 I have the status of a Certified Professional in Erosion and Sediment Control (CPESC Number 7628).

3 I have been in my position at SEL since 2003. My role at SEL involves the preparation of erosion and sediment control plans, expert advice, preparation of environmental management plans, monitoring ,site auditing and development, and delivery of erosion and sediment control training for contractors and consultants.

4 I have 20 years' experience in environmental management and erosion and sediment control, including:

4.1 Environmental auditing for Greater Wellington Regional Council and Auckland Council;

4.2 Development and delivery of International Erosion Control Association Approved Erosion and Sediment Control training to contractors, consultants and Council staff;

4.3 Preparation of chemical Flocculation Management Plans including soil bench testing;

4.4 Independent Erosion and Sediment Control expert for the Board of Inquiry on the Transmission Gully Project.

4.5 Erosion and Sediment Control expert for Greater Wellington Regional Council on the Mill Creek Windfarm, Wellington; and

Co-Author of the Erosion and Sediment Control Standard for the New Zealand Transport Agency (August 2010), and Auckland Council Erosion and Sediment Control Guideline (2015).

Involvement with the proposal

5 I have been engaged by Greater Wellington Regional Council (GWRC) to review and provide provide expert advice regarding erosion and sediment control measures during construction for the Wellington International Airport (WIAL) proposed runway extension application, dated 28 April 2016 (Project).

6 I visited the site on 27 July 2016.

Assessment

7 In assessing the application I have referred to the following documents:

7.1 WIAL Application:

7.1.1 APPENDIX D – Draft Construction Management Plan (**CMP**)

7.1.2 APPENDIX E – Draft Erosion and Sediment Control Plan (**ESCP**)

7.2 Technical Report 7 - AECOM – Concept Feasibility and Design Report

7.3 Technical Report 16 - NIWA – Marine Sediments and Contaminants (Lyall Bay)

7.4 Technical Report 17 - NIWA – Technical Report on Coastal Hydrodynamics and Sediment Processes in Lyall Bay

7.5 Technical Report 18 - NIWA – Ecological Character Report

7.6 Technical Report 19 - Aquatic Environmental Sciences (AES) – Assessment of Ecological Effects

7.7 Further information on the assessment of environmental effects provided by Mitchell Partnerships to GWRC 13 June 2016 (letter sent by email from John Kyle, Mitchell Partnerships to Jude Chittock, GWRC, 13 June 2016).

Effects of Construction

8 Potential effects of sediment discharges are described in the AEE and in the Technical Reports.

9 The three phases of construction for the runway extension where there will be sediment discharges are associated with the ground improvements (stone columns), the creation of the rock dyke and reclamation fill. In addition, the land based works (removal of the hillock and civil works) also have the potential for sediment related effects.

10 The need for ground improvements is not known at this stage. The ground improvement methodology will depend on the type of fill materials used for the reclamation and could include stone columns and/or vibro-compaction (Technical Report 7 – Appendix L).

11 The installation of the stone columns (if required) is to be undertaken by ramming a pile to the required depth and then installing stones inside the casing, after that the casing is removed. There will be localised minor sediment discharges as the casing is rammed in and then removed. The sediment related effects of vibro-compaction have not been assessed by the Applicant, however sediment raleted effects can be managed with silt curtains.

12 To construct the runway platform, a full section rock dyke will be built around the perimeter of the runway extension. The construction of the rock dyke has the potential to have sediment related effects during the placement of materials. This will dependent on the final construction methodology and the type of material used for the construction.

13 The assessment of effects is based on the rock dyke material being ‘cleanfill’ and sand-sized material (0.2mm and above). The plume modelling undertaken by NIWA (Technical Report 17) excludes the discharge of sand-sized material which they state will settle relatively quickly

and only have a small contribution to changes in receiving-water turbidity. There will still be localised turbidity effects as a result of the placement of the dyke material regardless of the minimum particle size. These effects can be considered minor provided appropriate mitigation measures, such as a silt curtain, is installed.

14 The reclamation fill has the greatest potential for sediment related effects on the marine environment. NIWA (Technical Report 17) identifies that the main source of turbidity in the water column would be from any clays, muds, or silts present in the fill material, even if they are only a small percentage of material by volume. I agree with this statement.

15 Technical Report 7 states that "The type of material used within the reclamation fill will be dependent on the Contractor's programme as fine particle materials will take longer to settle within the reclamation than coarse particle materials. Locating the weir at the opposite end to the filling operation will provide the mechanism to enable a large portion of settlement to occur inside the confined area. The sea conditions within the reclamation area will be more settled allowing the Contractor to actively manage the suspended settlement in a more controlled environment". I agree with this statement however I provide further comments on the erosion and sediment control devices in the Mitigation section of this report.

16 The rock dyke is to act as a containment barrier with dewatering via a weir/ decant arrangement. The key issue here is to ensure that the rock dyke is sealed to allow only dewatering via the weir/ decant. It will be critical that the first stage of reclamation achieves this.

17 Dewatering will be an ongoing operation as fill is placed, initially it will be displacement of contained sea water until such time as the fill is above Mean High Water Springs (MHWS), where rainfall will result in discharges from the surface of the reclamation. The draft construction programme indicates that the reclamation filling could take between 5 to 18 months depending on the source of material. In this regard there will be sediment discharges for the duration of the reclamation operation. This is further discussed below.

18 Delivery of reclamation material via the road network has the potential to cause tracking of dirt onto the road from the trucks. There are a number of options available to ensure that this does not occur. The applicant has suggested that a wheel wash or alternative measure for cleaning

vehicles be installed at exit points from the construction site and stockpile areas if applicable and that street sweeping of roads within the vicinity of the construction site entry and exit points will occur. Provided this is addressed through the management plans required as conditions of consent, the effect of this on the receiving environment should be less than minor.

19 The land based activities (removal of the hillock and civil works) also have the potential to generate sediment as a result of earthworks. I consider that erosion and sediment control measures installed and maintained in accordance with the GWRC Erosion and Sediment Control Guidelines - September 2002 (ESC Guidelines) will ensure that these effects are minor.

Mitigation Measures

20 The applicant proposes to manage sediment discharges and water quality throughout the construction phase of the Project via a Construction Management Plan (CMP) and an Erosion and Sediment Control Plan (ESCP). A Draft of these plans is attached as Appendix D and E of the AEE.

21 The purpose of the CMP is to describe the environmental management and monitoring procedures to be implemented during the construction phase of the Project. The CMP states that the management of sediment discharges throughout the construction phase will be implemented via the ESCP.

22 The ESCP is proposed to specify the erosion and sediment control measures that will be implemented during the construction phase of the Project, and confirm the monitoring obligations and actions that will be undertaken should there be any exceedance of the turbidity limits.

23 The draft ESCP describes a tool box of physical measures to reduce sediment discharges from works within the Coastal Marine Area (CMA) and above MHWS.

24 For works above MHWS the ESCP is focussed on the prevention of sediment as a result of road haulage of reclamation materials. There are other aspects (such as removal of the hillock and civil works associated with Moa Point) that also need to be considered. I consider that erosion and sediment control measures installed and maintained in accordance with the ESC

Guidelines will ensure that these effects are minor. In this regard proposed condition 61 requires a modification to ensure that the 'ESC are designed, installed and maintained in accordance with the ESC Guidelines'. This will ensure any sediment related effects of this operation are appropriately mitigated.

25 For works within the CMA the ESCP identifies a number of ESC devices that are available:

25.1 Floating sediment curtains or floating silt fences positioned around the perimeter of the work areas, including discharge points;

25.2 The use of material that is defined as "clean fill" as the only material that is deposited directly into the water;

25.3 The use of weirs and sediment traps at reclamation discharge points to capture suspended sediments;

25.4 Marine equipment that minimises material loss;

25.5 Marine equipment and construction methodologies that minimise sea floor disturbances

26 I agree that the above measures will assist in managing the seidment related effects of the works.

27 The key measures in my opinion are the floating silt curtain for all marine based works, the weir/ decant system coupled with the proposed construction methodology and fill source/ quality.

28 Floating silt curtains isolate sediment-laden waters, allowing sedimentation of disturbed waters within the enclosed area and can be effective in controlling turbidity in coastal environment. There are significant cost, design and maintenance issues associated with them, especially in a coastal environment like Lyall Bay. Regardless of this, I am of the opnion that they will be required for all marine based works to assist in reducing sediment related effects. I agree with

Mr Morrisey's comments that the silt curtains will concentrate the effects on habitats isolated within the curtain and that the silt curtain should be positioned around the discharge points.

29 The weir/ decant system will operate once the perimeter rock dyke is in place. Essentially the inner reclamation area will be a large pond and in my opinion discharges should be controlled via floating T-Bar decants. The ESC Guidelines provides design parameters that need to be met to achieve good sediment treatment, these include decant rates, length to width ratios and positioning of decants. These parameters should be incorporated into the management of sediment discharges from the reclamation and therefore should be included in proposed condition 61.

30 The decant system should have a shutoff valve installed so that in the event of a non-compliant discharge, the effects can be actively managed or ceased if required.

31 Wind and wave action can resuspend sediment within the water column. There are measures that can be installed to reduce this effect. Floating booms constructed from non-perforated novacoil strung across the impounded water can assist in reducing these effects. It is recommended that this be considered by the applicant through the ESCP.

32 Given the uncertainty of discharge quality and sediment related effects, a precautionary approach should be taken, in this regard chemical treatment of impounded water should also be considered. Chemical treatment could asisst in the settlement of any sediment laden runoff and would further enhance the discharged water quality. There are a number of chemical treatment options available that could be incorporated into the design and a condition requiring a Chemical Treatment Plan should be imposed.

33 Auckland Councils Draft Technical Publication - Overview of the Effects of Residual Flocculants on Aquatic Receiving Environments states that "The generic characteristics of flocculants and their propensity for toxicity to be lessened by particulate and dissolved organic matter including humic substances, and by neutral range pH. Saline water carries a strong signature of these characteristics and it is therefore likely that residual flocculants would be rapidly inactivated. Such bound residuals are stable and do not release or breakdown into toxic components. Additional to this is the reality that any discharges of residual flocculants are likely to be highly infrequent and of a very small volume relative to the dilution potential of the

receiving waters (especially in the coastal marine area)". In this regard the environmental effects of using chemical treatment are considered to be minor.

34 The construction methodology and source/ quality of fill will also have an influence on sediment discharges. Given the uncertainty of the source/ quality of fill, other then it needs to meet the definition of 'cleanfill' the focus should be on the measures to manage the discharge.

35 The construction methodology will need to ensure that the rock dyke is sealed to control sediment related discharges via the decant system and will need to ensure that progressive stabilisation can be undertaken. Progressive stabilisation of the reclamation should reduce the exposed surface area, erosion of the fill material and subsequent sediment discharge.

36 The material imported for the reclamations, rock dykes, groynes and temporary fill/surcharge shall be in accordance with the Ministry for the Environment "cleanfill" definition, as detailed in Publication ME418 "A Guide to the Management of Cleanfills, 2002" or subsequent updates. Condition 58-59 require the material to meet this definition and that a log recording the source of material be maintained. I also consider that a testing regime be implemented to ensure that all material is 'cleanfill'. This could either be at source of material or based on a test per number of truckloads.

37 I consider that proposed Conditions 61- 63 need to be modifed to include the matters that have been discussed above in Paras 30 – 35.

Monitoring

38 The application states that an adaptive management approach to monitoring turbidity against the existing background limits will be required to ensure water quality effects from sediment plumes are appropriately mitigated. This approach is to be contained within the ESCP.

39 Adaptive management enables a 'plan-do-check-act' approach to be undertaken whereby the ongoing monitoring and reporting that is proposed creates a continuous feedback loop from the effects being created, allowing for the most appropriate solution to be utilised or change of method made for any particular environmental effect.

40 An adaptive management approach requires setting of clear objectives, monitoring, research and review mechanisms through consent conditions. Once monitoring has occurred, the assessment of monitoring results will lead to “adapted” development and operation to ensure any effects of the activity are at acceptable levels.

41 Technical Report 19 identifies the monitoring in relation to sediment discharges that is to be included in an Environmental Monitoring Plan (EMP). It outlines the following:

41.1 Monitoring of turbidity at a compliance site and a control site during the reclamation to ensure that the TSS in the discharge plume is less than 25 mg/L beyond 150 m when the control site is <15 mg/L and a maximum of 10 mg/L above levels at the control site.

41.2 Monitoring of the extent of the plume ring construction to confirm that levels and extent are as predicted.

42 It is noted that there are no proposed conditions that include a separate EMP, however this recommended monitoring has been incorporated into Conditions 61 - 63, the Erosion and Sediment Control Plan and Monitoring. I consider this to be appropriate.

43 The ESCP states that monitoring of turbidity shall be undertaken at a compliance and control site as shown a map which shall be prepared and attached to the ESCP.

The monitoring at both sites shall include:

1. Continuous (telemetered) turbidity sensors and loggers shall be installed, operated and maintained.

2. The logged data shall be processed and assessed by the Consent Holder on a daily (24-hour) basis.

3. Data processing to extract a 48-hour rolling median, replacing the earliest 24-hour data record with the latest 24-hour data.

During any works in the coastal marine area (**CMA**) or dewatering discharges to the CMA, compliance with the turbidity limits set out in the conditions will be adhered to. If monitoring detects an exceedance of the turbidity limits then the process in the conditions and reporting requirements set out in the ESCP shall be followed.

44 The ESCP outlines that in the event that monitoring identifies an exceedance of the recommended suspended sediment limits, then it will be the responsibility of the contractor to ensure that the work area and associated sediment treatment and prevention devices are thoroughly inspected to ensure there is no obvious sign of fault. If any obvious sign of fault or failure is identified then this shall be remedied as soon as is practicable, and reported to the GWRC. Condition 65 outlines the actions that are required where an exceedance has occurred. These actions will need to be modified to incorporate actions that will be required for early warning triggers as suggested in Para 46.

45 Other experts have provided an assessment of the proposed discharge triggers, sediment modelling, monitoring locations and mixing zone. It is noted however that the modelling undertaken and subsequent limits proposed by the applicant are sediment loads (Total Suspended Solids - TSS) whereas the monitoring equipment proposed in the ESCP is a continuous turbidity (Nephelometric Turbidity Units - NTU) sensor (telemetered). There are complexities with the conversion of turbidity data to concentrations of TSS. In addition, it is unlikely that a single source of fill will be used therefore any conversion would require constant recalibration as fill sources change. In my opinion continuously monitoring turbidity would provide real time data which would then enable appropriate adaptive management actions to be undertaken in a timely manner when there are exceedances of the discharge triggers.

46 The triggers proposed (Condition 64) are not adaptive management triggers, they are compliance triggers and therefore there is a need for early ‘warning’ triggers to be established. These would enable an adaptive management process to be implemented prior to an effect ocurring, rather then a reactive management process during the construction phase. Early warning triggers would allow the contractor to make any necessary changes to site management prior to the compliance trigger being breached. If early warning triggers were established then the ESCP could also set out these actions. The actions could be wide ranging, however would normally include a full audit of the sites controls and undertaking any

necessary maintenance. Essentially if the compliance trigger is breached then the first course of action should be cease works and discharge.

Conclusion

47 Given the uncertainty of discharge quality and sediment related effects, a precautionary approach should be taken to the management of sediment and discharge limits/ triggers.

48 The proposed management plans (CMP and ESCP) are part of the key aspects to managing sediment related effects of the development. It is critical that the information contained in these plans addresses the areas of uncertainty regarding sediment discharges. Adaptive management of the site is another critical aspect to managing these sediment related effects.

49 Given the proposed monitoring is utilising a turbidity sensor, the measurement of NTU rather then TSS would enable real time data to be used and therefore adaptive management actions to be undertaken in a timely manner.

50 The proposed conditions go some way to addressing the adaptive management triggers, and information requirements for the management plans. I consider that the conditions should be modified to include the following:

50.1 Condition 64 - Early warning triggers in addition to the compliance trigger, coupled with this would be the actions associated with the early warning triggers.

50.2 Condition 61 should include a reference to the ESC Guidelines as a minimum standard in the development of the ESCP. In addition the condition should be more specific in terms of the requirement for the decant system (including shut off valve) from the reclamation, the requirement for a floating silt curtain for all marine based works, progressive stabilisation and measures to reduce wind and wave action within the impounded water of the reclamation

50.3 A condition for a Chemical Treatment Plan should be imposed

50.4 Condition 58-59 to include a testing regime to confirm that all imported material is classified as ‘cleanfill’

50.5 A detailed construction methodology for the reclamation works, including how it is proposed to ensure that the rock dyke is sealed. This should be incorporated into Condition 22

51 Provided modifications were made as discussed above, the effects of sediment discharges could be appropraitely managed.

Date: 7 October 2016

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Gregor John McLean

Appendix 4

WELLINGTON AIRPORT RUNWAY EXTENSION

Peer Review of Noise Reports

Introduction

1 My full name is Nigel Robert Lloyd, and I am an acoustical consultant.

2 I have been engaged by the Greater Wellington Regional Council (**GWRC**) and Wellington City Council (**WCC**) to peer review the various technical reports submitted with the application for the extension of the runway at Wellington International Airport (**The Airport**), and to consider the issues they raise from the perspective of noise (and vibration).

Qualifications and Experience

3 I am an acoustical consultant with Acousafe Consulting & Engineering Limited, a position I have held since 1985. I have a degree in mechanical engineering gained at the University of Wales, University College Cardiff in 1976.

4 Prior to my current position, I was employed by the Industrial Acoustics Company in the UK as an acoustical consultant between 1977 and 1980 and then spent five years as the Department of Labour noise control engineer in New Zealand, advising the safety inspectorates on occupational noise management and control. I have a total of 39 years' experience as a noise control engineer/acoustical consultant.

5 I advised the local residents association (**RANAG**) on the Wellington International Airport District Plan appeal in 1997 and have advised Manukau City Council on Auckland Airport for the Operative Plan, and Palmerston North City Council and Rotorua District Council on their airport plan provisions respectively.

6 In 2011, I advised the Ministry of Education during the appeals on the Queenstown District Plan Change for the Queenstown Airport.

7 In 2004, I advised Corrigan Commercial Ltd on an appeal by Wellington International Airport Ltd against the establishment of an apartment building in the Miramar Suburban Centre (ENV

W105/04). Over the years, I have been involved in advising on individual new dwelling/extension applications regarding aircraft noise insulation requirements.

8 I advised WCC on the original resource consent application for Moa Point Wastewater Treatment Plant and advised during the design and construction of the plant. I am still involved in undertaking regular compliance noise monitoring for the plant including night-time (2am) monitoring at Kekerenga Street.

9 I advised Auckland Council on Topic 45 of the Proposed Auckland Unitary Plan during the hearing process, including proposed plan provisions for Ardmore Airport, Auckland International Airport, Whenuapai Airbase, North Shore Airfield, Kaipara Flats Airfield (near Warkworth), and Parakai Airfield (near Helensville).

10 I am a Member of the Acoustical Society of New Zealand.

Involvement with the Proposal

11 In February 2016 Acousafe Consulting and Engineering Ltd was engaged by GWRC and WCC to undertake a preliminary review and provide pre-application comments regarding noise effects associated with the Wellington International Airport (**The Airport**) proposed runway extension.

12 Following receipt of the application and assessment of environmental effects I recommended that further information be sought from the applicant regarding inconsistencies in Technical Report 10 about ambient noise levels. This information was sought from the applicant in the GWRC letter dated 20 May 2016. Information was also sought about compliance with the Proposed Natural Resources Plan (**PNRP**) as well as the Operative Regional Coastal Plan (**RCP**). The applicant was asked about the weightings that had been given to the options of delivery of fill by sea compared by road. This was with a view to assessing the consequent reduction of truck noise that delivery by sea would provide.

13 Subsequent to receiving the Mitchell Partnership reply dated 13 June 2016, I sought further clarification in my email of 15 June 2016 (GWRC email of 16th June to the applicant) regarding inconsistencies I perceived between the information being provided and the original Table 6 of AECOM's Technical Report 10. In their memorandum dated 27 June 2016, AECOM explained

the inconsistencies between the new data and the original data in Table 6 (where AECOM had made some new assumptions about construction noise since those in Technical Report 10) and also provided a separate table setting out average background sound level measurements. When I asked Mr Humpheson of AECOM about the background sound level table he indicated that the LA90(0100-0600) for Wednesday 11-03-2015 was incorrect.

14 I have read the draft report of Dr Michael Steven advising Councils on the impacts on recreation usage and I rely on that report to the degree I set out below.

15 I visited the area surrounding the site with GWRC officers and other experts, on the morning of Thursday 30 June 2016. This included the Moa Point residential area and shoreline, the Lyall Bay shoreline, Melrose, Miramar and Strathmore Park, including Kekerenga Street, Ahuriri Street and the walking track above the wastewater treatment plant.

16 The Application Noise Documentation

17 I have reviewed the following reports:

a) The Assessment of Environmental Effects (**The AEE**) which includes an assessment of construction and haulage route effects in Section 7.7 and an assessment of operational noise (post construction under 7.17).

b) The assessment of effects on recreation in Technical Report 6. Wellington International Airport Proposed Extension – Assessment of Effects on Recreation by TRC (**The TRC Report**) dated 25 April 2016.

c) The construction noise assessment in Technical Report 10 of the application prepared by AECOM (**The AECOM Report**).

d) The aircraft noise assessment in Technical Report 26 prepared by Marshall Day Acoustics (**The MDA Report**).

e) The Mitchell Partnerships reply dated 13 June 2016 to Council's Further Information Request dated 10 May 2016.

f) The Mitchell Partnerships reply dated 1 July 2016 which contained:

(a) Attachment 1 - The AECOM Memorandum dated 27 June 2016 which is in response to Council's Further Information Request dated 16 June 2016 relating to predicted noise levels and baseline noise data.

(b) Attachment 3 - The AECOM Memorandum dated 1 July 2016 which is in response to Council's Further Information Request dated 20 May 2016 considering the noise implications of utilising marine based fill materials (barges).

g) The Mitchell Partnerships Memorandum dated 15 July with further clarification of Technical Report 10 (Location of Receivers and Location of Measurements).

18 I identify the areas of exclusion from my direct expertise below:

a) My peer review considers the methodology and approach used by Marshall Day Acoustics in the Operational Aircraft Assessment (Technical Report 26) but I am not an expert in the actual aircraft numbers forecasts. These forecasts have been undertaken by InterVISTAS and I have relied on them.

b) My review does not cover underwater impacts of construction noise (or vibration) on marine life.

c) I note also that the AEE does not consider the impact of vibration effects to be significant. I have not undertaken a separate peer review of the vibration effects but I have recommended a condition for vibration in the event that it does become an issue. Having said that, I am not an expert in environmental vibration.

19 There are two aspects of noise resulting from the proposed runway extension. The first relates to the noise of construction and the second from the changes to the aircraft noise once construction is complete, these are discussed in turn below.

The Regional and District Plan Noise Provisions - Construction

20 Both the RCP and the Wellington City District Plan (**District Plan**) require construction noise to comply with NZS 6803P:1984 *The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work* (**NZS 6803P**) which was a Provisional Standard. This Standard was superseded and replaced by a full New Zealand Standard NZS 6803:1999 *Acoustics – Construction Noise* (**NZS 6803**).

21 The *general conditions in section 5.7.2 of the* PNRP references *NZS 6802:2008 Acoustics – Environmental Noise* as the standard for measuring and assessing noise, and that any construction activities shall meet the limits specified in Table 1 of *NZS 6803:1999 Acoustics – Construction Noise.* All activities within the CMA are required to meet these noise conditions or adopt the best practicable option to ensure the emission of noise does not exceed a reasonable level (refer to Policy 150 of the PNRP).

22 I would note that Table 1 of NZS 6803:1999 referred to in section 5.7.2 of the PNRP is not a table of noise limits but is a list of symbols and terms used in the Standard. The relevant table is actually Table 2 which I include as follows:

Table 2 – Recommended upper limits for construction noise received in residential zones and dwellings in rural areas

Time of week	**Time period**	**Duration of work**					
		Typical duration (dBA)		**Short-term duration (dBA)**		**Long-term duration (dBA)**	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Weekdays	0630-0730	60	75	65	75	55	75
	0730-1800	75	90	80	95	70	85
	1800-2000	70	85	75	90	65	80
	2000-0630	45	75	45	75	45	75
Saturdays	0630-0730	45	75	45	75	45	75
	0730-1800	75	90	80	95	70	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75
Sundays and public holidays	0630-0730	45	75	45	75	45	75
	0730-1800	55	85	55	85	55	85
	1800-2000	45	75	45	75	45	75
	2000-0630	45	75	45	75	45	75

Table 3 – Recommended upper limits for construction noise received in industrial or commercial areas for all days of the year

Time Period	Duration of work		
	Typical duration	Short-term duration	Long-term duration
	L_{eq} (dBA)	L_{eq} (dBA)	L_{eq} (dBA)
0730-1800	75	80	70
1800-0730	80	85	75

23 The runway construction will mostly occur in the CMA, to which the RCP and the PNRP applies. There are land based depots and stockpile areas provided for in the proposal and other land-based excavation works (such as the removal of the small hill between Freight Drive and Stewart Duff Drive). These are outside the CMA.

24 The AECOM Report sets out the provisions of the RCP which, under 14.1.3(5), direct that construction noise "will meet standards specified in Table 1 of NZS 6803P:1984". There is a typographical error in the RCP in this regard (it refers to "198" instead of "1984").

25 In 3.10 Definitions, under *Noise Emission Levels*, the District Plan separately identifies noise from construction, maintenance and demolition activities, including those associated with the urgent repair of utilities to maintain continuity of service, on any site or on any road as needing to comply with, and be measured and assessed using, the recommendations of NZS 6803P:1984. When WCC regulate construction noise under the District Plan it is general policy to not have specific rules around construction noise, but rather, to control unreasonable noise through s16 of the RMA, and to use the NZS 6803P:1984 standard recommended noise limits as a baseline on what is reasonable.

26 As stated above, the provisional 1984 version of the Construction Noise Standard has been replaced with a full 1999 version. The limits are ostensibly the same between the two Standards except the 1999 version replaces the previously used L_{10} descriptor with L_{Aeq}. I agree with the applicant when I consider that the later 1999 full version of NZS 6803 Standard is the most appropriate one to use in this circumstance.

27 Table 2 of NZS 6803:1999 recommends upper limits for levels of construction noise received in residential areas and Table 3 recommends limits for industrial or commercial areas. As such, there is nothing specific in NZS 6803:1999 that relates to the CMA or its users.

28 NZS 6803:1999 provides (7.2.5) for the limits in Table 2 to be used to protect other specific noise sensitive activities at certain hours of the day. The emphasis for the use of the CMA for recreation is primarily on daytime and the predictions are that the limits in Table 2 can be met at all times during the daytime, with a reasonable margin of safety. I would consider that some exceedance, within reason, would be acceptable in waters close to the construction area and, say, at the southern end of Moa Point Road. However, it would be reasonable to expect 70 dB

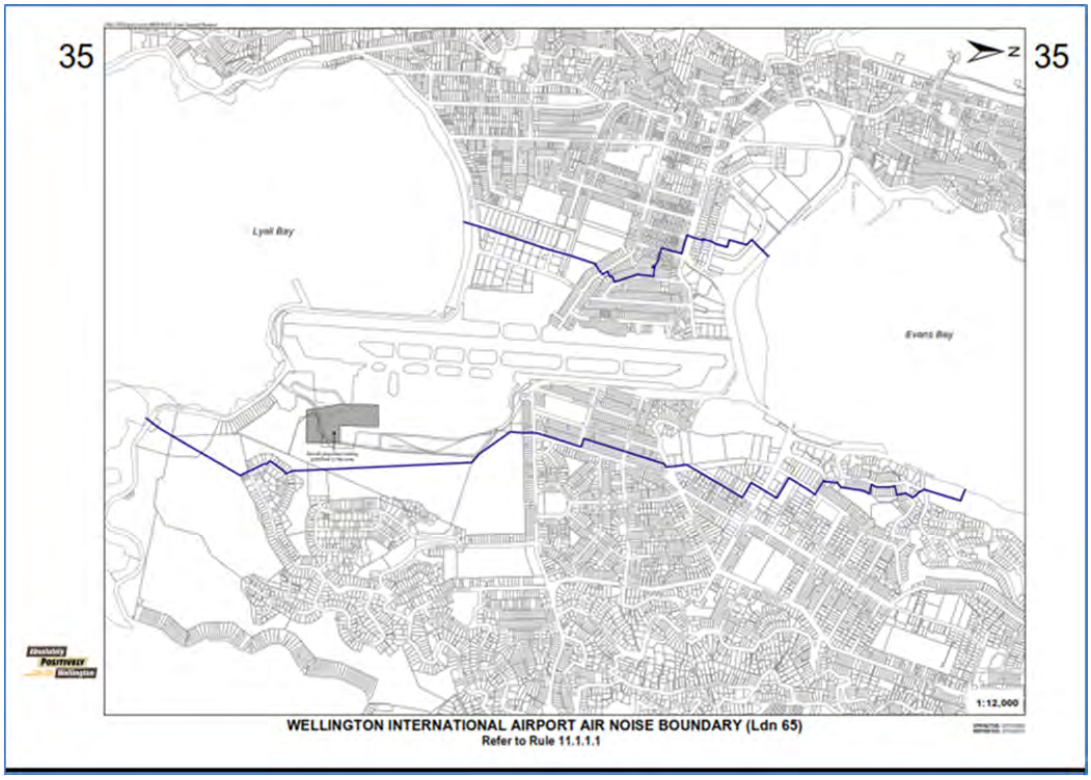
L_{Aeq} and 85 dB L_{Amax} (0730 to 2000 hrs) construction noise limits to be met at Lyall Bay Beach to protect people using the beach during the day. After 2000 hrs NZS 6803 applies the night-time noise limits (45 dB L_{Aeq} and 75 dB L_{Amax}). These are too strict to use to protect late evening beach goers. However, these noise limits will apply at nearby residential areas providing a defacto protection for beach and surf users during the late evening.

29 I concur with the approach taken in the Application (and in the AECOM Report) that NZS 6803:1999 *Acoustics - Construction Noise* provides appropriate recommended guideline limits for construction works and I also agree with the AECOM Report that the extended nature of the proposed works (up to 48 months) means that those guideline limits should be treated conservatively. I consider that these limits can be applied at residential dwellings, commercial properties and a limit of 70 dB L_{Aeq} and 85 dB L_{Amax} (0730 to 2000hrs) at Lyall Bay beach to protect beach users. This control will also protect surfers using Lyall Bay (to a slightly lesser degree) who will normally be closer to the beach than to the construction works.

30 I do not consider that the construction noise limits should be applied to construction traffic on roads. I discuss construction traffic later in my report and I consider that construction traffic noise can be appropriately controlled using a traffic management plan

The District Plan Airport Noise Provisions

31 Turning to aircraft noise; the applicant does not seek to alter the District Plan airport noise restrictions to accommodate the proposed runway extension project. Chapter 11A of the District Plan contains the airport noise rules and this section is included as Appendix C of the MDA Report. Rule 11.1.1.1.1 (See Appendix A) requires airport operations to be managed to ensure that the rolling 90 day average 24 hour night-weighted sound exposure does not exceed a Day/Night Level (L_{dn}) of 65 dBA outside the Air Noise Boundary (**ANB**) shown on District Plan Map 35.


35
35
N
Lyall Bay
Evans Bay
1:12,000
WELLINGTON INTERNATIONAL AIRPORT AIR NOISE BOUNDARY (Ldn 65)
Refer to Rule 11.1.1.1

WHO Guidelines

32 The World Health Organisation has extended its 1999 environmental noise recommendations[1] with 2016 guidelines on night noise[2].

33 The 1999 WHO Guidelines recommend that, to protect against sleep disturbance effects, inside limits should be based on a combination of 30 dB $L_{Aeq(8hr)}$ and 45 dB L_{Amax}. These translate to outside levels of 45 dB $L_{Aeq(8hr)}$ and 60 dB L_{Amax}, allowing a 15 dB reduction through ventilating windows.

34 The 2016 guidelines consider long term (1 year) average night L_{Aeq} which it calls L_{night}. The guidelines recognise that the relationship between $L_{night\text{-}outside}$ and sleep effects is not straightforward because short-term effects are mainly related to maximum levels per event inside the bedroom ($L_{Amax,inside}$). A summary of effects and threshold limits of effects is set out in Table 5.2 of the 2016 guidelines. The threshold for sleep effects such as sleep quality and well-being are stated to be in the range 40-42 $L_{night\text{-}outside}$ with a threshold for complaints at 35 dB $L_{night\text{-}outside}$. Health effects, such as hypertension and myocardial infarction, start to occur at a threshold of 50 $L_{night\text{-}outside}$. Note that these are yearly averages.

35 For single events, biological effects such as EEG awakening and onset of motility occur at noise levels of 32-35 dB $L_{Amax,inside}$. Waking up too early in the morning has a threshold of 42 dB $L_{Amax,inside}$ according to the 2016 WHO Guidelines. Note that these are L_{Amax} inside thresholds.

36 The WHO guidelines imply that the NZS 6803:1999 night-time noise limits need to be treated as maximum limits and should not be relaxed.

Construction Activity Noise

37 The Foreword of NZS 6803:1999 reinforces that the generally acceptable level of intrusive noise in the community is assessed under the provisions of NZS 6802. It goes on to identify that construction noise is outside the scope of that Standard because it usually cannot be kept within the specified limits. The Standard states "*although this may mean that the noise is*

[1] WHO Guidelines for community noise. World Health Organization, Geneva. 1999
[2] WHO Night Guidelines for Europe, WHO Regional Office for Europe, Denmark. 2016.

undesirable, it is not necessarily unreasonable when all of the relevant factors are taken into consideration. Construction noise is an inherent part of the progress of society".

38 I note that, in his submission, Mr Stan Andis takes '*the strongest possible exception to this statement*'. He considers that there are no guidelines or exceptions written into any Construction Noise Standard or District Plan Rule that would provide for '*progress of society*' to take priority over excessive construction noise impacts. The point is that the construction noise limits are significantly greater than the normal day to day guideline limits (found in NZS 6802). It is the less strict noise limits in the construction noise standard (than NZS 6802) which recognise that construction noise might be *undesirable* but which may not be *unreasonable* in the circumstances.

39 Critically, the Foreword in NZS 6803:1999 then goes on to state that communities will usually tolerate a higher noise level on the basis that it is of limited duration, is no louder than necessary and occurs within appropriate hours of the day. The construction works associated with the runway extension are going to be challenging for the community because they will take a number of years to complete and need to take place at night because of the operational requirements of the airport. The location of the site also makes it impossible to apply normal noise control strategies (e.g. noise barriers are impractical).

40 There are two main aspects of construction noise from the proposed runway extension:

a) Noise associated with the construction and support activities (mainly occurring at the southern end of the airport), and

b) Noise associated with the transportation of construction materials and fill on local roads and on the State Highway.

41 Section 4 of the AECOM Report discusses the ambient noise monitoring locations that were selected near to the airport. The monitoring locations include the nearest residential locations to the runway extension (and some further afield), recreation sites, and sites near to the potential truck access roads (See Appendix B of this report).

42 Unattended readings were undertaken on the front deck at 36A Moa Point Road and attended readings were undertaken at 8 sites around the airport as described in 4.3 (and specifically described in Appendix B of the AECOM Report). These included:

M1 – on the pavement outside 36 Moa Point Road
M2 - Moa Point opposite the layby on the verge nearest the shore line (opposite No.36)
M3 - Dorrie Leslie Reserve, opposite No.290 Queens Drive (on the opposite side of Lyall Bay)
M4 - Beside No.244 Coutts Street (which is at the north western side of the airport runway)
M5 - By the side of No. 23 Bridge Street in Gaudin Street (west of the airport runway)
M6 – Opposite No.10 Bridge Street on open space
M7 – near No.73 Ahuriri Street (at the corner with Kekerenga Street)
M8 – Outside 21 Bunker Way

A map and a photograph of each survey location is included in Appendix B of Technical Report 10. I note that there are some discrepancies between the locations in Appendix B of the Technical Report 10 and the Mitchell Partnership memorandum dated 15 July 2016. The location of M8 is shown to be at the junction of Nuku Street in Appendix 3 but outside 21 Bunker Way in the Mitchell Partnerships Memorandum, and Appendix 3 page B-7 wrongly identifies the location of measurement M1 as outside 26 Moa Point Road rather than 36 Moa Point Road (as is shown in the photograph it references). I do not consider that these inconsistencies make a material difference to the assessment.

43 The unattended readings were for a period of 6 days, including one weekend, and the attended readings were generally of a duration of 15 minutes or 30 minutes during the afternoon of 9 March 2015 and 15 minutes between midnight and 3.12am on 25 March 2015. The notes of Table 4 of the AECOM Report for night-time noise monitoring identified the presence of "*construction noise in distance dominant*". I am aware that there was significant night-time construction work taking place at the airport at the time although there is no link to the construction work being airport related in the reports and memoranda.

44 The sound environment in the area is highly influenced by the airport and the sea. Airport operations generally cease by about 2am but can be replaced by runway resurfacing noise or other night-time construction works taking place at the airport. Aircraft operations start up again before 6am with the first flights leaving after 6am. The sound from the sea depends on

the state of the surf. A significant southerly surf can generate high background sound levels at locations close to the south coast (including at Kekerenga Street and Ahuriri Street which overlook the airport and Lyall Bay beyond). However, the baseline noise data for Moa Point for the 6 days in early March 2015 (AECOM Memorandum dated 27 June 2016) show a good variation in sound measurements. For example, the results for Friday 13 March 2015 show moderately quiet night-time LA90 (0100-0600) background sound level of 31 dB at which time the LAeq was 37 dB. At the other extreme on Sunday 15 March 2016 the night-time LA90 (0100-0600) background sound level was 42 dB with the LAeq was 45 dB.

45 Appendix C of Technical Report 10 also includes noise measurements for the whole year. This shows a wide variation at night-time, when aircraft are not operating for much of the time.

46 Table 5 of the AECOM Report summarises the Long Term (6 day) readings for 36A Moa Point Road. The descriptor is L_{Aeq}. As part of a request for further information (dated 20 May 2016) I recommended to GWRC and WCC that the background sound (L_{A90}) results from the monitoring be obtained. The L_{A90} is the sound level that is equalled or exceeded for 90% of the time and generally representative of the baseline sound level that exists between noise events i.e. the quieter times. At Moa Point Road, at night, the L_{A90} measurements are representative of surf sounds, which can vary considerably. These background sound levels are important because they allow a judgement to be made of the intrusiveness of an introduced noise (such as construction noise). If the introduced noise is significantly greater than the background sound level, then it may become intrusive.

47 This comparison is less relevant with the L_{Aeq}. Table 7 of Technical Report 10 predicts how the construction works would increase the existing noise. Care needs to be taken in assessing Table 7. While it is useful to know the cumulative noise in the area from all noise sources, it does not allow a direct assessment to be made of how much impact the construction noise will have against the existing ambient sound. This is because the existing ambient sound environment is characterised by high level relatively short term aircraft noise. The characteristic of the introduced construction noise would be more consistent throughout the day compared to the aircraft noise. In the first instance then the construction noise should not be justified because the environment is already noisy, especially when that noise is of an entirely different temporal and frequency characteristic. The L_{Aeq} is the energy average sound level and is significantly influenced by short term high energy noise events (such as aircraft movements). Aircraft

movements are relatively short term and cannot be relied upon to mask other environmental noises, because the other noises will be present for long periods when aircraft noise is absent. This is less of an issue at night once aircraft operations cease and ambient sound levels are not influenced by aircraft noise.

48 I recommend that the appropriate noise limits are those in Table 2 and Table 3 of NZS 6803:1999 rather than a background plus approach.

49 The implication in Technical Report 10 is that Table 7 is a comparison of predicted construction noise with background sound levels. This is not correct in that the comparison is not with background sound but with ambient noise levels. Submitters have also identified this anomaly and I discuss the issue further below where I consider the submission from the Strathmore Park Progressive and Beautifying Association.

50 NZS 6803:1999 (7.2.6) recommends that consideration should be given where there are high background sound levels (a “background plus” approach). In such an assessment the construction noise level is compared to the background sound levels (L_{A90}). Note the background sound level is the L_{A90} not the L_{Aeq}. However, the sound monitoring undertaken by AECOM demonstrates that the background (L_{A90}) sound levels are not high enough to support any relaxation in the NZS 6803 limits. The baseline noise data results for 36A Moa Point Road (L_{A90}) were provided in the AECOM Memorandum dated 27 June 2016. A subsequent correction was made to the LA90(0100-0600) with the corrected data underlined in the following table:

	Tue 10-03-15	Wed 11-03-15	Thu 12-03-15	Fri 13-03-15	Sat 14-03-15	Sun 15-03-15	all days	Ex weekend
LAeq(24hr)	59	63	62	60	62	60	**61**	**62**
LAeq(0630-0730)	59	66	66	63	66	64	**65**	**64**
LAeq(0730-1800)	62	65	64	63	65	62	**64**	**64**
LAeq(1800-2000)	59	65	64	63	60	64	**63**	**63**
LAeq(2000-0730)	*52*	*59*	*57*	56	56	55	**56**	***56***
LAeq(0100-0600)	*43*	*41*	*46*	37	47	45	**44**	***44***
LA90(24hr)	41	43	40	39	45	38	**41**	**41**
LA90(0630-0730)	37	40	41	39	52	36	**41**	**39**
LA90(0730-1800)	45	46	41	44	50	38	**44**	**44**
LA90(1800-2000)	42	44	39	43	44	36	**42**	**42**
LA90(2000-0730)	*37*	*40*	*40*	34	40	38	**38**	***39***
LA90(0100-0600)	*38*	~~*53*~~*37*	*43*	31	38	42	**~~41~~38**	***~~45~~37***

Note – remains to be confirmed by AECOM

51 The L_{A90} sound levels fell to 31 dBA on the night of the 13 March 2015 which shows that there is the potential for ambient sound levels to be moderately quiet at the dwellings on Moa Point Road, even given their proximity to the shoreline. The above table shows that the Moa Point Road background sound levels are fairly constant at around 40 dB L_{A90} throughout the day and night. Because the background sound levels are consistently below the construction noise limits at the various times that they apply then there is no reason why the construction noise limits recommended by NZS 6803:1999 should be adjusted using the background plus approach either using the NZS 6803:1999 (L_{90}) approach or using the L_{Aeq} comparison in the manner that AECOM has wrongly provided for in Table 7 of Technical Report 10.

52 The predicted construction noise levels were also updated in the AECOM Memorandum dated 27 June 2016 (in response to the request for further information). This was as a result of the perceived inconsistences in the original response in relation to the difference between the measured background sound levels and the degree to which the predicted construction noise exceeded those limits. This was because the construction noise predictions in Technical Report 10 for stage B and stage E were changed in the further information that was provided in the Memorandum. The following explanation was received from AECOM (with the amended noise level predictions):

For stages B (stone blanket placement) and E (primary armour) revised prediction data was used to reflect a slightly worst case assessment on the usage of the barges and their proximity to the work areas. Only these two stages were altered in comparison to the remaining phases of the development programme. The original data is shown in brackets. The following table summarises this data (Table 6 assessment of Technical Report 10).

Receiver	Establish	A	B	CD	E	FG	H	I	J	K
R1	58	54	*52 (49)*	43	*45 (44)*	43	56	49	56	59
R5	52	48	*46 (43)*	37	*39 (38)*	37	49	43	50	53

53 A map of receiver locations is included as Appendix 3 of this report with R1 being 33 Moa Point Road and R5 being 48 Kekerenga Street.

54 The predicted construction noise levels were also updated in the AECOM Memorandum dated 1 July 1016 (on request) to illustrate the difference in noise level between the transportation and handling of marine based fill and from trucking.

55 The construction noise assessment is variously summarised as Table 6 of Technical Report 10, variations of which are presented in the AECOM Memorandum of 1 July 2016 showing noise predictions for the marine based fill with 30 barges per day and 50 barges per day. Table 6 assesses that, except at Moa Point Road, the Construction Noise Standard limits will be complied with between the hours of 0630hrs and 2000hrs. The noise limits are marginally exceeded at Moa Point Road (by up to 4 dB in Stage K – to construct the airfield pavements) during the early morning 0630hrs to 0730 hrs when the recommended limits are stricter.

56 It is night-time (2000hrs to 0630hrs), Saturdays and Sundays (0630hrs to 0730hrs), and Saturdays and Sundays (1800hrs to 20.00hrs) when the noise limit is 45 dB L_{Aeq} when the predictions in Table 6 of Technical Report 10 are that construction works will cause exceedances at nearly all of the receiver locations (except for Monorgan Road). Stage K is predicted to cause the greatest exceedances at Moa Point (14 dB), but also Kekerenga Street (8 dB) and Ahuriri Street (7 dB). Exceedances would also occur during the Stage 0 (site establishment) – 13 dB exceedance at Moa Point Road and with exceedances predicted at R3, R4, R5, R6, R8, R9, R10 and R11, Stage B (installation of stone blanket) – 14 months – 7 dB exceedance at Moa Point Road, Stage H (reclamation) – possibly 14 months, but variously described as 5 months to 18 months[3], and Stage J (including ground improvement such as

[3] GWRC queried the duration of Stage H and got the following response from the applicant on 17 August 2016:

vibrocompaction) – 8 months. Stage H and Stage J are predicted to have an 11 dB exceedance at Moa Point Road and 5 dB or less at R3, R4, R5, R6, and R11.

57 Further work was then undertaken by AECOM and reported in their Memorandum of 1 July 2016. The conclusion of that memorandum was that *"the above assessment demonstrates that the project's construction noise levels can be met at all dwellings other than those at Moa Point, the actual combination of plant, number and likely duty cycle will only be known when a specialist marine contractor has been engaged"*.

58 The Memorandum makes some sweeping assumptions about reducing noise levels from major plant items (including the 20 tonne dozer) in order for the noise limits to be complied with at Kekerenga Street and I would question the practicability of these assumptions. In addition, the marine based option makes no difference to Stage K (to construct the airfield pavements). Stage K is predicted to generate the highest noise levels of 53 dB L_{Aeq} at Kekerenga Street and 52 dB L_{Aeq} at Ahuriri Street. I fail to see how compliance with the Construction Noise Standards can be achieved at Kekeranga Street and Ahuriri Street with the noise levels that are predicted. I would note that in exceeding the night-time noise limits in the Construction Noise Standard there is an exceedance of the upper recommended guidelines limits for noise also set out in NZS 6802:2008 for preventing sleep disturbance. These residential guideline upper noise limits at night are 45 dB $L_{Aeq(15mins)}$ and 75 dB L_{AFmax}.

59 The applicant has accepted that a mitigation package needs to be offered to residents of Moa Point Road, of which there are 19 dwellings. In my opinion, given the uncertainties surrounding the noise levels and duration of the construction works (over a number of years), I consider that a noise mitigation package should also be offered, up front, to the residents of Kekerenga Street and Ahuriri Street who are predicted to be significantly affected by noise. According to the AECOM 1 July 2016 Memorandum there are 19 dwellings that have a clear line of sight to the works and an additional 17 dwellings which are set back but which would need to be considered. These are not separately identified in the report as to actual addresses

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"*With regard to your email query below re construction staging and duration, we can confirm that Chapter 4 of the AEE should have set out that Stage H is anticipated to be of a duration of 5 months for marine based fill, or alternatively up to 18 months should land based (or a combination of land and marine based fill) is sourced. This is reflected in both Technical Report 7 and Technical Report 10 which are correct.*

The indicated total duration of construction as set out in the AEE however is not affected by this omission in the table shown in Chapter 4".

but dwellings with a clear line of sight to the works are likely to be those on the west side of Kekerenga Street located at the top of the hillside. There are a number of two storey dwellings on elevated sites on the eastern side of the road that may also be affected. A noise mitigation package would be designed to offer acoustic insulation and mechanical ventilation to noise exposed dwellings to ensure appropriate internal noise limits are met.

60 For this approach to work the applicant would, prior to construction works commencing, need to establish maximum construction noise limits each at Moa Point Road, Kekerenga Street and Ahuriri Street, that it will not exceed during any of the construction works. These limits would then be used to design the noise insulation of dwellings, on a house specific basis, to ensure that appropriate internal levels are provided. The limits would be determined using a precautionary approach (i.e. with a factor of safety included).

61 There are no internal noise levels recommended by NZS 6803:1999 but AS/NZS 2107:2000 *Acoustics – Recommended design sound levels and reverberation times for building interiors* recommends that 30 dB L_{Aeq} is an appropriate internal noise limit for bedrooms.

62 Technical Report 10 relies exclusively on an L_{Aeq} assessment but the construction noise standard also contains noise limits for L_{Amax} both during the day and at night. L_{Amax} is difficult to predict and is often dictated by individual noise events that may occur during an assessment period, for example a dropped metal plate. Care will need to be taken during the project, particularly at night, that high noise events are not allowed to be generated as there would be greater potential for this to exceed the L_{Amax} limits and be likely to cause sleep disturbance.

63 Construction noise mitigation is discussed in Section 7.0 of Technical Report 10. The predictions made in the report are undertaken with the expectation that the '*best available equipment and techniques*' will be adopted. This allows little opportunity for the reduction of the noise by using quieter plant and equipment. The practicability of using screens or barriers is discussed (in 7.3). These would have to be placed close to dwellings, which would be impracticable, and, in the case of dwellings at Strathmore Park, would not work anyway because of the steep topography.

64 The only viable noise mitigation methods available are therefore the sound insulation of dwellings and/or temporary rehoming at times when noise levels exceed the noise limits in the Standards.

65 The construction noise levels are predicted to be up to 59 dB L_{Aeq} at dwellings in Moa Point Road, which is 14 dB above the construction noise night-time noise limit. If noise insulation of the dwellings or temporary relocation is not agreed to by residents, or if this proves to be impractical, then these predicted noise levels have the potential to cause significant sleep effects and impacts on health, as identified in the WHO noise guidelines. At Kekerenga Street and Ahuriri Street the noise levels are predicted to be up to 53 dB L_{Aeq} which is 8 dB above construction noise night-time noise limit. Again, sleep disturbance is likely to occur with such noise levels depending on the exposure of the individual dwellings.

66 In the first instance, the closing of windows can result in a significant increase in noise insulation but this relies on alternative forms of ventilation being provided. As a rule of thumb the noise will be reduced from outside to inside by about 15 dB with windows ajar. A solidly constructed dwelling would be expected to reduce noise by at least 20 dB (and possibly more) with windows closed. There are a number of variables that can influence the noise insulation that a dwelling will produce (such as window design and airtightness).

67 Given that the construction works are predicted to take place over 48 months, I consider that these night-time noise levels would be unreasonable and that alternative noise insulation/ relocation requirements are essential.

Construction Noise – Traffic

68 With a total reliance on land based transportation of fill materials, there is predicted to be in the order of 1.5 million cubic metres of fill and other material requiring transport to the site. These would be transported from places such as Kiwi Point Quarry and Horokiwi Quarry. The source of marine based fill, while logical, cannot be relied upon because of timing of separate consenting procedures.

69 The proposed haul routes are separated between the daytime route and night-time route. These are set out in Section 2.2 of the AECOM Report. The daytime route involves inbound traffic using SH1 and Stewart Duff Drive and the outbound route via Lyall Parade and Onepu Road.

The night-time route would fully utilise SH1 outside the airport confines. Technical Report 10 estimates that there are 2,670 dwellings within 50 metres of the proposed night haulage route as described in Table 9 of that report.

70 Following concerns raised about the numbers of trucks proposed to use the main haul routes (including through the city) AECOM has predicted, in Table 12 of Technical Report 10, how many construction vehicle movements would cause a traffic noise increase of 3 dB L_{Aeq} or less for different one hour periods of the night. The report considers that this represents an "*acceptable*" increase in noise levels. I agree that an increase of 3 decibels normally represents an increase that is only just perceptible. This has resulted in a new programme of truck movement and routes with hourly movements of 30 construction vehicles up to 11pm, reducing to 25 vehicles per hour until 1am, 15 vehicles per hour until 2am with 5 vehicles per hour between 2am and 3 am. Vehicles would then be allowed to increase to 10, 20 and 30 vehicles per hour for 3am, 4am and 5am respectively. It is Ruahine Street which is the choke point in terms of noise for these volumes.

71 There are no District Plan noise limits for existing road noise or restrictions on the increase of noise on existing roads. Neither are there any noise restrictions on the use of State Highways with respect to traffic flows. Some level of traffic noise, within reason, should be expected for dwellings established close to main routes.

72 AECOM's approach of assessing the change in traffic noise to assess the impact of the noise from the construction traffic movements is therefore a reasonable one. The assessment used by AECOM includes L_{Aeq}, which is the average noise level, and the single event sounds (L_{Amax}) from individual trucks passing. The individual events will exceed the criteria selected by AECOM of 70 dB L_{Amax} but this is the same for nearly all other vehicles travelling on the road at night (for the closest dwellings). L_{Amax} sound levels can vary widely for passes of vehicles but the example in Technical Report 10 (111) that a passing car generates a noise level of about 72 dB L_{Amax} and a truck 82 dB L_{Amax} at 10 metres is a reasonable supposition. The existing situation is that there is a regular flow of traffic on the night-time haul route and each passing vehicle generates noise that exceeds 70 dB L_{Amax}. The proposal is to limit the numbers of vehicles so that the (energy) average increase in noise is only just perceptible. I consider that acceptable.

73 The assessment is undertaken for the route through the eastern suburbs and for the inner city, connecting to the motorway.

74 No assessment has been undertaken of the outbound route via Lyall Bay and Onepu Road, which is only during the day and therefore less likely to cause significant noise impacts. An assessment should be undertaken for this route for the sake of completeness. These are empty trucks and the importance will be to minimise pot holes and maintain the road surface to ensure that truck body slap[4] is minimised.

Construction Noise - Effects on Recreational Users

75 The recreational activities that are most likely to occur in this area are identified in the TRC Report as follows:

a) Surfers
b) Kite surfers
c) Wind surfers
d) Swimmers and divers
e) Fishers and seafood collectors
f) Dog walkers (on Lyall Bay beach)
g) Sightseers, picnickers and general leisure
h) Surf lifesavers
i) Cyclists
j) Boaties
k) Plane spotters

76 Table 14 Technical Report 10 predicts the construction noise and haul route noise as it would impact on the various recreation users. The AEE and Technical Report 10 have different predictions for recreation user noise. Table 7-10 of the AEE has predicted noise levels for the haul route which are 3dB greater than in Table 14 of Technical Report 10 (except for the Golf Course). As Technical Report 10 is the construction noise report then I will review Table 14 rather than the data in the AEE.

[4] http://www.nzta.govt.nz/assets/resources/road-surface-noise/docs/nzta-surfaces-noise-guide-v1.0.pdf

77 The construction noise will be audible as far away as Lyall Bay beach, but should not cause significant impacts given the raised ambient sound levels from the surf and, occasionally, from aircraft activity noise. Neither the runway extension construction work nor the haul route noise is predicted to exceed 49 dB $L_{Aeq(1\ hr)}$ for surfers and other users of Lyall Bay beach.

78 Recreation users on Moa Point Road and beach and the breakwater will experience the highest levels of construction noise (up to 60 dB $L_{Aeq(1\ hr)}$) and, at times, this may impact on the pleasantness of the area for walkers on the south coast, people fishing or plane spotters. Given the closeness of this area to the works there may be times when this level is exceeded. Walkers and cyclists would be passing through this area though and this construction noise would be transient for them.

79 The noise from the outbound haul construction traffic would generally have the biggest impact particularly for cyclists and walkers using Moa Point Road and Lyall Parade. The predicted noise level for walkers immediately adjacent to the haul road on the south coast is 58 dB $L_{Aeq(1\ hr)}$ (also in Table 14). The road is also close to the Spruce Goose Café, which has outdoor seating areas. The road and car park has been subject to damage by tides and wave action in recent times and it would be important for this stretch of road to be kept in good repair if empty trucks are not to cause significant annoyance. The predicted haul route noise for the Spruce Goose Café is 54 dB $L_{Aeq(1\ hr)}$. The proposal is that there will be no haulage on weekends which will help to reduce noise impacts at times of maximum enjoyment by beach users and patrons of the café. These requirements would best be included in the CNVMP.

80 The construction noise will also impact on golfers playing at Miramar Golf Course. A number of the greens at the southern end of the course will be close to excavation, the proposed depot, and stock pile areas. This could have an impact on the pleasantness of the golfing experience. Again this will be transient, but would be significant in the areas closest to the construction works. The greatest impacts will occur when work is undertaken on removing the hill on Stewart Duff Drive and then in the use of this area for stockpiling, which is immediately adjacent to the southernmost holes of the course.

81 I consider that noise impacts on recreational amenity are not significant, given that the construction noise and haul road noise is predicted to be less than 60 dB L_{Aeq}. The weekday daytime residential noise limit in the construction noise standard is 70 dB L_{Aeq} and I consider

that a level 10 dB below that limit will not therefore be significant. NZS 6803:1999 provides for the limits in the Standard to be applied to noise sensitive activities in other areas. As such I consider the weekday limits in Table 2 of the Standard to be appropriately applied on Lyall Bay Beach. This is the principal recreation area and is therefore deserving of protection.

Conditions for Construction Noise

82 The Application includes proposed conditions under section 8.5 of the AEE.

83 I agree with the proposal in the AEE that a noise insulation package of noise insulation/ ventilation and temporary relocation during times when construction work exceeded the limits should be offered to the residents of Moa Point Road.

84 I also recommend that a process needs to be put in place to identify affected residents of Kekerenga Street and Ahuriri Street to allow a noise insulation and mechanical ventilation package to be provided to them if necessary. To achieve this the applicant needs to identify the noise level at every dwelling where the future construction noise will exceed 45 dB L_{Aeq} or 75 dB L_{Amax}. Given the uncertainty of the future construction process, the assessment needs to be undertaken using the precautionary principle using appropriate safety factors.

85 This will then allow the predicted noise levels to become the new construction noise limits and for a noise insulation package to be offered that will reduce the allowable noise level to an internal level of 30 dB L_{Aeq} in bedrooms. An internal noise level of 60 dB L_{Amax} in bedrooms would also be logical (which is the construction noise outside limit of 75 dB L_{Amax} minus 15 dB for a ventilating window).

86 Where it proves to be impracticable to noise insulate and ventilate a dwelling then the occupants of Kekerenga Street and Ahuriri Street should be offered temporary relocation during times of high construction noise.

87 No mitigation would be provided where the noise is predicted to comply with the construction noise limits and where the applicant accepts that those limits apply.

88 As discussed above I also consider that it is appropriate to apply the weekday daytime construction noise limit to the beach at Lyall Bay. This condition would be:

Construction noise at Lyall Bay Beach (other than haul route noise on public roads) shall not exceed: 0730-2000 hrs 70 dB L_{Aeq} and 85 dB L_{Amax}

89 Otherwise I agree that these conditions adequately mitigate the noise impacts, subject to the changes I suggest below. The proposal to temporarily relocate residents of Moa Point Road will help to avoid the impact on sleep and the subsequent health issues.

90 I specifically comment on proposed noise conditions as follows:

Proposed Condition	**Issue**	**Comments**
42	Provision of a Construction Noise and Vibration Management Plan (CNVMP)	I agree that a CNVMP is essential in this case to mitigate construction noise that exceeds the noise limits in the Construction Noise Standard as far as is reasonably practicable. Reference is made to standards for mitigating the effects of noise and vibration. However, there are no standards for vibration in the proposed conditions (see below)
45(a)	Construction noise limits to be established for all dwellings	Delete the words *as far as reasonably practicable* from the heading of the criteria. Provide an alternative schedule of dwellings and noise criteria where these exceed the night-time limits.
45(a)	Use of term dB LAeq(T) and definition of (T)	The definition of (T) does not correspond exactly with NZS 6803. I recommend that the term Leq (or, more properly, L_{Aeq}) be used, as is the case in NZS 6803, allowing the measurement sample time to be directed by 6.3 of the Standard.
45(a)	Noise limits for industrial and commercial receivers	The construction works could not comply if these noise limits are applied at industrial and commercial receivers on Airport Land. These conditions should therefore not apply to commercial receivers on Airport Land which are all under the same ownership (WIAL). Noise management then becomes an internal matter which needs to be managed between WIAL and its tenants.
45(c)	Where the criteria set out cannot be practicably met.	The AECOM report identifies that significant exceedances will occur during certain construction stages at night, mostly at Moa Point Road, but also, potentially, at Strathmore Park. Condition 45(c) currently gives carte blanche for all locations for all times. It is recommended that the constructed

		noise level be predicted for each dwelling in Moa Point Road, Kekerenga Street, and Ahuriri Street to allow the level to be established as a noise limit for that dwelling.
46(a)	Where the criteria of Condition 45 cannot be met.	This Noise Schedule needs to be prepared for all construction works for all stages to determine whether Condition 45 will be met or not. I recommend that the words "*where the criteria of Condition 45 cannot be met*" be deleted.
46(b)	Allowing <u>five</u> working days for certification.	This would be an inadequate time period for Council to provide the certification. I have discussed this with WCC and consider that 10 working days would be appropriate.
48	Noise mitigation to Moa Point Road	I agree with the need for this condition which should be developed to include internal performance standards (see recommended new condition for Kekerenga Street and Ahuriri Street below which includes an internal noise limit for bedrooms).
49	Haulage route maintenance	Need to ensure that pot holes are minimised by regular maintenance. Empty trucks are particularly noisy when they drive over pot holes.
new	Kekerenga Street and Ahuriri Street	For residential dwellings located at Kekerenga Street and Ahuriri Street and not owned by the Consent Holder, identified on Figure Y [to be developed], methods to be adopted within the CNVMP to manage construction noise and vibration shall be formulated by the Consent Holder, having first consulted with the owners and occupiers of these properties. The mitigation could include, but not be limited to acoustic insulation and mechanical ventilation within the affected dwelling. The acoustic insulation shall be designed and maintained to ensure that the internal noise level does not exceed 30 dB $L_{Aeq(15\ mins)}$ and 60 dB L_{Amax} in bedrooms. The mitigation shall be undertaken by the Consent Holder in agreement with the owner and/or occupiers of the dwelling prior to the commencement of construction of the reclamation.
new	Vibration standard	See below

91 I include a possible vibration standard used by the Board of Inquiry (**BoI**) for the Waterview Connection Proposal[5] below:

Except where certified by the Council through the SSNMP (in accordance with Condition CNV.13), construction vibration received by any building shall be measured and assessed in accordance with the German Standard DIN 4150-3:1999 "Structural vibration - Part 3: Effects of vibration on structures", and shall comply with the criteria set out as follows:

Type of structure	Short-term vibration				Long-term vibration
	PPV at the foundation at a frequency of			PPV at horizontal plane of highest floor (mm/s)	PPV at horizontal plane of highest floor (mm/s)
	1 – 10Hz (mm/s)	1 – 50 Hz (mm/s)	50 – 100 Hz (mm/s)		
Commercial/Industrial	20	20 – 40	40 – 50	40	10
Residential/School	5	5 – 15	15 – 20	15	5
Historic or sensitive structures	3	3 – 8	8 – 10	8	2.5

92 Although I was not present at the Waterview hearing the BoI heard from a number of expert witnesses in arriving at this Standard. The AECOM report does not consider that vibration will be an issue for the Airport Extension construction works but it would be sensible to provide for a vibration standard in the event that vibration issues arise. I flag that a vibration condition would be appropriate in these conditions as a back-stop measure and recommend that this matter be considered during any pre-hearing expert conferencing. This would include identifying the most appropriate monitoring locations.

Assessment of Aircraft Noise

93 District Plan Rule 11.1.1.1 is set out in Appendix A. This rule controls aircraft operations to ensure that the rolling 90 day average 24 hour night-weighted sound exposure does not exceed a Day/Night Level (Ldn) of 65 dBA outside the Air Noise Boundary shown on District Plan Map 35. The rolling 90 day average means that the average is taken over any consecutive 90

[5] Final Report and Decision of the Board of Inquiry into the New Zealand Transport Agency Waterview Connection Proposal, Volume 2, Conditions of Consent 29 June 2011.

day period i.e. an assessment duration cannot be cherry-picked to avoid including two busy times in any single 90 days, for example.

94 The current emission of noise from aircraft activities is below this permitted level when measured at the Air Noise Boundary. The runway extension is predicted to cause an increase in aircraft operation noise, but this noise will still be within what is permitted by the District Plan.

95 Technical Report 26 (**The MDA Report**) states that the continuous noise monitoring around the airport indicates that the existing aircraft noise levels are four to five decibels below the 65 dB L_{dn} limit as set by the District Plan as it applies at the ANB.

96 The predictions of aircraft noise levels in the MDA Report have been undertaken using the Integrated Noise Model (**INM**) software program. This methodology is appropriate in terms of the requirements of NZS 6805:1992 *Airport Noise Management and Land Use Planning*.

97 The INM aircraft noise prediction software struggles with the hilly terrain around the Airport. The MDA Report identifies that the original airport noise contours were manually adjusted for screening effects from the hilly terrain and then a different software package (SoundPlan) was applied in an attempt to confirm the predictions. This was particularly around Moa Point (to the southeast) and Lonsdale Crescent (to the west).

98 The prediction in the MDA Report is that the screening effects will not be materially changed by the proposed runway extension. I consider this to be a reasonable conclusion given that the screening of topography is quite abrupt i.e. is formed by ridge lines, and that the changes in flightpath should, intuitively, not cause material changes to the screening that is currently provided.

99 The MDA Report recognises that the proposed runway extension will allow larger aircraft to use The Airport and considers what the changes in noise impacts will be with the altered touchdown and start of roll location for Runway 34. The start of roll location is where all the aircraft wait at the end of the runway prior to being given permission to commence take-off. Runway 34 is the terminology used for the runway being used to land and take-off in a northerly direction while Runway 16 is with landing and taking-off towards the south. The MDA Report also considers whether projected aircraft operations on the extended runway will

comply with the Airport's current noise controls. The Report considers both the long term average noise levels (L_{dn}) and single event noise levels (L_{Amax}) from individual aircraft.

100 Section 3 of the MDA Report explains the changes that will occur as a result of lengthening the runway.

101 The first change that would occur is that the new start of roll location for Runway 34 will commence further towards the south (when the take-off is to the north). There would be no change in the start of roll location for take-off to the south (Runway 16).

102 The alteration to the start of roll location for Runway 34 means that the shape of the existing predicted contour will change with an increase in noise occurring further to the south. The contours tend to increase in area as the aircraft leave the ground, when taking off. This change is illustrated in Figure B1 of the MDA Report (also numerically in Figure B2 and Table 3). Figure B1 is attached as Appendix 3 and shows where the 2035 65 dB L_{dn} forecast (the green contour) extends beyond the 2015 (actual activity) 65 dB L_{dn} level (the blue contour). This mostly occurs at the southern end of the runway, because the start of roll would be further south. Progressing in a northwards direction, the green contour starts to move outside the blue contour at around Lyall Bay beach (to the west) and the terminal buildings (to the east). Maximum separation between the contours occurs at about Coutts Street to the west and at Broadway (to the east) then tapering together further towards the north. A maximum 2 dB difference occurs in the L_{dn} level with the 2035 being greater than the 2015 actual activity level. Most of that increase occurs in the neighbouring areas which are just north of the midpoint of the runway i.e. between Coutts Street and the northern end of Bridge Street on the western side and between Broadway and Caledonia Street on the eastern side of the runway. I consider that this is an appropriate method of determining the change in the average aircraft noise levels.

103 Because the start of roll location for Runway 16 will not change then this will result in only subtle changes to the shape of the noise contours for aircraft taking off towards the south. This would be caused only by the difference aircraft mix and the small changes in noise generated by take-offs.

104 Figure B4 also calculates the predicted change in worst case single event noise levels (L_{Amax}). This shows that the 777-300 will increase single event noise levels by a maximum of 4 dB in the area around Broadway/Miro Street and Coutts Street. Technical Report 26 considers that the 777-300ER is the most likely aircraft to operate on long haul routes through Australia and on to New Zealand, then return. The 777-300ER (and 330neo) is the loudest Code E aircraft in the 2035 forecast. Figure B5 shows though that, historically, noise levels from individual types of aircraft have been significantly higher than they are today, or are likely to be in the future.

105 Section 3 also identifies that Code E/F aircraft would be introduced to the airport if the runway is extended. Code E aircraft are expected to fly regularly whereas Code F operations would only be "occasional". Code E aircraft include Boeing 777-300ER, Boeing 787-800 and Airbus A350-900.

106 The current controls were originally formulated on the principle that the airport may one-day reach capacity. The runway extension will not increase the capacity of the runway (although technology may do this) so the only changes result from the alteration in the start of roll location for Runway 34 (taking-off towards the north) and the introduction of larger noisier aircraft.

107 The approach used in the MDA Report is to use the Integrated Noise Model (INM) to calculate noise contours at Wellington Airport for current aircraft operations and a future 2035 forecast with the runway extension. These two modelled scenarios include the following number of movements and are compared with the number of movements in the ANB model. To get an idea of the numbers that have been modelled the following table is copied from the Executive Summary of the report.

	Current (FY2015)	Proposed (2035 with extension)	Permitted (ANB Runway Capacity)
Peak Period Average Daily Movements	266	386	1102

108 What this table shows is that modelling based on full capacity of the airport (undertaken in the 1990s to develop the District Plan Air Noise Boundary) considerably overestimates the

potential future likely scenarios. In other words, the predictions now are that the airport is unlikely to ever reach anything like capacity, at any rate not before 2035.

109 The actual predicted aircraft movements are shown in Table 2 of the MDA Report.

110 The MDA Report does not undertake predictions based on a future capacity scenario which would then give a direct comparison with the original approach taken in the District Plan. However, the approach taken in the Report is compatible with the recommendations set out in NZS 6805:1992 which recommends that a minimum period of 10 years be used and the selection of 2035 easily meets this.

111 The assessment of noise effects is presented in Section 5 of the MDA Report. The assessment is that the District Plan requirements imposed by the ANB will be complied with up until 2035 and that the change in noise levels will, on average, barely be perceptible. I agree with this assessment.

112 A separate assessment has been made of single event impacts which could have an impact on sleep. The critical time for this is between 10pm and 1am and between 6am and 7am. These are the night-time shoulder periods when flights regularly occur at the airport.

113 The proposed Code E departures e.g.777-300ER that would be enabled by the runway extension would cause L_{Amax} noise levels to increase by 4 decibels, which would not be significantly perceptible. The MDA Report recommends that community engagement and impact review should be undertaken before night-time Code E (and Code F) aircraft operations are implemented. MDA considers that the Air Noise Management Committee would be an appropriate group to oversee this process and review the outcomes.

114 I consider that this would be an appropriate safeguard to ensure that the noisier aircraft, operating at night, do not cause the District Plan ANB controls to be threatened. When assessing L_{dn}, a 10dB weighting is applied for flights that occur between midnight and 7am and between 10pm and midnight.

Conditions for Aircraft Noise

115 There is no proposal to alter the current duties imposed by the District Plan airport noise restriction and the ANB and as such I consider that the increase in aircraft number and size is likely to have a minor effect and that there is no need to impose additional conditions for aircraft noise.

Submissions

116 The Councils have asked me to comment on the following submissions regarding noise:

117 Owen Longstaff at 79B View Road, Houghton Bay is concerned about the night-time construction works and the impacts on sleep. The predictions are that the construction noise will be able to comply with night-time construction noise limits at View Road and as such I consider that it will be appropriate at this location.

118 Fingall Pollock is concerned about the potential for hearing damage for children from aircraft noise and cites the locations of Lyall Bay Kindergarten and school. Both the kindergarten and the school are outside the air noise boundary for the airport and will therefore experience significantly less than 65 dB Ldn noise level. This is well below the noise levels that have the potential to cause noise induced hearing loss.

119 Stan Andis of 36 Ahuriri Street makes a submission as a resident of Strathmore Park. Mr Andis is concerned about:

a) The lack of consultation (with residents of Strathmore Park);

b) The lack of certainty with regards to land based or water based transportation of construction fill;

c) Concerns regarding night-time construction noise;

d) Content of NZS 6803:1999 (which I discuss above);

e) ‘Amphi-theatre’ noise effects;

f) That no exceptions should apply to the construction noise limits;

g) Recreation receivers either being given too much consideration or (as with golf) not enough;

h) Road surface maintenance requirements;

i) Existing night-time paving work at the airport caused sleep disturbance;

j) Issues regarding the practicality of noise insulating dwellings or temporary relocation;

k) Barge noise.

120 Further information has been provided by the applicant (Memorandum of 1 July 2016) with regards to the increase in local noise levels resulting from barging the fill. The noise level at Kekerenga Street and Ahuriri Street is predicted to be 52 dB L_{Aeq} during Stage H with 50 barge movements per 18 hour day, which is 7 dB over the night-time noise limit. The noise will be 3dB less during that Stage with no marine base fill. Note that Revised Table 6 gives different predicted noise levels for 30 barge movements per day during Stage H (reclamation) with 47 dB L_{Aeq} predicted for Kekerenga Street and 51 dB L_{Aeq} for Ahuriri Street. I would expect these predicted levels to be similar (they are the same predicted levels for 50 barges per day). The construction noise level for Stage K (drainage, pavements and navigation lighting etc.) is predicted to be 53dB L_{Aeq} (+8 dB) for Kekerenga Street and 52 dB L_{Aeq} (+7) for Ahuriri Street. The Stage K predictions are not repeated in Revised Table 6 where changes resulting from the marine based fill option are assessed. Care should be exercised therefore, when considering Revised Table 6 that this is not done in isolation of the main report.

121 Mr Andis submits that the works should not exceed the night-time construction noise limits. I have discussed the predicted construction noise levels above and the likely impacts these will have on the residents of Strathmore Park. The noise is predicted to exceed the construction noise limits for certain stages of the construction works, and the resultant noise levels will have the potential to cause sleep disturbance to residents in the more exposed dwellings. Options to mitigate the noise appears to be limited as the construction works would need to take place at night. The only real mitigation option would be for the applicant to noise insulate and mechanically ventilate dwellings that would be exposed to noise that exceeds the limits.

122 Mr Andis refers to NZS 6803P to support his submission where he considers that construction noise limits should not be exceeded. Section 5.1.1 of NZS 6803P does allow for noise levels to be "*measured indoors where external measurements are impracticable or inappropriate*". The recommended upper limits for indoor noise levels are then included in Table 3 of NZS 6803P except that there are no specific alternative noise limits between 2000-0630hrs. Reference is made to the relevant provisions of NZS 6802 in the note to Table 3 with the comment "*this may mean that no noisy construction work can take place during these hours*".

123 NZS 6803:1999 also provides for upper limits for noise measured inside the building where there is no practicable method of measuring outside (which is not the case here). The internal noise levels are recommended as the levels in tables 2 and 3 minus 20 dBA. The Standard considers this to be a typical value for the sound reduction normally achieved in New Zealand buildings with doors and windows closed. On that basis the recommended internal night-time noise limit would be 25 dB L_{Aeq} which is very strict. I agree with Mr Andis that construction noise standard limits will provide appropriate noise management controls but I consider that it is appropriate to exceed those limits where there is no option and where alternative noise mitigation packages provide adequate protection, particularly against sleep disturbance.

124 Mr Andis is concerned about an amphitheatre effect. What is experienced by the residents at Kekerenga Street and Ahuriri Street is not an amphitheatre effect but simply the lack of any ground absorption between their dwellings and the airport. This is because the land falls away sharply giving dwellings on the edge of the hill wide and uninterrupted views of the runway. There is therefore no screening of any noise generated on airport land to a large number of these dwellings. This allows noise to be heard at greater distances than normal.

125 I have previously considered recreation users (including golf).

126 I have not undertaken a separate assessment of the ongoing maintenance works associated with the existing runway, except to recognise that airport construction noise was present during the noise monitoring that AECOM undertook.

127 Mr Andis has raised the issue of whether noise insulating dwellings is practicable and of temporary relocation. Noise insulation and mechanical ventilation of dwellings has been successfully undertaken in circumstances where it is not practicable to internalise noise from

major infrastructure and industry. As far as the practicability is concerned, this would need to be ascertained on a dwelling by dwelling basis as to the extent and practicability of any works. Some dwellings will be more challenging than others to treat. Where it proves to be impracticable to noise insulate/ventilate Kekerenga Street or Ahuriri Street dwellings to below the construction noise limits then residents of Kekerenga Street and Ahuriri Street should be offered temporary relocation.

128 Vanessa Yung of 62 Kainui Road is concerned that the number of planes and potentially size of planes will increase with the runway being extended. This will not result in an alteration to the runway configuration, other than aircraft starting their take-offs further to the south. The predicted change in single event maximum level (L_{Amax}) in Figure 4 of Figure B4 of Technical Report 26 indicates that there should not be a noticeable increase in the loudness of the individual aircraft at Kainui Road (1-2dB).

129 Penehuro Lefale of 32 Tirangi Road submits that the truck haulage will cause sleep disruption for residents along the route. There is now no proposal to use Tirangi Road as a haul route and Lyall Parade will not be used at night.

130 Helen Salisbury of 55 Tirangi Road submits about the increase in noise pollution and vibration from larger planes. The submission identifies the increase of 120 daily aircraft movements between 2015 and 2035 which increases the current 266 movements to 386. However, not all of this increase will be long haul flights brought about by the runway extension. Any increase in noise has been predicted as a combination of the natural increase in flights at the airport over that 20 year period combined with the additional long haul flights. While the long haul flights will be larger and slightly noisier aircraft they make up only a small proportion of the mix. Technical Report 26 (Table 2) is based on a forecast that of the total 134,014 annual 2035 aircraft movements 2,710 will be long haul. This is an average of 7.4 long haul movements per day.

131 Mention is made in the submission of the actual increase in noise that each individual aircraft will generate. The individual aircraft noise levels are set out in Table 4 of Technical Report 26. Table 4 shows that the current narrow body jets generate a noise level of 93 dB L_{Amax} at 160 metres to the side of the runway while the noisiest Code E aircraft generate 96 dB L_{Amax}. An increase of 3 dB is only just perceptible.

132 The submitter identifies that larger aircraft taking-off currently causes the house to vibrate, including the contents of the china cabinet. Houses in Tirangi Road are well within the ANB and the submitter is therefore currently experiencing high levels of aircraft noise for which noise insulation would be appropriate (if not already provided as part of the Airport LUMINS programme).

133 The submitter raises concerns about the curfew at the airport but the current proposal is that no changes will be made to the curfew or any of the other District Plan rules that currently apply.

134 The Guardians of the Bay also submit that construction traffic noise will have significant adverse effects, including on public health. I have considered the construction traffic noise above and consider that night-time truck movements have been considered and will be mitigated appropriately to ensure truck movements do not unduly increase existing State Highway noise levels. I do not consider that the daytime noise levels are likely to cause public health impacts (although further work on the day time use of Onepu Road for a haul route would assist with this assessment).

135 The submission of the Strathmore Park Progressive and Beautifying Association sets out concerns about operation on a 24 hour basis and takes issue with the approach taken in Technical Report 10 where a 'background plus' approach is mooted. Council has interrogated the background sound levels in the area and I am of the opinion that the background plus approach does not allow the night-time construction limits to be relaxed beyond the limits as they are set down in the Standard. These are the maximum recommended guideline limits for the protection of sleep and the background sound levels do not support their relaxation. While the applicant has not suggested that noise limits should be relaxed in the draft recommended conditions, the background plus approach has, in my view, been erroneously used in both the AEE and in Technical Report 10. Table 7 of Technical Report 10 gives a comparison between the predicted construction noise levels and the ambient (L_{Aeq}) sound levels, wrongly claiming these to be L_{90} background levels. I consider Table 7 to be quite misleading and consider that the submitter is correct to question this.

136 The proposed construction work will generally comply with daytime weekday noise limits and the submitter is correct that it is night-time activity that will cause impacts on residential amenity, and particularly on sleep.

137 The submitter comments on the noise from recent re-paving at the airport which resulted in complaints being lodged with WIAL. The submitter has no confidence that the applicant will be able to have the required 'vigilance' to ensure construction noise is appropriately managed over the full 48 month period. The construction noise and vibration management plan will contain all of the essential elements that will minimise problems and allow issues to be quickly recognised and resolved. The CNVMP will need to be carefully administered.

138 Antonius (Tony) Bernard Rovers resides at 47 Ahuriri Street and submits on the following points:

a) Background sound monitoring appears to have been carried out while construction works were taking place at the airport;

b) There is confusion over whether the monitoring was undertaken at 73 or 52A Ahuriri Street;

c) There is confusion about the background plus predictions and construction noise contours would have made understanding easier;

d) There is confusion about construction noise impacts on residents located slightly further from the runway extension works

e) Concerns expressed about impacts on sleep;

f) Concerns that changes to aircraft operations will exacerbate the main issue that the submitter has with airport noise i.e. early morning take-offs after 6am.

139 I have dealt with a number of these issues above. With regard to the background sound monitoring I consider that the applicant is not justified in seeking a relaxation of the construction noise limits based on the range of levels that were monitored. I concur with the submitter in that it is unclear from Technical Report 10 what influence the topography will have on construction noise. The predicted noise levels will be relevant for dwellings that overlook the construction work areas but there will be good noise reduction for dwellings that are fully screened where line of sight is removed. The screening effects of the topography are not factored into the predictions in Technical Report 10. This is relevant to the submitter's

concerns about the impacts on sleep. These will be less than implied in Technical Report 10 for dwellings that are screened from the construction works (such as the submitter's).

140 The airport operations will fit within the ANB and curfew requirements currently imposed by the District Plan. This will result a significant increase in airport activity in the next 20 years against which the increase in long haul flights will be modest.

Conclusions

141 I have undertaken a peer review of the applicant's assessments for construction noise, the road haulage activities and for the predicted changes to aircraft noise (Technical Reports 6, 10, and 26).

142 The airport extension is a major infrastructure project that will take place at one general location for a period of up to 48 months (or more). For this reason, it is unusual in the level of intensity and the inevitable noise impacts that will be generated.

143 Because of the airport flight safety risks a significant portion of these construction works will need to take place at night which is normally avoided, where practical, when residential activity is nearby.

144 The AECOM Report identifies that the residents of Moa Point Road will be significantly impacted upon by night-time construction noise with noise levels of 14 dB over the night-time construction noise limit of 45 dB L_{Aeq} . This is likely to cause sleep disturbance and health issues.

145 The conditions identify that additional noise insulation for dwellings and ventilation would be offered to the Moa Point residents and that temporary relocation would also be available. This is essential if the impact on sleep and associated health issues is to be avoided. If the residents do not accept the noise mitigation package on offer then, according to the WHO Guidelines, the resultant noise exposure is likely to cause a significant impact on the residents' health and amenity.

146 Potential noise impacts would also occur at dwellings in Strathmore Park, particularly those on Kekerenga Street and Ahuriri Street with a view over the construction activities. I consider that

there is a strong risk that future construction noise levels will exceed the 45 dB L_{Aeq} Construction Noise Limit during Stage 0 (site establishment), Stage H (reclamation), Stage J (ground improvement such as vibrocompaction) and Stage K (drainage, pavements and navigation lighting etc.). Notwithstanding the current uncertainty over the exact methodology to be used for the construction I recommend that a noise mitigation and mechanical ventilation package should be offered to residents of Kekerenga Street and Ahuriri Street and, with their agreement, the package would be installed before the construction of the reclamation commences. I consider the applicant needs to predict the greatest noise levels likely to be experienced at each dwelling where the noise will exceed the construction noise limits. These levels will be predicted with sufficient safety factor to allow them to be established as noise criteria at each dwelling and then for the noise insulation to be designed against the predicted levels.

147 I see this as being fair to the residents, consistent with the precautionary principle and sensible in that it protects residents at the start of the process rather than wait for noise to become a nuisance at some future stage. Without this treatment these residents will be exposed to significant night-time construction noise which is likely to cause sleep impairment.

148 Construction vehicle noise has been predicted for the various haul roads that would be used though the eastern suburbs and city. Ruahine Street has been found to be the most sensitive and truck volumes are proposed to be controlled on an hourly basis, through the night, to ensure that average noise levels only increase such that they are only just perceptible (i.e. by 3 dB). This would ensure that truck noise does not become significant for the neighbouring residents to the haul route.

149 I recommend that a noise assessment is undertaken for trucks on Lyall Bay Road and Onepu Road, which is a proposed daytime haul road. I agree that this route should not be used at weekends.

150 Predictions have been made in the AECOM report for noise levels at various recreation areas. Given the levels that are predicted I consider that construction noise effects on recreational activities such as walking, jogging, swimming, surf-lifesaving, dog walking are not significant at Lyall Bay. Moa Point Beach is more exposed to construction noise and walkers and cyclists would experience noise from time to time that could impact on their enjoyment of the area.

These beach users are likely to be more transient in nature (compared to users of Lyall Bay Beach) and, therefore, the noise will be less significant. The noise from the proposed excavation works and stockpiling activities taking place by Stewart Duff Drive are close to the southern end of the golf course and will cause a noise impact on the southernmost holes. This noise is likely to be significant for golfers using the far south end of the course, when excavations and stockpiling is taking place.

151 Overall the construction noise and vibration will be managed and controlled by reference to the Construction Noise and Vibration Management Plan. The nature and extent of the exceedances of the Construction Noise Standard limits requires that the CNVMP should be strictly and rigorously applied. For the construction noise effects to be acceptable then the CNVMP will need to be properly administered to ensure that noise is minimised at all dwellings thus providing for noise mitigation packages to provide appropriate protection. The key here will be in ensuring that sleep disturbance is avoided.

152 I agree that the noise conditions proposed by the applicant are required with the additions and modifications which I have suggested above. I recommended that changes be made to conditions 45, 46, 48 and 49 and that new conditions be provided to protect residents of Kekerenga Street and Ahuriri Street. I summarise my recommendations below:

a) Establish predicted noise levels outside Moa Point Road, Kekerenga Street and Ahuriri Street dwellings where the noise levels are predicted to exceed the construction noise limits,

b) These levels will include sufficient safety factor for them to be established as construction noise limits at each dwelling concerned,

c) Noise insulation packages will then be designed by the applicant and offered to protect the residents from the predicted outside noise levels. This will include residents of Kekerenga Street and Ahuriri Street in addition to Moa Point Road,

d) The internal noise design criteria for bedrooms will be 30 dB L_{Aeq} and 60 dB L_{Amax},

e) The noise mitigation packages will be installed prior to construction commencing,

f) Where it is impracticable to provide noise mitigation/ventilation to comply with the internal noise limits then offers of temporary relocation will be made,

g) Construction noise at Lyall Bay Beach (other than haul route noise on public roads) shall not exceed: 0730-2000 hrs 70 dB L_{Aeq} and 85 dB L_{Amax},

h) Delete the words *as far as reasonably practicable* from Condition 45(a) to make the limits apply to all dwellings except for specific dwellings on Moa Point Road, Kekerenga Street and Ahuriri Street, for which special provision is made above,

i) For the same reasons delete condition 45 (c) - *where the criteria set out above cannot be practicably met* (sic), *the process of Condition 46 shall be followed.* Where the conditions cannot practicably be met (at Moa Point Road, Kekerenga Street and Ahuriri Street) then I recommend that alternative limits are established on a dwelling by dwelling basis.

j) These changes subsequently allow condition 46(a) to be amended to delete the words *where the criteria of condition 45 cannot be met.* In any event the Noise Schedule in Condition 46(a) needs to be prepared for all affected dwellings to determine the level of impact and whether they comply or not.

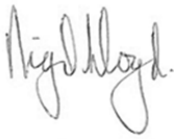
k) A vibration condition should be added. The applicant has assessed that vibration should not be an issue with the works but I consider that a vibration condition should be included, as a back-stop, to protect nearby residents and structures in the event that vibration is generated by future construction works. The suggested condition is taken from the Waterview Connection Proposal Decision.

l) To amend Condition 45(a) to provide for the limits to be expressed in the same way as NZS 6803:1999,

m) To amend Condition 45(a) so that the noise limits for industrial and commercial receivers shall not apply to commercial land parcels under the same ownership,

To amend Condition 46(b) to increase the lead time for the Noise Schedule to be submitted to WCC for certification from 5 to 10 days to allow adequate time for certification.

Date: 7 October 2016



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Nigel Robert Lloyd

APPENDIX A

WELLINGTON DISTRICT PLAN

11.1.1.1 Noise

Aircraft operations in general

11.1.1.1.1 Aircraft operations shall be managed so that the rolling 90 day average 24 hour night-weighted sound exposure does not exceed a Day/Night Level (Ldn) of 65 dBA outside the Airnoise Boundary shown on District Plan Map 35.

Aircraft noise will be measured in accordance with NZS 6805:1992 and calculated as a 90 day rolling average. All terminology shall have the meaning that may be used or defined in the context of NZS: 6805.

The level of noise from aircraft operations, for comparison with Ldn 65 dBA, is calculated from the total amount of noise energy produced by each aircraft event (landing or take-off) over a period of 90 days. This method of control does not directly control individual aircraft events, but does so indirectly by taking into account their contribution to the amount of noise generated in a 24 hour period.

Night flying operations

11.1.1.1.5 Domestic operations must not occur during the hours from midnight to 6am.

International operations must not occur during the hours:

- midnight to 6 am for departures
- 1 am to 6 am for arrivals

For the purposes of this Rule 'operations' means the start of a take off roll or touch down on landing.

APPENDIX B

AECOM NOISE CALCULATION POINTS

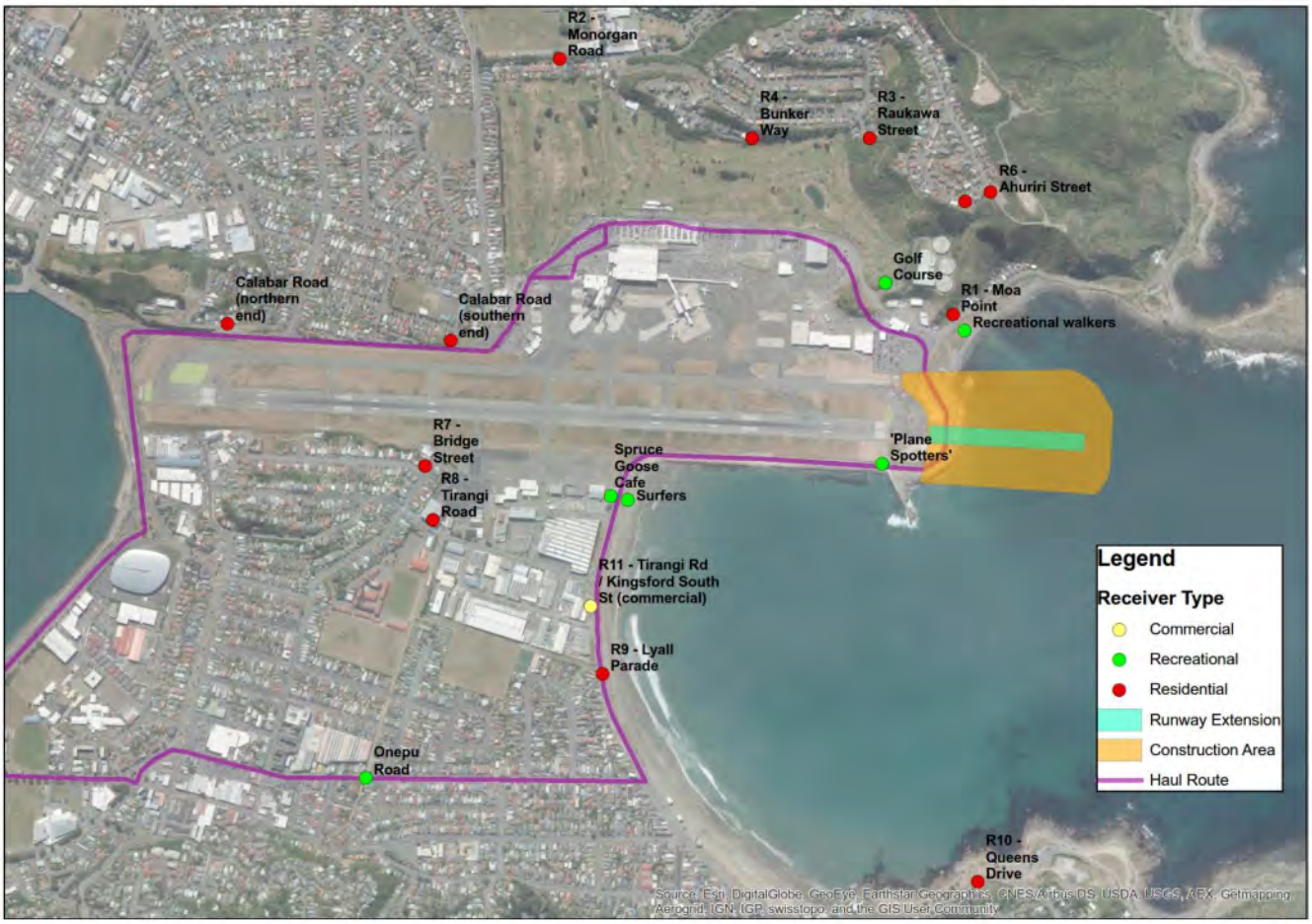
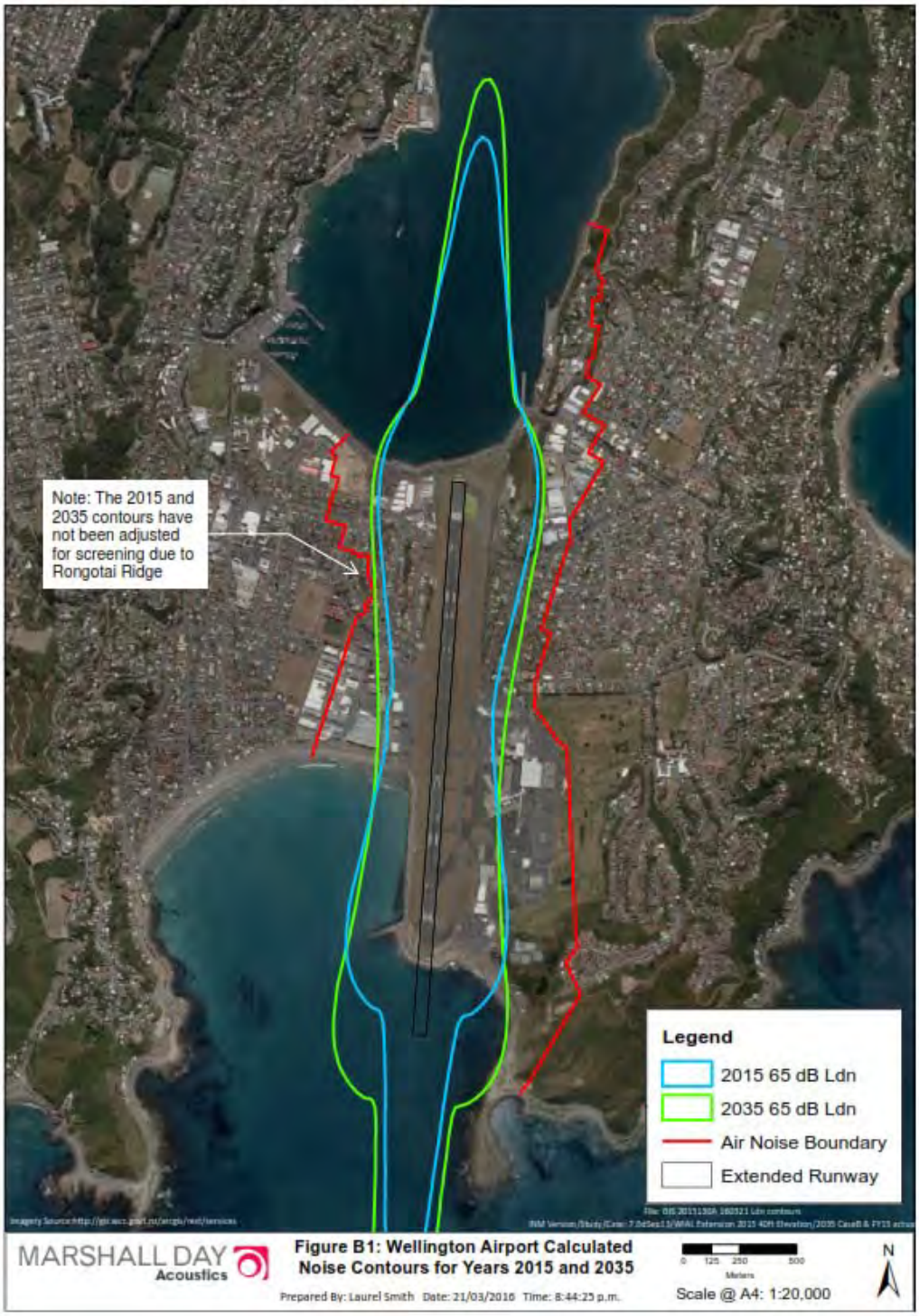


Figure 6 **Noise calculation locations**

APPENDIX C

MARSHALL DAY AIRPORT CALCULATED NOISE CONTOUR Figure B1



Appendix 5

Wellington International Airport proposed runway extension

Air quality Assessment

Introduction

1 My name is Louise Fleur Wickham. I am a Senior Air Quality Specialist at Emission Impossible Ltd. I have been in this position since April 2011.

Qualifications and experience

1 I hold the academic qualifications of Bachelor of Chemical and Materials Engineering from the University of Auckland and a Masters of Environmental Law from the University of Sydney. I am a certified Resource Management Act 1991 decision maker.

2 I have over 20 years' experience in air quality gained in New Zealand, Australia and the United Kingdom and split equally between the private and public sectors. From 2004 to 2011, I was the Ministry for the Environment's senior adviser on air quality. During this time, I was the Ministry's technical lead on air quality matters and played a key role in the introduction, implementation and review of the *Resource Management (National Environmental Standards for Air Quality) Regulations 2004*. I have authored, or co-authored, a number of national good practice air quality guidance documents.[1]

3 Since 2011, I have continued to provide technical air quality advice to both government and private clients and to publish technical air quality guidance.[2] This includes technical advice to the Environmental Protection Authority on air quality aspects of transport proposals such as the Basin Reserve Flyover and McKays to Peka Peka expressway. I currently assist Hawke's Bay Regional Council and Greater Wellington Regional Council with applications for resource consents to discharge contaminants to air.

[1] For example:
Ministry for the Environment, (2008). *Good practice guide for assessing discharges to air from land transport*. June. (co-author)
Ministry for the Environment, (2005). *Updated Users Guide to Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics) Regulations 2004 (Including Amendments 2005) (second draft).* October.

[2] For example:
Ministry for the Environment, (in press). *Good practice guide for assessing and managing odour.* (lead author).
Ministry for the Environment, (in press). *Good practice guide for assessing discharges to air from industry*. (co-author)
Ministry for the Environment, (in press). *Good practice guide for assessing and managing dust*. (co-author)
Auckland Council, (2014). *Use of background air quality data in resource consent applications*. GD2014-01, July.

4 I am a member of the Resource Management Law Association and the Clean Air Society of Australia and New Zealand.

Involvement with the proposal

5 I was engaged by Greater Wellington Regional Council (GWRC) on 13 May 2016 to review and provide advice on air quality effects associated with construction of the Wellington International Airport (WIAL) proposed runway extension.

6 I visited the WIAL site and surrounds on Thursday 30 June 2016.

Assessment

7 I have reviewed the following documents to inform this assessment.

- WIAL Proposed Runway Extension Resource Consents Application (Application) prepared by Mitchell Partnerships dated 28 April 2016, specifically the assessment of environmental effects (the AEE): Section 7.9 Air Quality Assessment, and Section 8.5 Proposed Draft Conditions.
- Application Appendix D Draft Construction Management Plan
- Technical Report 21 – Wellington Airport Runway Extension Air Quality Assessment prepared by AECOM Consulting Services (NZ) Ltd dated 19 April 2016
- Letters from Mr J Kyle, Mitchell Partnerships Ltd to Ms J Chittock, Greater Wellington Regional Council dated 10 and 13 June 2016 responding to further information requests.

8 In my opinion, the key air quality issues arising from construction are:

- particulate matter (‘nuisance’ dust and respirable fractions); and
- traffic emissions from construction of the extended runway.

9 I will address each of these in turn below.

Particulate matter

10 The primary discharge to air of potential significance from construction of the extended runway is fugitive dust. Fugitive dust, also generally referred to as particulate matter, comprises a wide range of particle sizes. The common definitions used for assessment purposes are:

- Total suspended particulates (**TSP**), which includes anything smaller than 100 micrometres (µm) in diameter. In practice, the large particles (ie, greater than 20-30 micrometres) do not last long in the atmosphere, as they tend to fall out rapidly and settle. Particles deposited on a surface only become individually visible at about 50 micrometres. It is these larger dust particles that are generally responsible for 'nuisance' dust effects.

- Particles smaller than 10 µm in diameter are known as **PM_{10}**. PM_{10} includes particles referred to as 'coarse' (between 2.5 and 10 µm) and 'fine' (less than 2.5 µm, also known as **$PM_{2.5}$**). These smaller, respirable, fractions of particulate can be inhaled into the lower (PM_{10}) and upper ($PM_{2.5}$) sections of the lungs are known to cause adverse health effects.

11 In this project fugitive dusts arise from the following sources:

- Trucks transporting up to 1.5 million cubic metres of fill material to the construction zones at the airport over a three or four year period; and

- Construction activity at the airport (construction of haul and access roads, removal of topsoil, placement and compaction of fill material, operation of vehicles on access/haul roads, wind erosion, stockpiles, rehabilitation).

12 Following a request for further information the applicant advised[3] that all truck loads of fill will be covered prior to transport. I consider that covering the loads is best practice and will

[3] Letter from Mr J Kyle, Mitchell Partnerships Ltd to Ms J Chittock, Greater Wellington Regional Council dated 13 June 2016

satisfactorily mitigate potential fugitive dusts over the course of the haul route. I recommend a condition of consent to reflect the fact that all loads will be covered prior to transport, as set out in **Attachment 1** to this report (my recommended condition 2).

13 With respect to construction, good practice for assessing the *nuisance* aspects of fugitive dust (TSP) is to consider the FIDOL parameters (i.e. frequency, intensity, duration, offensiveness and location) and this has been undertaken by the applicant[4]. However, it is also good practice to focus on mitigation so as to avoid or remedy potential adverse effects, particularly when assessing *potential adverse health effects* of (the respirable fractions of) fugitive dust (i.e. PM_{10}).

14 Whilst I disagree with the applicant's conclusions regarding frequency[5], I concur with the applicant's assessment that, *in the absence of mitigation*, fugitive emissions of dust from construction of the runway extension could adversely impact residents of Moa Point. I further concur with the applicant that it is therefore, appropriate to focus on mitigation and good practice management of fugitive dust to ensure no adverse (health and/or nuisance) effects occur offsite.

15 As an aside, the applicant has assessed the proposal in general accordance with published good practice for dust management (Ministry for the Environment, 2001). However, this guidance is in the process of being updated.[6] Where appropriate I have reviewed the assessment and recommended mitigation and good practice management conditions of consent based on current good practice. These tend to be more comprehensive and more stringent than those recommended by the applicant.

16 Accordingly, **Attachment 1** sets out my recommended conditions of consent for mitigation and good practice management of fugitive dust from construction of the runway extension. Paragraphs 30 – 32 details how these agree or differ, and why, from conditions of consent recommended by the applicant. I consider that, if implemented, these would ensure adverse effects from fugitive dusts from construction of the extended runway will be satisfactorily

[4] Technical Report 21, section 6.2

[5] Notably, the applicant's conclusion that there is "limited potential for off site dust nuisance to occur with any significant frequency" in light of the relatively high frequency (34%) of winds at a level that would involve dust pick up (5 m/s) in a direction from the construction zone(s) towards residents at Moa Point.

[6] Emission Impossible Ltd successfully contracted to the Ministry for the Environment to update this guidance. This was completed in June 2016 and is in the process of being published. I was a co-author on this guide.

avoided, remedied or mitigated. These conditions include baseline monitoring (i.e. prior to construction commencing) to demonstrate no significant impacts at Moa Point where residents are closest to the construction zones.

17 A submitter from Moa Point Road has expressed doubt about the applicants statement in the AEE that fugitive dust will be mimised to within 50 metres of the source and raised concerns over a perceived lack of management or monitoring.[7]

18 The submitter appears to be unaware of the monitoring proposed by the applicant (continuous TSP and meteorological monitoring during construction). However, I agree that good management and monitoring will be critical in Wellington's high wind environment to ensure that fugitive dusts do not cause any adverse effects offsite. This is particularly true for Moa Point's high wind environment where the predominant north/south winds may also 'eddy' into the bay increasing the likelihood for deposition of fugitive dust emissions.

19 This is why I have recommended additional mitigation recommendations as conditions of consent to those recommended by the applicant in the AEE (refer my recommended conditions 1-2 and 19-30 in **Attachment 1**) based on existing good practice at other construction sites in New Zealand. This includes more stringent 'trigger levels' for TSP and PM_{10} requiring prompt action by the consent holder to minimise emissions to ensure that there are no adverse amenity impacts (TSP) and no adverse health effects (PM_{10}).

20 I have also added monitoring recommendations as conditions of consent to those recommended by the applicant (refer my recommended conditions 3-18 in **Attachment 1**) based on existing good practice at other construction sites in New Zealand. This inludes continuous monitoring for TSP, PM_{10} and meteorology for a full year prior to construction commencing. If implemented, this baseline monitoring will provide site-specific, representative data to refine the existing good practice 'trigger levels' for TSP and PM_{10} to be site specific for Moa Point's high wind environment when construction commences.

21 I consider that, if implemented, my recommended conditions of consent will ensure the applicant is managing the site at all times to minimise fugitive dust and avoid any adverse

[7] Submission by Mr Peter Hyam of 41 Moa Point Road dated 12 August 2016

effects. It will further provide real-time, publicly available (online) monitoring to demonstrate this is the case.

Traffic emissions

22 Traffic emissions during construction arise from:

- Trucks transporting fill material to the construction zones at the airport over a three or four year period; and
- Construction vehicles at the airport.

23 The key pollutants that are emitted to air from vehicles include:

- Carbon monoxide (CO);
- Nitrogen oxides including nitrogen dioxide (NO_2);
- PM_{10} and $PM_{2.5}$;
- Sulphur dioxide (SO_2); and
- Hazardous air pollutants (e.g. benzene, polycyclic aromatic hydrocarbons).

24 In addition to these pollutants directly emitted from vehicles, ozone and particles (from sulphates and nitrates) can form downwind of the point of emission by reacting with other gases in the atmosphere. These are called secondary pollutants.

25 I consider the primary pollutant of potential significance from traffic emissions to be nitrogen dioxide. Short-term exposure to nitrogen dioxide is linked with adverse respiratory effects including airway inflammation in healthy people, increased respiratory symptoms in people with asthma, increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.

26 Assessment of nitrogen dioxide requires an understanding of the ambient air quality of the receiving environment, which has not been well characterised by the applicant. I am aware that background annual levels of nitrogen dioxide long-term are already elevated compared with the World Health Organistation guideline in Wellington at some transport monitoring sites.[8]

27 The applicant considers that the impact of nitrogen dioxide emissions from the trucks hauling fill will be negligible. Screening modelling of emissions data from vehicle manufacturers[9] does support 310 trucks per day[10] being unlikely to have any measureable impact on long-term nitrogen dioxide levels. However, given the uncertain nature of many manufacturers NOx emissions data, I agree with the applicant's proposal to monitor ambient levels of nitrogen dioxide.

28 Rather than six months, as recommended by the applicant, I recommended baseline monitoring using passive samplers for a period of a year in accordance with existing good practice (Ministry for the Environment, 2008). A full year of monitoring will include all meteorological conditions that may give rise to maximum ambient levels of nitrogen dioxide. This will assist with:

- Establishing baseline (i.e. annual) levels of nitrogen dioxide; and
- Indicative monitoring (only) of impacts of construction traffic.[11]

29 I also concur with the applicant's recommendations for passive nitrogen dioxide monitoring as conditions of consent at two locations along the transport route (Calabar Road and Onepu Road). In addition, I also recommend a third monitoring location at Lyall Bay Parade and a fourth monitoring location at Moa Point because these are locations where residents may also be exposed to transport emissions (as set out in **Attachment 1**).

[8] Greater Wellington Regional Council, (2015).
[9] NZTA air quality screening model version 2
[10] Technical Report 10, Assessment of Construction Noise Effects, at para 19.
[11] Passive monitoring is a low-cost method suitable for trend analysis only (i.e. it cannot be compared with the 1-hour national environmental standard for nitrogen dioxide).

Recommended Conditions of Consent

30 The majority of (air quality) conditions of consent proposed by the applicant are in accordance with good practice. I support the consent conditions proposed by the applicant[12] relating to:

- Community liaison (applicant proposed conditions 8-10)
- Complaints management (applicant proposed conditions 11-12)
- Construction in accordance with proposed management plans (applicant proposed conditions 17, 21-24, 26-29)
- Construction Air Quality Management Plan (applicant proposed condition 37)
- Continuous TSP and meteorological monitoring (implied through requirement for construction management plan in applicant proposed condition 37(e))
- Visual dust monitoring (applicant proposed condition 40)

31 However, a number of conditions are not as clear as they could be. For example, the applicant has proposed a condition requiring a construction management plan that *describes* any temporary changes to the speed limit, including a 20 km/hr speed limit on unsealed construction site haul roads (applicant proposed condition 30(a)). I consider this less clear and enforceable than a consent condition requiring a speed limit on unsealed surfaces and stating what that speed limit should be.

32 Similarly, a number of the applicants recommendations for management and/or monitoring in the detailed assessment appear to have been overlooked in proposed consent conditions. For example, Technical Report 21 recommends passive monitoring of nitrogen dioxide at two locations along the proposed haul route but this is absent from the proposed consent conditions in the AEE.[13]

[12] Section 8.5 AEE, page 240
[13] *Ibid.*

33 **Attachment 1** includes my recommended conditions to improve clarity and address apparent oversights. It further includes a my recommendations to *replace* a number of conditions suggested by the applicant to give greater surety that adverse effects will be avoided or mitigated. I recommend:

- Reducing speed limit for unsealed areas from 20 km/hr to 10 km/hr (applicant proposed conditions 30(a) and 37(c)(i), my recommended condition 19). This lower speed limit is in accordance with existing good practice and common to many construction sites in New Zealand.

- Increasing pre-construction monitoring from 3-months to one year (applicant proposed condition 39, my recommended condition 13). In my view, a full year of monitoring is required to adequately characterise the existing environment. This is also in accordance with existing good practice.

- Reducing 1-hour TSP trigger level and adding new 5-minute trigger level (applicant proposed condition 41, my recommended conditions 15 and 16). These reduced trigger limits are in accordance with good practice at other transport construction sites in New Zealand (e.g. Mackay's to Peka Peka and Waterview transport projects). I further recommend the (absolute) trigger levels be reviewed upon the completion of pre-construction monitoring to ensure they are not over, or under, conservative for the existing environment (my recommended condition 14).

- Reducing timeframe for follow-up with (dust) complainants from 10 working days to three (applicant proposed condition 11b, my recommended condition 28). A prompt response will facilitate a good neighbourly relationship with the community in accordance with existing good practice.

34 **Attachment 1** further contains my recommended conditions of consent in *addition* to those proposed by the applicant. These are intended to:

- Address the mitigation relied upon in both the applicant's and my assessment of construction discharges to air (applicant's recommendations in section 7.9.5 of the AEE and my recommended conditions 19-26); and

- Provide good practice air quality monitoring and management of particulate from construction (my recommended conditions 1-18 and 29-30).

Overall Assessment

35 Assuming my recommended conditions of consent are implemented I consider:

- Discharges to air from the construction of the extended runway will not have any adverse health or nuisance impacts on air quality offsite;

- Discharges to air from trucks hauling fill will not have any significant impact on air quality in the wider region; and

36 When considering the actual and potential effects of an activity, section 104 of the RMA requires the decision maker to have regard to the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 (NES for air quality). The NES for air quality includes short-term, ambient air quality standards for, *inter alia*, PM_{10} and nitrogen dioxide. Provided the conditions of consent I have recommended are implemented, I consider that the proposed construction will not impact on achievement of (NES for air quality) ambient standards for PM_{10} and/or nitrogen dioxide.

Conclusion

37 In my opinion, the key air quality issues arising from the proposed construction are:

- Particulate matter ('nuisance' dust and respirable fractions); and

- Traffic emissions from construction of the extended runway (including trucks hauling fill to the site).

38 I consider that discharges to air from construction of the extended runway, including traffic, will be satisfactorily addressed (i.e. no adverse effects offsite) if my recommended conditions of consent are imposed.

39 I have less confidence that the applicant's recommended conditions of consent will ensure adverse effects are limited to within 50 metres offsite. This is reflected in my recommended conditions for mitigation and management of fugitive dust being more comprehensive and stringent than those recommended by the applicant.

Date: 7 October 2016

. . . . . .
Louise Wickham

References

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FAA, (2015). *Aviation Emissions and Air Quality Handbook*. Federal Aviation Administration. Office of Environment and Energy. Version 3. Update 1. Washington. DC. USA. January.

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International Agency for Research on Cancer (IARC), 2009. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans List of Classifications, Volumes 1-116. Accessed 27 July 2016.

Ministry for the Environment (MfE), (2009). *Good practice guide for air quality monitoring and data management*. Wellington. April.

MfE, (2008). *Good practice guide for assessing discharges to air from land transport*. Wellington. May.

MfE, (2001). *Good practice guide for assessing and managing the environmental effects of dust emissions*. Wellington. September.

New Zealand Transport Agency (NZTA), (2016). *Ambient air quality (nitrogen dioxide) monitoring network Annual report 2007-14*. Wellington. February.

Attachment 1 Recommended Conditions of Consent: Air Quality

General Conditions

1 There shall be no noxious, dangerous, objectionable or offensive discharges to air to the extent that the discharge causes an adverse effect at or beyond the boundary of the site (i.e. construction zone(s)).

2 The consent holder shall cover all loads (that may generate fugitive dust discharges to air) to minimise the generation of fugitive dust. This includes all material being transported to and from the construction zone(s).

Air Quality Monitoring: General

3 All air quality and meteorological monitoring shall be undertaken in accordance with the *Good Practice Guide for Air Quality Monitoring and Data Management* (Ministry for the Environment, 2009).

4 All air quality monitoring to be sited, as far as practicable, in accordance with AS/NZS 3580.1.1:2007 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment.*

5 Meteorological monitoring to be sited, as far as practicable, in accordance with AS 3580.14:2014 *Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications.*

6 Continuous monitoring for PM_{10} and passive sampling for nitrogen dioxide shall be carried out at Moa Point at a location that is, as far as practicable, representative of resident's potential exposure to discharges to air from construction.

7 Passive sampling nitrogen dioxide (only) shall also be carried out at three locations along the proposed heavy traffic route on sections of State Highway 1:

- Onepu Road;
- Calabar Road; and

- Lyall Parade

8 Passive monitoring for nitrogen dioxide shall be carried out in accordance with the method described in section 3 of NZTA, (2016) *Ambient air quality (nitrogen dioxide) monitoring network Annual report 2007-14*.

9 Continuous meteorological and total suspended particulate (TSP) monitoring shall be carried out at a location that is, as far as practicable, representative of local weather conditions across the construction zone(s).

10 Continuous monitoring for particulate matter less than 10 micrometres in diameter (PM_{10}) shall be carried out in accordance with Schedule 2 of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

11 Continuous monitoring data shall be made available online in real-time in a format similar to GWRC public air quality monitoring.

12 Monthly summary reports of quality assured, air quality and meteorological monitoring data shall be provided to GWRC, and made available online, within 10 working days of end of each calendar month.

Advice Notes

The purpose of passive NO_2 monitoring is to detect long-term impacts (if any) of the proposal. The purpose of the PM_{10} monitoring is to demonstrate no adverse effects on health (i.e. ensure compliance with the national environmental standard for PM_{10} at Moa Point). The purpose of TSP monitoring is to demonstrate no adverse amenity effects from fugitive dust offsite. The purpose of meteorological monitoring is to inform ongoing site management (e.g. investigating dust complaints) and developing site specific trigger levels for TSP and PM_{10} (refer Condition 14).

The location(s) of PM_{10}, TSP and met monitoring sites have not been specified to provide some flexibility for the applicant to practically achieve these objectives.

Air Quality Monitoring: Pre-Construction

13 Monitoring shall be carried out for at least one year prior to construction commencing, for:

- TSP;
- PM_{10};
- Meteorology (rainfall, temperature, wind speed and wind direction); and
- Nitrogen dioxide.

14 At the completion of pre-construction monitoring, the consent holder and community liaison group shall review the (recommended) trigger levels in Table 1 (set out below) and amend them if necessary to ensure they are not under, or over, conservative for the existing environment.

Air Quality Monitoring: Construction

15 Monitoring shall be carried out during construction for:

- TSP
- PM_{10}
- Meteorology (rainfall, temperature, wind speed and wind direction); and
- Nitrogen dioxide.

16 In the event that any particulate trigger level in Table 1 (visible dust, TSP or PM_{10}) is exceeded, the consent holder shall investigate the cause as a priority and, if appropriate, immediately initiate dust mitigation measures to reduce ambient levels of particulate.

17 In the event that the one-hour PM_{10} or TSP trigger levels in Table 1 are exceeded for more than 1 hour (i.e. two consecutive hours, or more, above 150 $\mu g/m^3$ for PM_{10} or above 200 $\mu g/m^3$ for TSP), the consent holder shall cease all activities that generate fugitive discharges of dust to air. Construction may recommence when the trigger level is no longer breached. This does not apply if an investigation identifies that the consent holder is not the cause of the PM_{10} or TSP trigger being exceeded.

Table 1: Recommended* Trigger levels for TSP and PM_{10}

Parameter	Averaging period	Trigger Level
Visible dust	Instantaneous	Visible dust crossing the boundary
TSP	5 min 1 hour	250 µg/m^3 200 µg/m^3
PM_{10}	1 hour	150 µg/m^3
Wind warning	1 minute	10 m/s (during two consecutive 10-minute periods)
Rain warning	12 hours	There has been no rain in the previous 12 hours

*To be reviewed following 12-months baseline monitoring (refer Condition 14).

18 The consent holder shall notify GWRC monthly of any exceedances of the trigger levels in Table 1 and of the outcomes of any investigations and remedial actions undertaken.

Construction Dust Management

19 The speed of vehicles travelling on unsealed areas or access roads shall be limited to less than 10 km/hr.

20 The consent holder shall provide and use adequate water suppression to minimise dust emissions from unsealed areas and other sources of fugitive discharges of dust to air.

21 There shall be no deposition of earth, mud, dirt or other debris on any public road or footpath resulting from transport of materials, construction or construction related activities. In the event that such deposition does occur, it shall be removed as soon as practicable.

22 A wheel wash shall be installed, maintained and used to prevent the transportation of material onto sealed surfaces where the material can become a source of dust emissions.

23 Stockpiled material shall be located as far as practicable outside the operational flight envelope and away from sensitive receptors (i.e. residences at Moa Point).

24 The size, height and number of stockpiles that may generate fugitive dust shall be kept to a minimum and managed so as to avoid or minimise the generation of fugitive dust.

25 Construction is to be carried out, as far as practicable, in accordance with good practice mitigation of fugitive discharges of dust to air as outlined in the most up to date version of (Ministry for the Environment, 2001) *Good Practice Guide for assessing and managing the environmental effects of dust emissions*. This includes:

- Locating stockpiles and sources of fugitive discharges of dust to air so as to maximise separation distance to sensitive receptors (primarily residents at Moa Point).
- Limiting the height and slope of stockpiles.
- Limiting the drop heights from conveyors, loaders or other equipment transferring material that may generate fugitive discharges of dust to air.
- The use of wind breaks and/or bunding for stockpiles.
- Re-vegetation of exposed surfaces (including inactive stockpiles).
- Regular sweeping of sealed surfaces.
- Swift clean-up of spillage around transfer points.

26 Construction vehicles shall be serviced and maintained to minimise discharges to air as follows:

- Appropriate and regular engine maintenance (no visible emissions to air for more than 10 seconds).
- Ensuring vehicles are loaded correctly (i.e. not overloaded and/or covered if the material being transported has the potential to generate fugitive discharges of dust to air).

Construction: Dust Complaints Management

27 Upon receipt of any complaint about dust, the consent holder shall investigate the cause as a priority and, if appropriate, immediately initiate dust mitigation measures to reduce ambient levels of particulate. The investigation shall consider frequency, intensity, duration, offensiveness and location of the alleged dust nuisance and be carried out in general accordance with complaint investigation methods in the most up to date version of (Ministry for the Environment, 2001) *Good Practice Guide for assessing and managing the environmental effects of dust emissions*.

28 The consent holder shall advise the complainant of the outcomes of their dust complaint as soon as practicable, but at least within three working days.

29 The consent holder shall notify GWRC monthly of any dust complaints and of the outcomes of any investigations and remedial actions undertaken.

Construction: Dust Management Training

30 The Consent Holder shall ensure that personnel responsible for supervising contractor site staff (eg. foremen, supervisors, and managers) shall undergo dust management training required by the Construction Management Plan. Specifically, training shall include:

a) Dust mitigation;

b) Dust complaint management;

c) All conditions of consent relating to dust management including trigger levels and actions to undertake in the event these are exceeded;

Appendix 6

Wellington International Airport Limited

Proposed Runway Extension

Section 87F Report

Recreation, Landscape & Visual, and Natural Character Effects

Prepared for Wellington City Council &

Greater Wellington Regional Council

Michael Steven

Landscaper Architect/Landscape Planner

October 7, 16

Introduction

1. My name is Michael Lawrence Steven. I am a practicing landscape planner and landscape architect based in Pohara (Golden Bay).

2. I am a Registered Landscape Architect (NZILA).

3. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note (December 2014). This report has been prepared in accordance with the Code and I agree to comply with it. The matters covered within the report are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Qualifications and experience

4. I hold a Doctor of Philosophy in Architecture (Environment-Behaviour Studies) from the Faculty of Architecture, University of Sydney (Australia), a Master of Landscape Architecture by research from the Faculty of the Built Environment, UNSW (Sydney, Australia), a postgraduate Diploma in Landscape Architecture from Lincoln College (University of Canterbury), and a Diploma in Horticulture (Distinction) from Lincoln College.

5. My PhD research investigated the dimensions of environmental experience of recreationists within natural environments. In particular I investigated 'environmental knowing', or the way in which we make sense of the physical environment through our responses to the stimuli we perceive in the environment. My area of expertise is environment-behaviour studies, particularly environmental perception, and human factors in landscape design, planning, and management.

6. I have over 25 years of experience in the landscape architecture profession, both in New Zealand and Australia. A large part of my professional career has focused upon landscape assessment theory and practice. My PhD research at the University of Sydney investigated recreational experience, and in the course of this research I developed a typology of recreational experiences. I taught at tertiary institutions in Australia and New Zealand for 13 years. For the past 11 years I have practised as a landscape architect and landscape planner in New Zealand.

7. My recent professional work has involved landscape assessments and the presentation of expert evidence to local authority hearings Boards of Inquiry and the Environment Court on landscape issues for a wide range of sites around New

Zealand. I have a particular interest in the coastal environment, and I have undertaken several landscape, natural character and amenity assessments associated with coastal development proposals within the Wellington and Marlborough regions, including:

7.1. Expert evidence before the Environment Court, *Save the Point Inc. v Wellington City Council*, W82/2007 (Wellington Marine Education Centre, Te Raekaihau Point)

7.2. Expert evidence before the Environment Court, *Robert John Buckley v South Wairarapa District Council*, W4/2008

7.3. Expert evidence before the Environment Court, *Intercontinental Hotel v Wellington Regional Council*, W15/2008 (Hilton Hotel, Queen's Wharf)

7.4. Expert evidence before the NZ King Salmon Board of Inquiry

7.5. Expert evidence before the Environment Court in various appeals on marine farming applications, including: *KPF Investments Ltd v Marlborough District Council* [2014] NZEnvC 152; *R.J. Davidson Family Trust v Marlborough District Council* [2016] NZEnvC 81; *Clearwater Mussels Ltd v Marlborough District Council* [2016] NZEnvC 21.

8. I am a member of the New Zealand Institute of Landscape Architects, the Resource Management Law Association (RMLA) and the Environmental Design Research Association (EDRA).

Involvement with the proposal

9. I have been engaged by Wellington City Council and Greater Wellington Regional Council (**the Councils**) to review and report on technical reports prepared for the Wellington International Airport Ltd (WIAL) Proposed Runway Extension application. The specific technical reports I have reviewed are:

9.1. Technical Report 6 Assessment of Effects on Recreation (TRC Tourism), (including relevant aspects of Technical Report 11, Surf Break Impact Assessment (DHI Water and Environment Ltd))

9.2. Technical Report 24, Landscape and Visual Assessment (**ALVE**) (prepared by Mr Boyden Evans of Boffa Miskell Ltd)

9.3. Technical Report 25, Natural Character Assessment (**NCA**) (prepared by Mr Frank Boffa)

10. The purpose of my review and this report is to assist the consideration of the application through providing a critical review of the technical reports listed above. In particular I address:

    10.1. The appropriateness of methods applied in the assessments of environmental effects, and the adequacy and accuracy of the findings reported in the respective technical reports

    10.2. Any matters omitted from the technical reports pertinent to a decision on the application

    10.3. Any matter unresolved or which may be the basis of disagreement over the nature or severity of effects

    10.4. Any submissions referred to me by the Councils, relevant to the matters addressed in this report

    10.5. Any conditions that should be imposed if consent is to be granted.

11. In support of my review I have also read related technical reports and relevant sections of the Assessment of Environmental Effects document (Mitchell Partnership, 28 April 2016) and associated Appendices.

12. I prepared requests for further information on issues arising from the Recreation, and Landscape and Visual Effects Technical Reports. I address further issues arising from the applicant's responses to these requests later in this report.

13. In the company of other technical experts and Council Officers from the Councils, I visited the site on Thursday 30 June. I also have some familiarity with the site from 2 years residency in Wellington (2006-7), during which time I was involved in a number of coastal development matters, including the proposed Wellington Marine Education Centre at Te Raekaihau Point, at the western entrance to Lyall Bay.

14. This report is structured into five parts:

    14.1. PART A addresses Technical Report 6, Assessment of Effects on Recreation

    14.2. PART B addresses Technical Report 24, Landscape and Visual Assessment

    14.3. PART C addresses Technical Report 25, Natural Character Assessment

    14.4. PART D addresses matters raised by submitters that have been referred to me by the Consenting Authorities.

14.5. PART E summarises the principle conclusions I reach concerning my review of the Technical Reports, and recommendations arising from my review.

PART A: Assessment of Effects on Recreation (Technical Report 6)

Recreation Assessment: Review of methods

15. In this section I review Technical Report 6 (TR6), Assessment of Effects on Recreation (25 April 2016), prepared by TRC Tourism. I have also considered Technical Report 11 (TR11) , Surf Break Impact Assessment insofar as it informs my review of effects on surfing amenity. As the subject matter of TR11 is outside my area of expertise I do not review the document in this report, other than to note aspects of relevance to surfing amenity.

16. The recreation assessment described in Technical Report 6, applied five different techniques to the assessment of the recreational use of Lyall Bay and the likely effects of the project on recreation:

    16.1. A review of relevant background documents, plans and other reports

    16.2. Interviews with recreation user groups (key informant interviews)

    16.3. An online survey of 2,700 residents drawn from Wellington City Council's resident panel (on-line survey)

    16.4. Personal observations at and near Lyall Bay between 13 March and 1 April 2015 (participant observation)

    16.5. Review of technical reports and interviews with report authors on noise, construction method, traffic, ecology and surf amenity.

17. For the purposes of this review, I shall focus on the techniques I regard as most likely to yield data on current recreational use patterns in Lyall Bay: key informant interviews, on-line survey, and participant observation.

18. The adoption of three techniques (key informant interviews, on-line survey, and participant observation) for investigating the recreational use of Lyall Bay is a sound approach, in principle. Of the three techniques selected, no single technique has the capacity to yield sufficient data upon which to make informed judgements. The techniques adopted should, in principle, provide a good balance of data sources and ensure a range of recreational users is accounted for. The more techniques that are applied to the task, the more complete the emerging picture is likely to be.

19. Key informant (or stakeholder) interviews were conducted with representatives of recreation user groups (identified in Appendix 2 to the Recreation Report). Of those sources listed that represent actual recreational users, there is an unavoidable bias

towards active recreational users, particularly those users inclined to organise themselves into social groups as part of their participation in their activity of choice, such as surfers and surf life-savers. The report recognises that not all recreational users (e.g., surfers) will necessarily be club members. However, as regular users of Lyall Bay, the key informants selected for interview may have provided anecdotal information on recreational use by other users, not directly affiliated to the groups consulted.

20. The key informant interview process appears to focus largely on land-based activities, or at least activities that have an onshore presence or base within Lyall Bay (e.g., surf life-saving). Not represented among stakeholders interviewed are others groups, such as itinerant recreational fishers, that may visit the area by boat. The Wellington Recreational Marine Fishers Association is one such group. The views of members of this organisation do not appear to have been sought.

21. In this particular case it is difficult to judge the utility of the key informant interviews. While the report states (p.1) that: "[i]nterview questions were designed to find out about how recreation groups make use of Lyall Bay and other nearby bays on the South Coast", no information is provided as to specifically what questions were asked of the informants, and there is no separate analysis of the data obtained from these interviews. I assume that from the statement "...interview questions were designed", that the technique involved the use of structured or semi-structured interviews. A schedule of the questions asked and some analysis of the responses with respect to each question would have been helpful.

22. As there is no specific explanation or analysis of the interview process, I assume the data gathered has been used to inform the overall investigation, but in a rather general sense. There is no consistent basis for understanding what data may be attributed to which informant, and therefore how valid and reliable the findings might be. A more robust approach to this phase of the investigation and its reporting, would have produced data with greater utility.

23. The on-line participation survey provides quantitative data on participation in a range of recreational activities over a 12 month period (TR6, Figure 2). The report distinguishes between the activities engaged in by local residents (TR6, Figure 3), and activities engaged in by respondents residing in the wider Wellington City area (TR6. Figure 4).

24. It is a reasonable assumption that local residents would constitute a greater proportion of recreational users, and would also be more frequent users of Lyall Bay than residents from elsewhere in Wellington. Yet local residents are significantly

under-represented in the survey. Only 13% of the sample group were local residents (109 responses out of a total of 865[1] responses). I consider it would have been helpful to have identified a larger sub-set of local residents from the resident panel group, and to have conducted two separate surveys (Lyall Bay residents, and non-residents) for comparative purposes.

25. The survey found that within the population sampled, there appears to be a significantly higher level of engagement in land-based activities (categorized as either exercise-related, such as running, walking and cycling, or social activities, such as sight-seeing or visiting a cafe). Some marine activities, such as fishing from boats, are not represented at all in the survey findings, while other marine-based activities (e.g., swimming, surfing) rated very low for participation rates for both local residents (8%) and Wellington residents from further away (4%). The survey found Lyall Bay is used exclusively for recreational use by only 5% of respondents, the majority of whom were plane watchers.

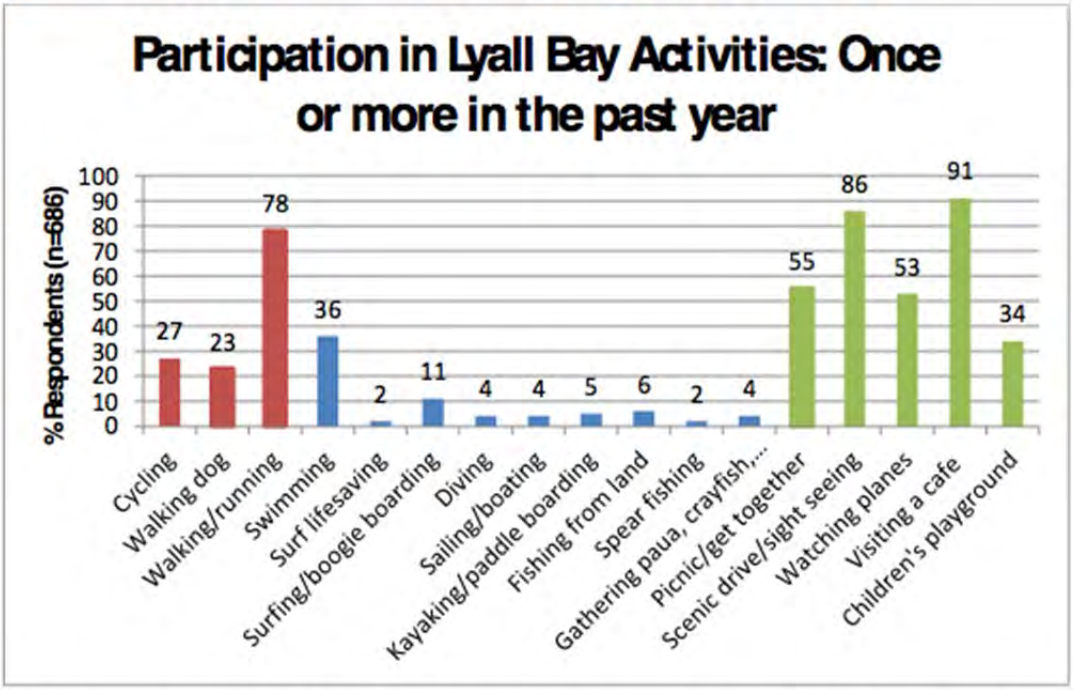
26. I consider a significant degree of caution must be applied in interpreting these findings and forming conclusions relevant to the project:

    26.1. The survey sample was drawn from Wellington City Council's Residents Panel. The use of a sample drawn from this panel is particularly relevant to the investigation matters of interest to, or affecting Wellington residents generally. This is not the case in this particular matter, as I do not regard it as a reasonable assumption that all residents of Wellington are equally likely to recreate at Lyall Bay. In my opinion, the use of such a sample is less suited to the investigation of the current issue, given the geographically-specific nature of the effects and the narrower range of groups likely to be affected. While this approach may have been useful in helping describe a general picture of recreation at Lyall Bay from a city-wide perspective, the generalities mask the most pertinent issues.

    26.2. The scoping of recreational issues prior to undertaking the recreational assessment should, in my opinion, have identified marine-based recreation, and in particular surfing, as the activities likely to be most affected. Marine-based recreational users, particularly surfers, are significantly under-represented in the survey sample, as Figure 2 from the Recreation Assessment (TR6) illustrates (see Figure 1).

[1] Figure 2 in TR6 refers to there being 686 respondents, which is a significantly lower figure than referred to in the text (p.1)

Figure 2: Participation in recreation activities in Lyall Bay in the last 12 months



Activities are colour-coded with red representing exercise related activities on land, blue representing activities on or in the water, and green representing social activities.

Figure 1: Reproduction of Figure 2 from Technical Report 6, Assessment of Effects on Recreation, illustrating the relatively small number of respondents engaging in marine=-based recreational activities

26.3. The numbers of respondents reported engaged in marine based activities was low (8% of Lyall Bay residents, 4% of residents from further afield). The 8% of Lyall Bay resident respondents (N=109) who participated in marine-based recreational activities numbers fewer than 9 respondents, while the number from further afield (4% of 756) amounts to no more than 30 persons. Of these 39 respondents, there is no data on how many are active surfers In my opinion, surfing is the recreational activity potentially most affected by the proposal, yet surfers, and other marine-based recreationists generally are under-represented in the sample.

26.4. In my opinion, a misleading aspect of the findings is the implication that adverse effects on marine-based recreation generally - and surfing in particular - cannot be regarded as more than minor owing to the low numbers of participants the survey identified as being engaged in these activities.

26.5. A scoping exercise prior to the design of the investigation should have identified that Lyall Bay is the pre-eminent Wellington surfing location. The key

informant interview process identified that on good days, the number of surfers riding the Corner reaches saturation point, while across the bay there may be 200 surfers in total. In these circumstances is it somewhat irrelevant that 96% of Wellington residents living further afield than Lyall Bay do not participate in watersports at Lyall Bay.

27. As a consequence of the issues listed above, I do not regard the on-line survey as being a reliable basis for assessing the importance of surfing and other water sports in Lyall Bay, nor the magnitude of adverse effects on watersports activities, particularly surfing, likely to arise from the project.

28. The third approach to data collection, participant observation, had the potential to complement the anecdotal nature of key informant interviews and participation patterns from the on-line survey, by providing data on the actual behavioural patterns of recreationists, as observed within Lyall Bay. The technique could be designed to provide data on participant numbers, time and dates of activity, duration of activity, the spatial distribution of activities, and prevailing weather conditions that may influence behavioural patterns.

29. Potentially a very valuable tool, the utility of the observation data is limited by the brief and unrepresentative period over which observations were made. Observations were conducted at 6 observation sites on 16 days between 13 March and 1 April 2015, yet for reasons that are not explained in the report, only the data for 7 days is reported. Significant variations in the data within this 7 day period are not explained, and no information is provided on weather conditions prevailing at the time that may have influenced observations. There is no indication whether the days surveyed can be regarded as representative of weather for March. No time is given for the duration of observations during the day, and what factors may account for differences in the data recorded. While the data was purportedly gathered from 6 observation sites around Lyall bay (TR6, Appendix 3, Observation Locations), the reported data makes no reference to the observation zone within which the activities were observed.

30. The Moa Point embayment is identified as an observation zone, yet there is no recreational data in the report that can be recognised as relating specifically to this location (or indeed, any location). The Moa Point embayment is readily accessible and offers a different range of recreational activities to the western areas of Lyall Bay. It is also the recreational location to be most directly impacted by construction activities, being immediately adjacent to the planned extension. As such, a substantial part of the CMA part of the embayment will be included within an exclusion zone for the period of construction. The direct implications of the exclusion zone for users of the embayment are not discussed, but I anticipate that this omission

can be rectified following further participant observation studies, as agreed following a request for further information (see following paragraphs and Appendix 1).

31. Overall, I consider the participant observation component of the recreation assessment to be poorly designed and implemented, and poorly reported. Very little, if any utility can be gained from the findings. There is no basis for accepting that seven days of reported data is sufficient to draw any useful conclusions on recreational use over a year.

32. Two requests for further information were made to the applicant (20 May and 16 June, 2016), in which a range of concerns were expressed regarding shortcomings in this aspect of the Recreation Assessment (see Appendix 1 for the full text of requests and the Applicant's responses).

33. In response to the first request, (20 May 2016), the applicant provided information on the weather conditions prevailing at the time of the surveys:

> *The observation technique was structured around fine days when use of Lyall Bay would be highest and where people were likely involved in a wider range of activities than on less-favourable weather days. While observing "low-use" days can also be useful, the need in this case was to explore how busy the place gets and what, if any, issues arise as a result. For instance, the observations provided insight into how busy The Corner car park becomes, including frequent pedestrian crossings between the car park and the Spruce Goose Café. This in turn was raised as a potential issue for management of the haul routes.*
>
> *The observations undertaken are specific to March. Undertaking observations on sunny/calm and sunny/windy days in spring, summer and winter (when most activity takes place) would provide a more complete picture of the potential maximum volumes of use that Lyall Bay could receive at any time of the year.*

In response to the second request (16 June 2016), the applicant has undertaken to complete further surveys necessary to provide a more complete and helpful data set:

> *The Applicant is prepared to undertake some further survey work during 2016 and for this to form part of the Applicant's evidence for the hearing.*

34. This is a positive step, and one which, if designed and implemented well, could yield valuable data unavailable from the other techniques used. The participant observation studies, when completed, will supplement the general understanding gained so far with specific information regarding patterns of recreational behaviour, as observed at different times of the day, and at different times of the year. Importantly too, this information could have a spatial dimension, illustrating how patterns of behaviour are distributed around the Bay.

35. The shortcomings of the on-line survey and participant observation methods aside, I consider the recreation assessment provides a reasonable but generalised understanding of recreational use patterns within Lyall Bay. The more common recreational activities are identified, and there is some limited information on their temporal and spatial distribution, and the particular weather and sea conditions that favour the marine-based activities.

Assessment of effects

36. The recreation assessment of effects has identified three main areas of effects (TR6, section 3, pp.16-21):

    36.1. Wave action and beach amenity

    36.2. Noise (construction and post-construction), and

    36.3. Construction phase traffic congestion.

37. The main Assessment of Environment Effects (AEE) document (p.236) re-states these effects in the following terms:

> *Potential annoyance or disruption to recreational pursuits (walking, cycling etc) during construction due to noise effects.*
>
> *Potential congestion/conflicts with recreational users (cyclists) along proposed public haulage routes*
>
> *Changes to the current surfing amenity in Lyall Bay*
>
> *Temporary disruption during construction and loss of access to kai moana, fishing spots and recreational activities within the immediately affected CMA*

38. The last point relates to the imposition of a marine exclusion - or temporary occupation - zones around the perimeter of the proposed reclamation - see Figure 1, below

39. The recreation report concludes that adverse effects with respect to each of these issues will be minor or less than minor. With respect to surfing amenity I regard this conclusion as an under-estimate of the level of likely effects.

Surfing amenity effects

40. The likely outcomes in terms of surfing amenity are identified in section 3.1 (TR6, p.16) as:

> *The Airport Rights surf break that occurs off the end of the current runway will be lost with the extension*
>
> *Surf rides at The Corner could reduce by 4% to 8% as a result of a slight reduction in wave peakiness*
>
> *Surf rides at Middle Beach could reduce by 14% to 29%*
>
> *Surf rides at West Beach could reduce by 18% to 27%*

41. These estimates are taken from figures reported in the Surf Break Impact Assessment (Technical Report 11), which I refer to briefly in the next section of this report.

42. The loss of the Airports Right surf break is considered a "...localised loss affecting a small group of people." I consider the matter of whether the effect is localised (or not) and the numbers of affected recreationists involved to be secondary to the magnitude of the actual effects, which in this case will be significant, i.e., total loss of the Airport Rights surf break. In considering the scale of effects, I understand that consideration of impacts on the resource itself (in this case a popular, but rare wave break), is of greater relevance than the numbers of participants who use that resource.

43. Effects on The Corner are assessed to be less than minor, given the high levels of congestion that can occur there, and the opinion that any further congestion may be "...very difficult to detect". Again, I consider the wrong test has been applied to the assessment of effects. While it is the case that high levels of congestion can occur at The Corner, the reduction in surf rides will aggravate a situation already subject to considerable user pressure. I understand that the density of users at The Corner can approach saturation levels at times. Any overall reduction in suitable waves will potentially lead to greater crowding, as surfers compete for a diminished resource.

44. While the proposed Submerged Wave Focussing Structure (SWFS) may serve to mitigate loss of surfing amenity at Middle and West Beach, the success of this particular aspect of the proposal is by no means assured, and insufficient data is available upon which to base an informed opinion. The SWFS is of itself a proposal requiring considerably more detailed baseline data to inform its design, and the potential environmental effects of its implementation. Any benefits that may accrue from its construction are largely hypothetical at this stage.

45. It has been proposed by the applicant, following submissions from affected stakeholders, that the design and implementation of the SWFS be the subject of an adaptive management approach, by way of a collaborative Surf Mitigation Adaptive Management Plan (SMAMP). A draft SMAMP is included as a condition of consent (Condition 66). I endorse this approach.

46. Effects on surfing amenity overall have been assessed to be minor by the applicant. As already noted, this conclusion appears to be based upon (1) assumptions concerning the effects of the extension on wave patterns within Lyall Bay, and (2) the limited numbers of surfers who are likely to be affected, particularly as the Airport Rights surf break is only surfed under certain rare conditions by a small number of expert surfers.

    46.1. I understand the issue of effects on wave activity to be uncertain, and contested, owing to insufficient baseline data and different approaches to modelling. This matter is referred to in the Review of Coastal Processes, prepared by Dr Derek Goring.

    46.2. As to the issue of numbers of recreationists affected, from the perspective of those surfers concerned who will experience the loss of surfing amenity that is likely to result, the effects can be regarded as significantly adverse (a complete loss of amenity in the case of the Airport Rights break), rather than minor. Even adverse effects of overcrowding that may result from a possible reduction in the number of surf rides, are likely to be perceived as more than minor by those most affected. In respect of effects on surfing amenity, I consider the recreation assessment has under-estimated the likely level of adverse effects, as these are experienced by the surfers themselves.

<u>Surf Break Impact Assessment (Technical Report 11)</u>

47. My review of this report is limited as for the most part I regard its subject matter as the domain of other disciplinary experts. In particular I defer to the expertise of Dr Derek Goring, the Councils' expert in hydrodynamic modelling and oceanography. However, I note the following comments/findings from the DHI report as being relevant to the consideration of surfing amenity:

    47.1. The Airport Rights break will be lost.

    47.2. The proposed runway extension will cause a reduction in wave 'peakiness', with a consequent reduction in surf rides of between 14- 29% for Middle Beach and 18-27% at West Beach.

47.3. The reduction in wave peakiness at The Corner surf break will be affected to a lesser extent, with an expected reduction of total number of surf rides of 4-8%.

47.4. For each of The Corner, Middle Beach and West Beach, adverse effects are predicted to be greatest during longer period swells.

47.5. I do not consider it likely that the potential surfing amenity adverse effects can be avoided or reduced.

47.6. A submerged wave focusing structure (SWFS) has been proposed as a means of potentially mitigating adverse effects. It is thought that the SWFS potentially may further enhance surfing amenity in Lyall Bay. However, as the SMAMP acknowledges, further baseline data collection, modelling and design is necessary to establish the feasibility of this aspect of the proposal. Accordingly, what level of mitigation it may provide is somewhat uncertain at this stage.

48. I understand these findings form the basis of opinions on the effects of the proposal on surfing amenity reported in the Recreation Assessment. However, I note also that the figures on the reductions in surf rides are based upon an approach to modelling that have been questioned by Dr Goring.

49. In Dr Goring's assessment, the development is likely to reduce the surfing amenity to some degree, but he questions whether any reduction will be discernible to surfers.

50. Accordingly, I consider the conclusions of the Recreation Assessment on the effects of the proposal on surfing amenity need to be treated with some caution. The one incontrovertible impact appears to be the total loss of the Airport Rights break. Beyond this, if the DHI (Technical Report 11) figures on reductions in surfing amenity should prove accurate, then in my opinion the adversity of effects has been under-rated by the applicant. What I regard as an under-rating of effects may be due to what appears to be the focus of the applicant's recreation assessment on the numbers of users that will likely be affected, rather than effects on the surfing resource itself.

Other recreation effects

51. Effects on cycling and pedestrian activity will likely be confined to the period of construction, and will be dependent to a large extent on the management of construction and haulage traffic particularly along Moa Point Road and Lyall Bay Parade. This is a route particularly favoured by weekend cyclists. An increase in heavy traffic for haulage will have adverse effects upon cycling amenity and safety - I consider the two aspects to be closely related as perceptions of safety will have a bearing on the amenity benefits of cycling. The magnitude of effects will depend upon

the frequency of haulage traffic, the size of haulage vehicles, and the times of greatest haulage traffic frequency.

52. The avoidance or mitigation of traffic effects falls to other experts to determine. It is proposed that construction phase traffic effects be controlled through the implementation of a Construction Traffic Management Plan (CTMP). I support the involvement of cycling advocacy groups in the preparation of this plan.

53. Loss of access or restrictions on recreational activities (particularly marine based activities, but including the gathering of kai moana) resulting from the imposition of the temporary occupation zones (see Figure 2, below) will occur. The full implications of the temporary exclusion zones may not be apparent until construction gets underway. The runway exclusion zone will affect persons gathering kai moana and fishing, and marine recreation activities such as kayaking, kite surfing and wind surfing. These water based activities are not location specific and it is likely the exclusion zones can be accommodated through changed recreation behaviour patterns.

54. From Technical Report 17 (Coastal Hydrodynamics and Sediment Processes) and the review of this report by Dr Derek Goring, I understand there to be a possibility of a turbidity plume from suspended sediment discharges reaching inner Lyall Bay under conditions of high sediment discharge (2 kg/s) and calm weather. Such a situation may result in water discolouration which may impact adversely upon amenity for swimmers. I understand the potential for suspended sediment plumes can be controlled by way of a proposed Erosion and Sediment Control Plan and associated Conditions (61-65). Mr McLean addresses this issue in detail.

55. The exclusion zone that will be necessary for the construction of the SWFS, being more centrally located within Lyall Bay, is likely to affect the full range of water based recreation activities through restrictions on access to the central part of the bay. While kite surfers and windsurfers may be able to avoid the area, adverse effects on surfers using the Middle Beach - and possibly other adjacent surfing zones - are likely to be more than minor for the duration of the construction period. Further detailed design and modelling of the effects of the structure will be necessary to reveal the full extent of the exclusion zone and construction activities on surfing amenity.

Figure 2: Reproduction of Figure 1.6 of the Resource Consents Application document showing what are referred to as Temporary Occupation Zones to Enable Construction (CMA areas appearing pale green/blue on aerial photo). These areas are referred to in paragraph 1.4.1 (p.10) as Temporary Exclusion Zones. The areas affected include both the areas of the proposed runway extension, and the location of the Submerged Wave Focussing Structure

56. Issues of noise and dust are discussed in the Recreation Technical Report 6 but as consideration of these matters fall within the disciplinary domain of other experts, I shall not comment beyond noting that:

    56.1. An increase in dust (and larger particulate matter from haulage vehicles falling onto roads) could have adverse effects upon the amenity of pedestrians and cyclists in particular. However, I understand the effects of dust can be avoided through conditions of consent.

    56.2. Noise, in the vicinity of an airport is a ubiquitous problem, and to a very large extent 'goes with the territory'. The report notes (p.17) that "[t]he effects of construction noise on all other activities (such as walking, running/jogging, swimming, surf life-saving and walking dogs along the beach) are not considered to be significant". I agree with this conclusion as it relates to recreational amenity.

Recreation Assessment: Conclusions and recommendations

57. The Assessment of Effects on Recreation (Technical Report 6) paints a very generalised picture of the recreational use of Lyall Bay. While the methods selected

for the investigation were sound in principle, the actual implementation of two of the methods - the online survey resident survey and the participant observation technique - have yielded data of limited relevance and utility to the issue under investigation. The decision of the applicant to conduct further recreation surveys prior to the hearing is acknowledged and supported.

58. Short term effects during the construction period will affect a wide range of recreational users, including cyclists, water-based recreationists (particularly surfers) and gatherers of kai moana. With the exception of adverse effects arising from the enforcement of exclusion zones, some of these effects (e.g., effects of heavy traffic on cyclists) may be manageable through management plans (e.g., Construction Traffic Management Plan), or through short term recreational behaviour modification by recreationists. I consider short term effects with respect to land-based recreational activities to be minor, or less than minor, and acceptable. Mitigation of effects on cyclists and other land-based recreationists can be mitigated to an extent by way of proposed management plans, including the Construction Traffic Management Plan and Stakeholders and Communication Management Plan.

59. The effects of exclusion zones may not be fully appreciated until these areas are established and their spatial extent becomes apparent. The exclusion zone for the SWFS is likely to have the greatest impact on the activities of Lyall Bay water-based recreationists, but uncertainties regarding the design of this structure prevent an accurate estimate of effects. I consider short term effects on water-based recreational activities, such as surfing and gathering kai moana to be more than minor within the areas of the exclusion zones. For some recreationists, such as surfers, adverse effects arising from the SWFS exclusion zone may be unacceptably adverse in the short term, and unable to be mitigated.

60. A level of recreation displacement may occur as individuals relocate their recreational interests elsewhere for the period of construction. This may apply particularly to those whose activities are impacted adversely by the exclusion zones.

61. Long term (post-construction) effects on surfing amenity are uncertain. If DHI (Technical Report 11) predictions as to the likely reductions in the number of rides should prove accurate, then I regard the long term adverse effects on surfing amenity to be more than minor. However, there is some uncertainty as to likely nature of effects on waves, and the implications for surfing amenity. Dr Goring notes in his report; "...the development is likely to reduce the surfing amenity to some degree. Whether that will be discernible to surfers is arguable." Dr Goring also notes that the prospects for mitigation and enhancement by way of the SWFS are uncertain, and he suggests alternative solutions be investigated through changes to the design of the

footprint of the runway extension. For expert surfers, the loss of the Airport Rights break may be regarded as an unacceptable outcome, and an outcome that is beyond the potential of the SWFS to mitigate.

62. I acknowledge as a positive proposal the condition of consent (Condition 66) providing for adaptive management of surfing amenity by way of a Surf Mitigation Adaptive Management Plan (SMAMP). However, my understanding of the situation is that there are too many uncertainties concerning the design and implementation of the proposed Submerged Wave Focusing Structure to be able to regard it as a viable option for mitigation. Insufficient baseline data is available, no detailed design has been undertaken, and no assessment of effects has been undertaken. It could prove to be the case that the SWFS proves unviable before any attempt to implement it through an adaptive management process even commences.

63. Landscape and urban design proposals for publicly accessible walking areas (promenade and lookout points, and Moa Point access) will enhance recreational opportunities for walkers. However, I consider the design concept for the Moa Point area to be insufficiently resolved to permit any helpful analysis. Significant questions of public safety arise from the provision of public access within an area subject to large waves, and this issue does not appear to have been recognised or addressed in the conceptual design proposals.

64. A Community Liaison and Stakeholders and Communication Management Plan (SCMP) is to be prepared and implemented (Condition 9), and a Community Liaison Group formed (Condition 10). The proposed membership of the Community Liaison Group (Condition 10(a) (iv)) is proposed to include: “Representatives of the local community, including at least one resident of Moa Point Road”. In my opinion, representatives of the local community should include a representative of the surfing and surf life-saving communities.

PART B: Landscape and Visual Assessment (Technical Report 24)

Introduction

65. In this section of my report I review Technical Report 24, Assessment of Landscape and Visual Effects (ALVE) report, prepared by Boffa Miskell Ltd and dated 22 April 2016.

66. The ALVE report follows the generally accepted format of such investigations, with a description of the project, a description of the existing environment, or landscape context, with particular reference to the Lyall Bay landscape/seascape.

67. The statutory framework for the assessment of the project is identified as the RMA and the NZCPS (2010). Section 3.1 of Appendix 1, Assessment Methodology refers also to the Wellington District Plan and the Regional Policy Statement 2010 (RPS) among a range of other documents that were reviewed. The RPS contains a number of objectives and policies pertaining to the coastal environment and landscape, but these are not specifically referred to in the ALVE report. It may be the case that the author of the ALVE report has assumed these objectives and policies to be addressed adequately by way of consideration of NZCPS Policies 13 and 15. However, I consider some comparative analysis of RPS coastal environment and landscape policies, with NZCPS Policies 13 and 15 is necessary to demonstrate that the relevant provisions of the RPS have been considered.

68. RPS Policy 50, *Managing effects on outstanding natural features and landscapes – consideration*, is a provision that requires specific analysis[2], and I address this in the next section of this report.

69. The method for the landscape and visual assessment is set out in Appendix 1 to the ALVE report. A review of the method is presented in following sections of this report.

Landscape context and significance

70. Project-based landscape assessments are generally premised on the definition of the landscape context within which the project is located, and with reference to which the magnitude of effects are to be assessed. In the context of this particular matter, and

[2] "Policy 50 provides an interim assessment framework for councils and resource consent applicants prior to the identification of outstanding *natural features* and *landscapes*, in accordance with policy 25, and the adoption of plan provisions for protection in accordance with policy 26." (Explanation to Policy 50 Managing effects on outstanding natural features and landscapes – consideration, Wellington RPS)

consistent with NZCPS Policy 15, the spatial extent of the landscape within which the project is located must also consider the adjacent seascape:

> Policy 15: Natural features and natural landscapes
>
> (a) *To protect the natural features and* ***natural landscapes (including seascapes)*** *of the coastal environment from inappropriate subdivision, use, and development:* [emphasis added]

71. For the avoidance of any ambiguity over the extent of the landscape context, it is necessary for the spatial extent of the landscape/seascape to be mapped. The relevant area has been defined and is illustrated on Figure 8 Lyall Bay Landscape/Seascape (ALVE report graphic attachments), reproduced below as Figure 3. The landscape context for the project is described in Section 3.0 (commencing p.5) of the ALVE report.

Figure 3: Reproduction of Figure 8 Lyall Bay Landscape/Seascape, from the ALVE Report. The areal photograph show the landscape/seascape defined for assessment purposes. The wider landscape/seascape is divided into a East Lyall Bay and East Lyall Bay area.

72. I regard the landscape as defined to be a credible analysis for the purposes of the assessment, however I anticipate that expert opinions may vary as to the spatial extent of the relevant landscape/seascape. Given the wording of the introductory

paragraph to NZCPS Policy 15 (*To protect the natural features and natural landscapes (including seascapes) of the coastal environment...*), an analysis that recognises the Lyall Bay seascape as a relevant area for assessment, independent of the terrestrial landscape, also may be regarded as a legitimate frame of reference for analysis.

73. How the landscape/seascape is defined in terms of areal extent, and the location of boundaries is influential in determining its natural character. The significance of the location of boundaries is illustrated at paragraph 4.24 (p.11) of the ALVE report where it states; "It is the landscape generally (as opposed to the seascape) that has undergone the greatest physical modification."

74. In this particular matter, it is the less-modified (and thus more natural) seascape that is to be impacted most significantly by the proposal, and on this basis consideration of the effects of the proposal on the terrestrial landscape are less relevant in my view. This raises the question of whether the seascape can and should be defined as a separate entity to the highly modified terrestrial environment for landscape assessment purposes. To the best of my knowledge, such separation is as yet untested in RMA-based landscape assessment, although the separation of terrestrial from marine areas is becoming standard practice in NZCPS Policy 13 assessments of the natural character of the coastal environment.

75. In consideration of RMA section 6(b), which provides for the protection of outstanding natural features and landscapes from inappropriate subdivision use and development, and NZCPS Policy 15, which provides for the protection of the natural features and natural landscapes of the coastal environment, it is necessary to address the question of whether any part of the landscape context of the project can be regarded as a feature[3]. For the purpose of s6(b) and NZCPS Policy 15 assessments, landscapes and features are to be regarded as distinctly different entities for resource management purposes. As is the case with landscapes, the extent of any landscape feature should be spatially defined through mapping.

76. At paragraph 4.6 (ALVE report, p.8) it is stated:

> *While Lyall Bay is not a natural landscape there are natural features present.*

77. No specific consideration appears to have been given to the identification and spatial definition of features, as distinct from the landscape/seascape. However, the

[3] "...a distinctive or characteristic part of a landscape". *Wakatipu Environmental Society Inc. v Queenstown Lakes District Council* C129/2001, 9 August 2001 at [33]

recognition that there are “natural features present” suggests the need for accurate spatial definition and analysis with respect to NZCPS Policy 15(b):

> *(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural features and natural landscapes in all other areas of the coastal environment;*

78. At paragraph 3.12, (ALVE report, p.6) it is stated that Wellington City Council have not yet undertaken a study to identify any section 6(b) outstanding natural landscapes and features of Wellington district. In such circumstances I consider it necessary that the landscape assessment for the project address this issue. The requirement to do so is stated in Policy 50 of the RPS:

> Policy 50: managing effects of outstanding natural features and landscapes-consideration
>
> When considering an application for a resource consent, notice of requirement or a change, variation or review of a district or regional plan, a determination shall be made as to first, whether an activity may affect an outstanding natural feature and/or landscape, and second, whether or not an activity is inappropriate, having particular regard to the following:
>
> (a) the degree to which the natural feature or landscape values will be modified, damaged or destroyed including:
>
> (i) the duration and frequency of any effect, and/or
>
> (ii) the magnitude or scale of any effect;
>
> (b) the irreversibility of adverse effects on landscape values;
>
> (c) the resilience of the natural feature, place or area to change;
>
> (d) the opportunities to remedy or mitigate previous damage to natural feature or landscape values; and
>
> (e) whether the activity will lead to cumulative adverse effects on the natural feature or landscape values.

79. The ALVE report, in omitting any specific reference to the RPS, has failed to acknowledge the relevance of Policy 50, and the requirement to undertake an original assessment of the outstanding natural features and landscapes of the locality.

80. A generally accepted approach to landscape assessment adopts a 3-stage process for assessment[4]:

80.1. Identify the relevant landscape/seascape, or feature,

80.2. Determine whether a landscape/seascape qualifies as a 'natural' landscape/seascape or feature, and if so, how natural (with reference to the scale of natural character given in Figure 4, below),

80.3. Assess whether any landscape/seascape or feature, as a natural landscape/seascape or feature, is also outstanding.

81. This 3-stage process is consistent with the evaluation process stated in RPS Policy 25: *Identifying outstanding natural features and landscapes – district and regional plans*.

82. The question of whether a landscape/seascape or a feature is 'natural' is particularly significant with respect to NZCPS Policy 15. While Policy 15(a) provides for the protection of; "*...outstanding natural features and outstanding natural landscapes in the coastal environment*", Policy 15(b) provides protection for "*...other natural features and natural landscapes in the coastal environment*" - i.e., natural features and landscapes that are not outstanding.

83. The ALVE report states (paragraph 4.24, p.11) that in the opinion of the assessor, the Lyall Bay landscape/seascape:

> *...cannot be considered a natural landscape/seascape. There are however, natural features present and natural processes occurring, albeit in places where these are truncated or modified. It is the landscape generally (as opposed to the seascape) that has undergone the greatest physical modification.*

84. Whether a landscape or feature is a natural landscape or feature is generally resolved with reference to the scale of natural character (Figure 4). The application of this scale is premised on the assumption that the terms 'natural character', and 'natural' as it is used in the context of outstanding 'natural' landscape refer to one and the same phenomenon. A natural landscape or natural feature can be regarded as a landscape or feature displaying natural character at levels above the mid-range

[4] Referred to in *Man O'War Station Ltd v Auckland City Council* [2015] NZHC 767, at [10]

(Moderate) of the scale. Within the ranges Moderate – Very High, a landscape or feature may be regarded as passing the naturalness threshold for consideration as an outstanding natural feature or landscape (or in this particular case, seascape). There is no objectively verifiable cut off point between ranges on the scale – more of a fuzzy transition - and as I note in the caption to the scale, landscapes and features within the upper end of the Moderate range of the scale may, in some circumstances, be regarded as sufficiently natural to pass the naturalness threshold for section 6(b) and NZCPS Policy 15 purposes.

Figure 4: 7-range scale of naturalness for the assessment of the degree of natural character exhibited by a landscape or the coastal environment. The shaded part of the scale is the range within which natural processes become dominant over cultural processes, and represents the range within which a feature or landscape may be regarded as natural enough for s6(b) or NZCPS Policy 15 purposes. Landscape assessed as being within the Moderate range of the scale will generally display natural and cultural influences in equal measure.

85. I consider an inadequate analysis has been conducted for the purpose of assessing the natural character of the landscape/seascape context of the project. While this work has been undertaken by Mr Boffa and reported in his Natural Character report (Technical Report 25), it is not cited in the ALVE report. Rather, At paragraph 4.26 (p.11) the ALVE report concludes:

> *In summary, the Lyall Bay landscape/seascape is highly modified with some parts much more modified than others. Given the extensive modification* ***it cannot be considered a natural landscape/seascape****. There are however, natural features present and natural processes occurring, albeit in places where these are truncated or modified. It is the landscape generally (as opposed to the seascape) that has undergone the greatest physical modification. Progressive reclamations to establish the current airport have had a significant effect on the seascape, particularly at the land/sea interface on the eastern part of Lyall Bay*. [emphasis added]

86. Mr Boffa assesses the natural character of the marine components of Lyall Bay (within which area the runway extension is shown as being located) as Moderate for the Inner Bay, Moderate-High for the Outer Bay, with an overall rating of Moderate. (see Natural Character Assessment Technical Report 25, Figure 5, p.15 for map of areas and summary table of natural character ratings, p.33).

87. The question of whether a characteristic area of seascape, such as the marine component of a bay (i.e., that area being defined as enclosed by the mean high water line, independent of the enclosing terrestrial land) could be considered as a feature for NZCPS Policy 15 purposes is as yet untested, to my knowledge. The case for a seascape feature can be understood with reference to two such features in the wider seascape of Cook Strait and the outer Marlborough Sounds: the Karori Rip, and the waters of French Pass. Both of these phenomena could, in my opinion, legitimately be regarded as seascape features, having distinct patterns of wave action and tidal currents that can be perceived and appreciated independently of the adjacent terrestrial environment. I consider that in circumstances in which the characteristics of currents and wave actions are sufficiently different to those of the wider seascape context, a case could be made for regarding the waters of a bay as a feature.

88. In my opinion, the waters of Lyall Bay have a distinguishing character derived from exposure to the southerly swells of Cook Strait, and the "unlimited fetch of the Southern Ocean", as it is referred to in Dr Goring's report. This character is sufficient to define the water surface as a seascape feature.

89. As noted earlier, support for the recognition of Lyall Bay as a feature appears at paragraph 4.6 of the ALVE report, where it is stated:

> *While Lyall Bay is not a natural landscape there are natural features present**. The sea, waves and tidal action are major defining elements** as are the sandy beach, the fringe of reefs and the unbuilt headlands of Te Raekaihau on the west and Palmer and Hue te Taka Peninsula on the east.* [emphasis added]

90. Just how this statement is to be interpreted in spatial terms is unclear, but I take the statement, "*the sea, waves and tidal action are major defining elements*", as support for the idea the waters of the bay as a natural feature. The matter could have been clarified in the ALVE report by means of a graphic representation of the spatial extent of any specific features that may be impacted by the proposal.

91. If Lyall Bay is conceptualised as a seascape independent of the adjacent landscape, or as a seascape feature for the purposes of NZCPS Policy 15 and RPS Policy 25 assessment, it is my opinion that, with reference to the scale of natural character presented above, a Lyall Bay seascape or feature clearly falls within the range of natural character that would qualify it as a natural seascape or a natural seascape feature. As such, Lyall Bay meets one of two high level tests for the identification of outstanding natural features and landscapes in RPS Policy 25: "that its natural components dominate over the influence of human activity".

92. As a natural seascape or natural feature, Lyall Bay would qualify as being subject to NZCPS Policy 15(b).

93. While the surface waters of Lyall Bay can be regarded as a natural seascape or natural seascape feature for the purpose of NZCPS Policy 15 and RPS Policy 25, it is my opinion that the second test in RPS Policy 25, the threshold for outstandingness, is not met. With regard to the second test of RPS Policy 25, whether the natural feature or landscape is "exceptional or out of the ordinary", I regard the waters of Lyall Bay as displaying high aesthetic quality, but overall, the seascape/feature falls short of being exceptional or out of the ordinary with respect to each of natural science, sensory and shared and recognised factors.

94. On the basis of my familiarity with the locality, and on the basis of an intuitive analysis only, it is my opinion that Lyall Bay, considered as a landscape/seascape incorporating the marine and terrestrial area defined in Figure 8 of the ALVE, does not qualify as an outstanding natural landscape on the basis of being exceptional or out of the ordinary with respect to each of natural science, sensory and shared and recognised factors. Accordingly, consideration with respect to NZCPS Policy 15(a) would not apply.

Summary: Landscape and landscape significance

95. I consider that the landscape/seascape and features of the project environs have not been adequately defined in conceptual or spatial terms. In my opinion it is open for the wording of NZCPS Policy 15 to be interpreted such that the marine component of Lyall Bay can be regarded as a seascape independently of the terrestrial landscape defining the Bay. Alternatively I consider it plausible that the marine component of Lyall Bay be regarded as a feature (or more precisely, a seascape feature).

96. Such ambiguities and uncertainties arise because of unresolved questions regarding the definition of key concepts associated with landscape assessment practice in the context of the RMA. For example, *landscape* itself remains a contested term, and I am unaware of any decisions of the Environment Court that clarify the meaning of *seascape*, such as when used in the current context.

97. The issue of whether the landscape/seascape context can be regarded as an outstanding natural landscape, and whether outstanding natural features are present does not appear to have been the subject of any detailed analysis in the ALVE report. No landscape/seascape is defined in spatial terms, and neither are landscape features so defined. However, at paragraph 8.119 (p.41) the ALVE report concludes:

> *In terms of section 6(b) of the RMA, Lyall Bay and environs is not an outstanding natural feature or landscape. In terms of Policy 15 of the NZCPS Lyall Bay is not a natural landscape but there are some natural features present.*

98. At an intuitive level I accept the ALVE report's findings on the absence of outstanding natural feature and landscapes. However, the acknowledged presence of natural features does invoke NZCPS 15(b), and this aspect of the assessment has received inadequate attention.

Assessment of landscape effects

99. The assessment of landscape effects is described in the GLVIA3 document (p.70) as follows:

> *The assessment of landscape effects deals with the effects of change and development of landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape, and its distinctive character.*

100. This process relates to the European Landscape Convention definition of landscape (GLVIA3, p14) that provides the basis for the methods presented in the GLVIA3 document:

> *Landscape is an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.*

101. The focus of the landscape effects assessment process is on changes to the natural factors referred to in the definition above: the biophysical landscape elements that contribute to landscape character and aesthetic quality The process is not concerned with effects that relate to the natural heritage or intrinsic value of biophysical factors. Such assessments are undertaken by other disciplinary experts from the biophysical sciences (such as are referenced in the ALVE report, see footnotes, pp.18-19). These assessments may inform the assessment of landscape effects, but only insofar as they relate to changes that affect landscape character and aesthetic qualities.

102. In the ALVE report, the assessment of landscape effects was undertaken with reference to effects on; (1) the biophysical landscape, and (2) landscape character. The role of the ALVE has been to summarise these effects and reach general conclusions on the landscape effects of the proposal.

<u>Effects on the biophysical landscape</u>

103. Biophysical landscape effects are identified as being associated with the 350m, 10.8ha extension of the existing runway into open water, covering a rocky reef that is

currently part of Moa Point. This will result in the total loss of marine environment and habitats currently associated with the reef. The biophysical effects are assessed as being moderately adverse (ALVE, paragraph 8.6, p.19), primarily on the basis of the scale and extent of modifications that have already occurred. Moderately adverse effects are defined in the ALVE report (p.49) as; "alteration to one key feature/attribute - partially changed".

104. I rate the biophysical landscape effects on Lyall bay east (refer to my Figure 3, ALVE report Figure 8) as being more than moderately adverse, in terms of the scale applied in the ALVE report. In my opinion a rating of moderately adverse does not respond adequately to a total loss of 10.8 ha of marine environment and its replacement with a terrestrial landform. However, to rate the adversity of biophysical landscape effects higher than moderate, I also have to set aside the assessment parameters defined in the Significance of Biophysical Change scale presented in Section 6 of the ALVE report (pp.48-49). In this scale, the author establishes the following indicative examples of what constitutes degrees of adverse change at the level of moderate and high:

> *High - Alteration to several key features/attributes-considerably changed*
>
> *Moderate - Alteration to one key feature/attribute –partially changed*

105. The parameters established by Mr Evans are, as far as I am aware, unique to this study, and are by no means universal in their application to the assessment of effects. The problem is the requirement that a high level of adverse effects must involve alteration to *several* key features or attributes, whereas moderate requires alteration to just one key feature or attribute. I do not agree with this assessment framework as it has been applied in this instance, and I consider that the proposed modification to a single key attribute in this instance is sufficient to warrant a rating of high adverse effects in the context of Lyall Bay.

106. I consider a high level of adverse effects for Lyall Bay east to be unacceptable in the absence of significant mitigation measures. I acknowledge the potential for mitigation to reduce the overall level of adverse effects in this area, and I endorse the proposals outlined conceptually in the ALVE and Urban Design reports. However, I consider the proposals are insufficiently resolved and there is insufficient detail available to enable an informed judgement on the potential for mitigation to reduce the adverse effects to an acceptable level.

107. I defer to the Councils' marine ecology expert, Dr Morrissey for comment on the ecological aspects of the loss of marine habitat, as these aspects do not pertain to the appreciation of landscape character or aesthetic quality.

108. The ALVE report (paragraph 4.12, p.9) notes the existing state of the south-eastern end of the runway (the Moa Point embayment), where rubble and what appears to be demolition debris has been used to protect the land/sea interface. This has been unsuccessful, and incursions by the sea are apparent. The existing runway/Moa Pt embayment interface could be described as a localised blight on the amenity of the coastline, and remedial actions to enhance this area, outlined conceptually in the ALVE report (see Figures 14-15), are to be encouraged.

109. While brief mention is made to changes that will result in the form of both Lyall Bay and the Moa Point embayment (e.g., paragraphs 8.6, 8.9, 8.107), I consider the changes that will result to the Moa Point area are more significant than the ALVE report acknowledges. At paragraph 8.113, the post-construction changes to the Moa Point landscape/seascape character are described as moderate, but I note that this is a reference to the character of the landscape/seascape ('character' being an abstract, or conceptual phenomenon) rather than to the form of the actual embayment. At paragraph 8.121, the landform effects within the area of the embayment are stated to be moderate - presumably adversely so.

110. I acknowledge the existing level of intrusion of the southern end of the runway into the Moa Point embayment, and also the visually unappealing - even blighted - nature of the embayment owing to the fill material at the runway/embayment interface. However, I consider a plan view analysis of the proposed extension (e.g., ALVE report, Figures 7, 8 and 9) reveals the effects of the proposed extension on the embayment to be very high in terms of the scale applied to the assessment of biophysical effects (ALVE report, p.49). However, in rating the biophysical effects on the embayment as very high, I reiterate my earlier reservations regarding the parameters defined by Mr Evans for each level on his scale. By his scale, very high requires "*Fundamental alteration to most key features/attributes*". In my opinion, the scale of the reclamation relative to the aerial extent of the Moa Point embayment, and the very significant changes that will result to the form of the embayment are such as to warrant a very high rating of adverse effects.

111. In principle I regard the thresholds for the assessment of the significance of effects in Mr Evans' scale (ALVE report, p.49) to be too rigid and prescribed. I also consider a 7-range scale to be excessively broad for this purpose, and question the capacity of an assessor to discriminate between levels without recourse to inflexible criteria, such as Mr Evans applies. Rather than an idiosyncratic scale devised for one purpose, I suggest the application of a scale that applies terms more consistent with RMA

practice, such as is presented on the NZ Quality Planning website where it describes the terms used for levels of effects[5].

112. With more appropriate edge treatment at the end of the runway, the embayment could be regarded as having a relatively naturalistic, concave form in its current state. However, as Figures 7 and 9 reveal, any sense of naturalness will disappear post-construction and the physical form of the embayment will be fundamentally changed. The form of the bay will instead be dominated by the straight line edge of the runway extension and the acute angle this forms with the existing shoreline. Given the more enclosed scale of the embayment compared with Lyall Bay west, the landscape effects of the runway extension will be most significant in the area of the Moa Point embayment than elsewhere.

113. Landscape proposals within the Moa Point embayment are described in brief terms (ALVE paragraph 8.10, p.20):

> *…the junction between the exterior rock armouring of the runway extension and the shoreline beach will be designed to provide a functional and integrated edge to the adjoining beach.*

114. The proposals are illustrated conceptually in Figures 14 and 15 (ALVE report), but the illustrations suggest an awkward visual relationship between the smooth surfaced, geometric Accropodes used for runway armouring and the natural rocks of the embayment. The Accropodes illustrated in the ALVE report (Figure 17) display a severe, monumental – even brutalist - character, which while functional in terms of sea defences, is incongruous with human scale and natural character considerations in an area intended for public access.

115. Given the intended provision for public access within the Moa Point area of the structure, and the fact that public access is already available to the embayment beach, I consider it necessary to provide a high quality design solution to the area where the existing beach ties in to the proposed structure. In particular, provision of public access (even informal access, as indicated on Figures 14 and 15) within a field of Accropodes will pose significant design problems, given the characteristics of the terrain. As the southern end of the runway is very open and exposed, public access to this area raises issues of safety during high seas, and these do not appear to have been addressed.

116. I recommend that WIAL provide further information at the time of a Court hearing, explaining how the runway extension will be integrated into Moa Point beach to

[5] http://www.qualityplanning.org.nz/index.php/consents/environmental-effects

mitigate adverse landscape and natural character effects. Such information should account for provisions for public safety in what is potentially a high hazard zone as a consequence of exposure to waves, and should be accompanied by more advanced design concept drawings than those that accompany the ALVE report.

117. A more naturalistic Accropode design, with pitted, coarser textured surfaces and crevices may be a possible aesthetic solution if such structures are also functionally suited to the task.

Assessment of effects on landscape character

118. Landscape character may be understood as:

> *A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse*[6].

119. The ALVE notes the connection between landscape character as a general concept, and the narrower area of natural character as an area of specific concern. The natural character of the coastal environment has statutory protection, whereas the more general concept of landscape character does not, other than in the context of an outstanding natural landscape. Natural character aspects are addressed in the separate report prepared by Mr Boffa, and reviewed elsewhere in this document.

120. Effects on landscape character are considered separately for the western and eastern parts of the Lyall Bay landscape/seascape[7]. The effects on the western side are considered to be low, on the grounds that:

> [t]*he form and design of the extension, and the elements and materials used will be similar to what already exists and a high level of integration will be achieved. The open waters of the bay and the open sea will continue to have a major influence on landscape/seascape character.*

121. I agree with this assessment.

122. The situation is different on the eastern side of Lyall Bay, including the Moa Point embayment. During construction, the ALVE report states the adverse effects of the project on landscape/seascape character will be high, but these effects will drop to moderate post-construction.

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[6] Swanwick, C. and Land Use Consultants 2002, *Landscape Character Assessment*. Countryside Agency and Scottish National Heritage, p.8

[7] I use the terms eastern and western Lyall Bay in the same sense as used in the ALVE report, and illustrated in Figure 8 of that report. In a general sense, western Lyall Bay refers to that area of Lyall Bay between the proposed runway extension and Te Raekaihau Point, while eastern Lyall Bay refers to the area between the extension and Hue te Taka Peninsula.

123. I do not agree with the concluding statement in paragraph 8.113:

> *In terms of the scale of change in relation to the embayment, the original development of the airport was far greater than that being proposed by the proposed runway extension.*

124. Figure 3 of the ALVE report traces the historic coastline within the vicinity of the southern end of the runway. While I acknowledge that significant change has occurred to the character of the coastline in this area, I have commented elsewhere that the embayment can still be regarded as *naturalistic* in its concave form, if not natural. It is my opinion that the scale of the runway extension will have a significantly greater effect on the character of eastern Lyall Bay seascape than is acknowledged by the ALVE report, which assesses the post construction effects on landscape character as moderate (ALVE report, paragraph 8.113, p.40). In my opinion the effects of the runway extension on the landscape/seascape character of Moa Point will be high during the period of construction, and will remain high post-construction.

125. Some of the effects on landscape character can be mitigated through the restoration and rehabilitation of natural character, and the design proposals for the Moa Point area outlined conceptually in the ALVE report. However, I consider the more fundamental adverse effect is the change that will result to the form of the Moa Point embayment, and the effect this will have on the experience of landscape character of the embayment. The adverse effect on the form of the embayment could be mitigated to some extent through the elimination of the acute angle that will be formed by the junction of the extension and the embayment beach, and the design treatment of the junction. I recommend that the intersection of the extension with the natural form of the embayment be redesigned to eliminate the acute angle shown in my Figure 5, below.

126. I consider a more naturalistic form to the embayment could render the adverse effects acceptable, but I acknowledge there are submitters who consider the effects of the proposal on the natural character of the embayment/Moa Point area will be significantly adverse, and unable to be mitigated.

127. As Figure 5 (below) suggests, the area of sea to be reclaimed for the runway extension appears at least as great, if not greater, than the adjacent sea surface area that will remain within the embayment, post-construction. The character of the embayment will also be changed further by Accropode armouring structures, the straight line edge of the extension, and the unnaturally acute angle formed between the embayment and the extension, compared to embayments further east of Hue te Taka Peninsula.

Figure 5: Part of Figure 1, ALVE, illustrating relative surface areas of the runway extension and the residual area of the Moa Point embayment. The area of sea to be reclaimed for the runway extension appears at least as great, if not greater, than the adjacent sea surface area that will remain within the embayment, post-construction. Note also the acute angle created between the embayment beach and the extension (Source, Figure 1, Site Context, ALVE report)

128. While changes to the landscape/seascape character of the eastern Lyall Bay area are in my opinion significant, and under-estimated in the ALVE report, the preservation of character per se has no statutory basis. The more relevant matter is the adverse effects on the narrower concept of natural character, as provided for in NZCPS Policy 13, to which the issues raised above with respect to the Moa Point embayment also apply. Natural character, and the effects of the proposal on natural character, are discussed in Mr Boffa's report and have been addressed in a separate section of this document.

Assessment of visual effects

129. In assessing the magnitude of effects, extensive use is made of pre-construction photography and post-construction visual simulations. Visual simulations were

prepared with reference to the NZILA best practice guidelines for visual simulations[8]. Simulations are a standard tool to assist with the assessment of visual effects. The technology is robust and the simulations are realistic. It is relevant to bear in mind that the real-world experience of the development will vary from that represented in the simulations according to a range of factors, including the conditions under which simulations are viewed and atmospheric conditions prevailing at the time of viewing in the field. Simulations remain a useful analytical tool, however.

130. Simulations presented in the ALVE report were prepared from a range of 19 representative viewing locations, with a further simulation prepared to illustrate the effects as they will be experienced from an inter-island ferry. Viewpoints were derived from a 'zones of theoretical visibility' (ZTV) analysis, or view shed mapping. Again, this is a standard analytical procedure, but one limited by the inability of the process to factor in structures and vegetation to the analysis of visibility - hence the term 'theoretical visibility'.

131. For any project of this scale an almost infinite range of potential viewing locations might be identified from which visual simulations might be prepared. While the claim may be made that a simulation has not been prepared from a particular viewpoint of significance to an individual or community, I consider that a sufficiently representative range of viewing locations has been selected.

132. While not specifically referenced in the ALVE, the technique of applying the simulations to the assessment of visual effects follows the principles and process described in the third edition (2013) of Guidelines for Landscape and Visual Impact Assessment (GLVIA3), published by the Landscape Institute and Institute of Environmental Management, UK. I am familiar with this document, and Mr Evans, of Boffa Miskell Ltd, refers to his reliance upon in it his response to a request for further information (see Appendix 1 for the text of Mr Evan's response).

133. The GLVIA3 document has no formal status as a best practice approach to landscape and visual effects assessment in NZ but has been adopted by many members of the landscape profession. It is referred to as a source of assessment guidelines on the NZ Quality Planning website[9].

134. Assessments undertaken according to the GLVIA3 approach are not based upon public surveys, but rather are professional assessments informed by certain

[8] *Best Practice Guide, Visual Simulations BPG 10.2*, New Zealand Institute of Landscape Architects, November 2010.
[9] http://www.qualityplanning.org.nz/index.php/planning-tools/land/landscape/landscape-assessment

assumptions regarding the 'sensitivity' of certain viewing audiences. Sensitivity, in the context of the GLVIA3 approach, is defined in the following (somewhat obscure) terms:

> *A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed , and the value related to that receptor. (GLVIA3, p.158)*

135. 'Specific receptors', in the case of the ALVE are either; (1) landscape receptors, or aspects of the biophysical landscape itself, or (2) visual receptors - people whose viewing experience is likely to be affected at a specific viewpoint.

136. Viewers are assumed to have differing levels of sensitivity to changes in views or visual amenity. Sensitivity to change is assumed to be based upon certain characteristics of the viewer:

> *The susceptibility of different visual receptors* [viewers] *to change in views and visual amenity is mainly a function of:*
>
> - *the occupation or activity of people experiencing the view at particular locations, and*
>
> - *the expectant to which their attention and interest may therefore be focussed on the views and the visual amenity they experience at particular locations.* (GLVIA3, paragraph 6.32, p.113)

133. The ALVE investigation adopted this assumption as the basis for assessing visual effects according to whether the viewers were likely to be residents or transients, according to the circumstances of each selected viewpoint.

134. The assumptions relating to the sensitivity of different viewers that underpin the investigation of visual effects are not supported by any reference in the GLVIA3 document, nor in earlier editions of the same publication. While the assumptions, may on the face of it have some intuitive appeal, they have never, to the best of my knowledge, been validated by empirical research that would support their application in the present context. I consider it plausible that many transient viewers – such as those that visit Lyall Bay for recreational purposes - may be as sensitive, or even more sensitive to changes as local residents. It is equally plausible that some local residents could, over time, become de-sensitised to changes resulting in adverse visual effects.

135. Specific assumptions explicit in the assessment of visual effects are set out in the ALVE report, paragraphs 8.2 (Table of factors that influence the Significance of Visual Effects) and paragraph 8.3 (Table of Significance of Visual Amenity Effects).

136. The implications of this approach is that the professional assessor (1) establishes the assessment framework, and then (2) presumes to conduct an analysis and determine a ratings of effects on behalf of the community, based upon certain assumptions as set out in the assessment framework. While the ALVE report documents the basis for the assessment of visual effects (see section 8, pp. 50-51) and makes the process reasonably transparent as far as the assessor's analysis is concerned, there is no reliable basis for assuming that the assessor's analysis conforms to those members of the community on whose behalf the assessor has conducted the assessment.

137. In my opinion, the obvious approach to resolving this uncertainty would be to ask the community, rather than presume to speak on its behalf, on the basis of certain untested assumptions.[10]

138. I acknowledge that a number of 'public open events' were held that were attended by Boffa Miskell staff (AEE report, Mitchell Partnerships, pp110-111). I assume the graphic visualisations were available for public viewing on these occasions. However, I do not understand there to have been any structured approach to eliciting opinions on visual effects on these occasions.

139. There has been a reluctance among members of the landscape profession to engage directly with community views on matters of amenity and visual effects, and this has been noted in decisions of the Environment Court[11]. This reluctance may be a response to a range of factors, including project budgets, project time frames, and lack of familiarity with appropriate techniques of community engagement.

140. I consider the current project to be one for which direct community engagement for the assessment of visual effects would be particularly helpful. It is somewhat perverse, in my opinion, to prepare a comprehensive range of sophisticated simulations but then to offer the opinion of a single landscape professional in support of claims as to the adversity of visual effects. I consider this approach particularly inadequate when the framework for the assessment of effects is based on unreferenced and untested assumptions contained in the GLVIA3

141. A further information request (RFI) was made to the applicant (16 June 2016), asking that the applicant:

[10] Section 3.43 (pp.43-45) of GLVIA3 refers to the desirability of public engagement and the prospect that consultation may provide; "...better understanding of the landscape and of local attitudes to it".
[11] e.g., *Mainpower New Zealand Ltd v Hurunui District Council*, [2011] NZEnvC 284 at [294]

> *...undertake and submit a visual effects investigation or survey that provides a more valid and reliable basis for decision making than the current professionally-based assessment, based as it is upon untested assumptions from the UK context.*

142. In response to the RFI, dated 1 July 2016, the applicant's landscape consultant, Mr Boyden Evans of Boffa Miskell Ltd, declined to do so, stating:

> *...it is considered that the visual effects assessment provided as part of the Application has utilised an appropriate methodology and no further assessment is required.*

143. I regard this response as unhelpful, given the opportunity provided by the project timeline to undertake direct community engagement on the assessment of visual effects. A well designed public engagement study, utilising the same visualisations that were applied to Mr Evan's analysis would have tested and perhaps validated the assessment framework and scale of effects applied by Mr Evans, and provided some empirical basis for understanding the visual effects of the project, relative to targeted sections of the community. In the circumstances, the findings of the assessment of visual effects can be considered valid only insofar as they are the professional view of Mr Evans, who I assume set up the parameters and conducted the assessment.

144. In the absence of a community consultation program, public submissions will need to suffice for the purposes of understanding community opinions. However, the self-selecting, non-representative nature of the submissions process will preclude any analysis that might validate the findings of the ALVE visual effects study. In particular, there is no basis for understanding that submitters will necessarily apply the same Significance of Visual Effects Scale presented in the ALVE report (p.51). A focused interview process in which responses to the visualisations are sought from a representative range of stakeholders could serve to validate the scale applied, and the professional assessment undertaken.

145. This process could reveal the Significance of Visual Effects ratings to be inconsistent with the real world experience of sections of the community. For example, the significance rating from the beach, Moa Point Rd is rated Very High. The Very High rating is premised on the assessment criterion;

> *Proposal is prominent and substantially restricts primary views such that existing views are fundamentally changed.*

146. In order for the effects to be rated Extreme, the following criterion must be met;

> *Proposal completely dominates/obscures all primary views.*

147. Submitters familiar with the Moa Point environs, including local residents, may rate the significance of effects as Extreme, but in doing so they will likely be applying criteria that differ from the professional assessment. The rating criteria imposed by the assessor may not be shared by other communities of interest, who may be inclined to apply criteria that more accurately reflect their own perceptions of the visual effects of the project.

148. The criteria applied by the ALVE report have no particular authoritative status. As the ALVE scale of the significance of visual effects has not been validated against public opinion, and as no alternative scale has been established through a public consultation process, the extent to which the ALVE professional assessment and community assessments coincide is unknown.

149. The issue of lack of correspondence between different scales of assessment, particularly between professional scales and those that may be regarded as more representative of community opinion, is a widespread problem in landscape assessment.

Mitigation

150. Mitigation proposals associated with the project are discussed with respect to three aspects:

- *Creation of, and improvement to, marine and terrestrial ecological habitats;*
- *Improved access and parking, including safety improvements for pedestrians and cyclists; and*
- *Additional and improved recreation facilities and opportunities.*

151. Improvements to marine and terrestrial habitats are summarised in the ALVE report but addressed in more detail in the Technical Report 19[12]. An aspect discussed in the ALVE report is the prospect of designing the arms of Accropodes such that they provide surfaces suitable for colonising by marine organisms (see Technical Report 19, *Assessment of Ecological Effects*, pp.38-39 for further discussion).

152. Elsewhere in this report I have commented on the possibility of design modifications to Accropodes to render them more aesthetically fitting. The prospect of surface modification for habitat creation and enhancement is also a compelling reason for the

[12] Technical Report 19: *Assessment of Ecological Effects of the reclamation and extension to Wellington Airport*, prepared for Wellington International Airport Company by Mark James (Aquatic Environmental Sciences Ltd, Alison MacDiarmid, Jenny Beaumont & David Thompson (NIWA), February 2015. (pp.38-39)

investigation of options for Accropode construction. While it appears there is no firm commitment to the use of alternative Accropode designs, I consider this option should be investigated further.

153. In the interests of encouraging landscape design initiatives directed towards the restoration of natural character, I also endorse further investigations into options for the enhancement of penguin habitat (ALVE report, paragraphs 74-76, p.16, and Figure 14), and for the field collection of macro-invertebrates from reefs destined for burial for the colonisation of the new surfaces, post-construction.

154. Options for improved access and parking are discussed and conceptual proposals are illustrated in Figures 10-16 of the ALVE report. While the proposals illustrated are indicative at this stage, the initiatives are to be commended and will constitute a significant improvement to public access options and the enjoyment of waterfront amenity and recreation within this part of the south coast. I support these.

155. Brief comment is made on the proposed submerged wave focusing structure (SWFS) (paragraph 7.10. p.17). This aspect of the project is addressed in more detail in a separate technical report[13] that I discuss elsewhere in this document.

Conclusions and recommendations: Assessment of landscape and visual effects

156. The landscape context of the proposal is clearly defined and in my opinion the area outlined in Figure 8 of the ALVE report is a defensible definition. However, the area is variously referred to as the Lyall Bay landscape, and Lyall Bay landscape/seascape. Whether these terms refer to one and the same spatial area is unclear. In my opinion the separate status of the Lyall Bay CMA as a seascape (as referred to in NZCPS Policy 15) separate from the terrestrial landscape, has not been explored or considered, and it should be.

157. Similarly the status of Lyall Bay coastal marine area as a natural feature is not sufficiently addressed by the applicant. The ALVE report recognises the presence of features within Lyall Bay but these are not mapped nor are they specifically referred to. In my opinion they should be.

158. Given the lack of clarity concerning how NZCPS Policy 15 is to be interpreted and operationalised for assessment purposes, and acknowledging the unique circumstances of this particular proposal, I consider some definitive statements on the relevant 'units of analysis' (landscape, seascape, feature), supported by some

[13] Technical Report 11: *Wellington Airport Runway Extension Surf Break Impact Assessment: Numerical Modelling, Preliminary Investigations and Feasibility Study*, DHI, October 2015.

professional analysis as to their application in the current context, would be helpful at the time of the hearing.

159. For the purposes of a section 6(b) and NZCPS Policy 15(a) assessment of landscape value, the ALVE report authors record that Wellington City Council has not yet undertaken an outstanding natural landscape assessment of Wellington. The authors have not undertaken an assessment of landscape significance either, but have stated that Lyall Bay is not an ONL. I agree - I do not consider any part of the landscape/seascape context of the proposal to be outstanding in section 6(b) or NZCPS Policy 15 terms.

160. Should the Lyall Bay CMA be regarded as a feature, then in my opinion, supported by Mr Boffa's natural character assessment, that, with reference to the scale of natural character presented elsewhere in this report, it is unquestionably a *natural* feature in terms of NZCPS Policy 15(b). As a natural feature, the runway extension should be assessed to determine if the effects are significantly adverse, or if adverse, whether they can be avoided, remedied or mitigated.

161. In my opinion the effects of the proposal on Lyall Bay as a seascape feature are not significantly adverse, and as such do not reach a level requiring avoidance. I regard the effects as adverse, but acceptably so, and able to be mitigated to an extent through marine and terrestrial ecological restoration initiatives directed towards the restoration of natural character.

162. Regarding biophysical and landscape character effects, in my opinion the conversion of 10.8 ha of marine environment to terrestrial landform, and consequent changes to the form of the Moa Point embayment, are more than moderately adverse effects (ALVE report p.44) . The relatively small scale of the Moa Point embayment compared with Lyall Bay west (refer to Figure 8, ALVE report), and its immediate proximity to the extension, makes it an area more susceptible to changes in landscape character. These changes relate particularly to the resulting unnatural form of the embayment, and the incongruent relationship between the architectural elements of the runway reclamation and the natural elements of the embayment.

163. In my opinion, and with reference to the scales of biophysical and landscape character effects applied in the ALVE report, I rate the post-construction effects on the Lyall Bay east landscape area as high, rather than moderate. While high, I consider the effects to be acceptable, and able to be mitigated to an extent through landscape design and ecological restoration initiatives. I agree with the ALVE report that the landscape/seascape character effects on the western side of Lyall Bay are

considered to be low with reference to the scale applied in the ALVE report, and in my opinion are acceptable.

164. The method applied to the assessment of visual amenity affects is based upon guidelines published by a recognised professional institute, is transparent in its application, and the assumptions underpinning the analysis are made explicit. Within these parameters the findings presented in the Summary of Visual Effects from Representative Viewpoints table (ALVE report, p.36) can be regarded as valid and reliable insofar as the professional opinion of the assessor is concerned. With reference to the criteria established by Mr Evans in his assessment, I generally agree with his assessment of effects, as summarised in the table, Summary of Visual Effects from Representative Viewpoints (paragraph 8.92, ALVE report). I depart from Mr Evans' assessment with respect to the effects on views from residential dwellings on Moa Point Road and the beach at Moa Point. I consider the effects on views from this area to be extreme, and unable to be remedied or mitigated. As such, I regard these effects as significant and unacceptably adverse.

165. I remain of the firm opinion that further work should be undertaken by way of community consultation on visual effects. Such work should seek to provide some validation for the assumptions that have informed the professional assessment reported in the ALVE report, including the scale of effects.

166. The magnitude of changes to the landscape/seascape character of the Moa Point embayment justify a significant input of ecological restoration and landscape design expertise to mitigate the effects of the proposal. The ALVE acknowledges the issues, and indicative, conceptual proposals have been prepared. I regard this location as an area presenting particular challenges, but with a potential for the creation of a publicly accessible space designed with regard to coastal natural character experience, safety, and ease of access.

167. As recognised in the ALVE report, particular attention should be applied to the design of the interface between the runway extension and the Moa Point embayment:

    167.1. Options for a more naturalistic plan form for the embayment/extension interface should be explored, such that the acute angle between beach and runway extension is rendered in a more concave manner, similar to coves between Hue te Taka Peninsula and Palmer Head.

    167.2. Alternative Accropode designs should be explored in the interests of achieving both (1) structures with a more naturalistic surface quality and greater aesthetic appeal, and (2) surfaces more suited to colonisation of marine organisms.

167.3. The embayment has a more human scale than Lyall Bay west, and the foreshore is readily accessible to the public. I consider the embayment to be the public place most adversely affected by the extension, in terms of natural character and amenity. However, it is an area with potential for the restoration of natural character, commensurate with provision for public access and the enjoyment of coastal amenity. I commend the range of design possibilities represented conceptually in Figures 14 and 15, but I recommend that they be more fully resolved at the time of a hearing.

PART C: Natural Character Assessment (NCA) (Technical Report 25)

Introduction

168. The proposed runway extension is located within what is unquestionably accepted as the coastal environment, as understood in terms of the New Zealand Coastal Policy Statement (2010) (NZCPS). As such the proposal must be considered with respect to NZCPS Policy 13:

> ***Policy 13: Preservation of natural character***
>
> *(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:*
>
> *(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and*
>
> *(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;*
>
> *including by:*
>
> *(c) assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of high natural character; and*
>
> *(d) ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.*
>
> *(2) Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:*
>
> *(a) natural elements, processes and patterns;*
>
> *(b) biophysical, ecological, geological and geomorphological aspects;*
>
> *(c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
>
> *(d) the natural movement of water and sediment;*
>
> *(e) the natural darkness of the night sky;*
>
> *(f) places or areas that are wild or scenic;*
>
> *(g) a range of natural character from pristine to modified; and*
>
> *(h) experiential attributes, including the sounds and smell of the sea; and their context or setting.*

167. In my experience, the definition and application of the concept of natural character is one of the most vexed issues in landscape assessment practice. Neither the RMA nor the NZCPS define natural character, but Policy 13.2 provides some guidance with the words "... natural character is not the same as natural features and landscapes or amenity values...", followed by a range of matters (13.2.(a)-(h)) that may be investigated in the course of natural character assessments.

168. The Regional Policy Statement (RPS) also refers to natural character of the coastal environment at Policy 3: *Protecting high natural character in the coastal environment – district and regional plans,* and Policy 4: *Identifying the landward extent of the coastal environment – district plans.*

169. An operational definition of natural character, and how matters (a)-(h) apply to natural character and its assessment is the subject of ongoing debate, particularly with respect to how 'experiential attributes' are to be understood and operationalised in natural character assessments.

170. While the NZ Institute of Landscape Architects has published rudimentary 'best practice' guidelines for landscape assessment[14], these do not address natural character assessment in any useful way, and in particular, natural character as it is understood in the context of the NZCPS (2010). There is no recognised best-practice approach to the assessment of natural character for the purposes of the NZCPS (2010). This comment extends to the absence of an accepted, unambiguous definition of natural character, and a valid and reliable method for its assessment.

171. The approach taken by Mr Boffa differs in some subtle yet significant respects from definitions and approaches to natural character assessment adopted by other landscape architects in regional, district and project-based natural character assessments. However, I consider Mr Boffa's approach to be robust, rigorous and defensible, and is close to what I consider is a best practice approach to natural character assessment.

172. I do not consider this report the appropriate context for the promotion of a preferred definition of natural character, or method for its assessment. Rather, I have considered Mr Boffa's assessment and report in a more pragmatic sense, with regard to how well it responds to statutory requirements for assessment and the consideration of effects.

[14] New Zealand Institute of Landscape Architects. (2010). *Best Practice Guide: Visual simulations BPG 10.2*. NZILA.

173. The NCA report does not reference a recently published Boffa Miskell Ltd (2016) study, *Wellington City and Hutt City Coastal Natural Character Assessment.* This study reports on the investigation of the natural character of the coastal environment, of Wellington City and Hutt City, including the location of the proposed runway extension. However, the study only mapped natural character at the level of High and above, and at a coarse scale of analysis. No High (or greater) levels of natural character are mapped within Lyall Bay or the area directly affected by the runway extension (Figure 6), although the Hue te Taka Peninsula at Moa Point is identified as having High natural character in its terrestrial component.

174. I consider the finer grained analysis of Mr Boffa's NCA study to be a more reliable level of assessment for project–level purposes, such as the runway extension.

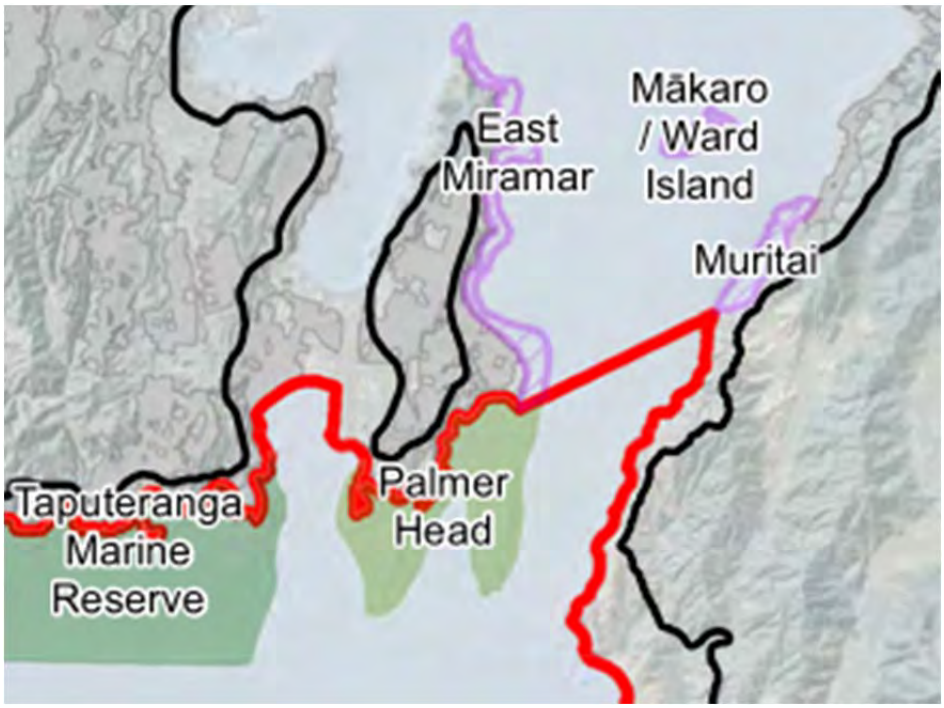

Figure 6: part Map 4, Coastal marine Area B: South Coast. Pale green = High natural character, Dark green = Very High natural character. The scale at which natural character has been mapped for the marine component of the coastal environment is too coarse to be reliable for the purposes of the runway extension natural character analysis. (Source: Boffa Miskell Ltd (2016) study, *Wellington City and Hutt City Coastal Natural Character Assessment.)*

Method applied to assessment

175. Any assessment task should be grounded in a clear and unambiguous definition of that which is to be assessed. For the purposes of the NCA, Mr Boffa's definition of natural character is similar to those that are applied, and generally accepted, in RMA-based landscape assessment:

> *Natural character is generally assessed on a continuum of modification that describes the expression of natural elements, patterns and processes (or the 'naturalness') in a coastal landscape/ecosystem where the degree of 'naturalness' depends on:*
>
> - *The extent to which natural elements, patterns and processes occur and are legible;*
> - *The nature and extent of human modifications to the landscape, marine area and ecosystems;*
> - *The proposition that the highest degree of natural character (greatest naturalness) occurs where there is least modification/uncluttered by obvious or disruptive human intervention and/or influence*

176. I consider this to be an acceptable definition for the purposes of the natural character assessment.

177. The assessment was undertaken with reference to the expression of natural elements, natural patterns and natural processes and the extent to which these have been modified by human intervention. As is sometimes done in other natural character assessments, natural elements, patterns and processes have been re-conceptualised into physical, biological and experiential factors. With input from NIWA scientists, these factors were assessed and rated within the terrestrial environment, and within different structural components of the Lyall Bay marine environment (beach, reefs and the bay, including water column and seabed).

178. The natural character of each of the broad categories of attributes (physical, biological and experiential) was assessed and rated with reference to a 7-range scale of natural character (Figure 7):

VERY HIGH	HIGH	MODERATE-HIGH	MODERATE	MODERATE-LOW	LOW	VERY LOW

Figure 7: 7-range scale of natural character for the assessment of the degree of natural character exhibited by a landscape or the coastal environment.

179. The application of this 7-range scale of natural character, endorsed by the Environment Court in *High Country Rosehip Orchards v Mackenzie District Council*[15], is becoming standard practice in natural character assessment. I support the use of this scale and consider it has been used appropriately in the NCA.

180. Marine and terrestrial components of the coastal environment have been assessed and rated separately, but accorded identical weight in determining a natural character rating for each area of the coastal environment assessed.

181. The coastal environment of the project environs has been assessed at a fine level of detail, according to "natural character component areas", as illustrated in Figure 5 of the NCA. As this is a project level assessment I consider this level of analysis appropriate and I agree with the definition of component areas. I accept there may be alternative approaches to this aspect of the assessment but the approach adopted provides utility and scope for a fine level of analysis.

182. The different attributes (physical, biological, experiential) were weighted such that the expression of physical and biological attributes was accorded greater prominence in determining natural character ratings. The weighting applied was:

Physical attributes	40%
Biological attributes	40%
Experiential attributes	20%

183. While I am unaware of any precedent for the application of such a weighting, and while there is no empirical basis that I am aware of for determining a valid ratio, I consider the approach adopted to be essentially sound, and reflects what I consider to be the relatively minor role of experiential attributes in rating natural character. I agree with, and endorse for the purpose of future assessments, the statement at paragraph 5.13 of the NCA:

[15] *High Country Rosehip Orchards v Mackenzie District Council* [2011] NZEnvC 387, at paragraph [93]

> *The basis for developing and applying the weightings noted above, is that natural character is a **condition** rather than a **quality** or **value** and to that extent, it exists regardless of experiential or perceived attributes*. [emphasis in original]

184. On the basis of this comment Mr Boffa may be considered generous in allocating experiential factors as much as 20% of the rating. However, these attributes are referred to in NZCPS 13.2(h), so some reference to them is justified. The issue remains to be resolved however, as to what experiential attributes are valid expressions of natural character.

185. The NCA, at paragraph 5.15, offers a helpful technique for determining the basis for adverse effects:

> *(i) Where natural character is assessed as being very high (VH) or high (H) a change considered to be significantly adverse, would be a reduction to a lower level of natural character.*
>
> *(ii) Where natural character is assessed as being moderate/high (MH) and less sensitive to change, a reduction to moderate/low or lower levels of natural character would generally be considered to be significantly adverse.*
>
> *(iii) Where natural character is assessed as being moderate (M), or below, there is limited potential to generate significant adverse effects within what is predominantly a modified coastal environment.*

186. I endorse this approach and consider it offers some rationale for what may otherwise appear a somewhat arbitrary approach to assessing the magnitude of effects.

187. NZCPS Policy 13.1(a) requires that areas of outstanding natural character within the coastal environment be identified and mapped. As with the assessment of coastal natural character generally, the definition and assessment of outstanding natural character (ONC) is a contested issue in RMA-based landscape assessment.

188. The NCA refers to ONC in the following terms:

> *Generally areas of outstanding natural character are identified and mapped following a comprehensive natural character assessment based on the 7 point scale referred to in paragraph 5.11.* [see Figure 4, above] *Outstanding candidate areas or parts of areas are selected where appropriate from those areas that have been assessed as having very high and/or high areas of natural character.*

189. A significant aspect of this approach is that ONC is not located on the same scale of natural character (the continuum from Very Low - Very High, my Figure 7). By this approach, ONC is regarded as a quality of characteristic that exists independently of

the scale, and therefore areas of High and Very High natural character may be identified also as Outstanding. The details of the process by which ONC is identified according to this approach are not specified in the NCA report, nor are critical criteria for 'outstandingness', in respect of natural character, identified.

190. A further insight into this interpretation of outstanding natural character is outlined in the Boffa Miskell Ltd (2016) *Wellington City and Hutt City Coastal Natural Character Assessment* (p.164):

> *An area with outstanding natural character may be an area within the coastal environment that is considered to have 'high' or 'very high' levels of natural character, although it is important to note that the 'high' or 'very high' ratings do not in themselves equate to 'outstanding', as clarified by the following Boffa Miskell definition:*
>
> > *'Outstanding' is a comparative evaluative term meaning; to stand out, exceptional, pre-eminent.*
>
> …
>
> *It was also determined that* ***outstanding natural character should combine both terrestrial and marine components*** *so that important sequences of ecological naturalness (such as from the top of a ridge above sea level to the bottom of the adjacent sea and interconnected systems) are considered.* [emphasis added]

191. A significant aspect of this approach is stated in the final paragraph quoted (and emphasised) above: that ONC is not attributed to terrestrial or marine components of the coastal environment in isolation, but only where they occur adjacent, in a continuous sequence. I agree with this interpretation of ONC, but I note that one of only two areas of ONC identified in the Boffa Miskell (2016) study is an isolated area of the marine environment – the Cook Strait Canyons

192. A different, competing interpretation of ONC places it on the same continuum of natural character, as the following annotated version of the scale of natural character (Figure 8) indicates:

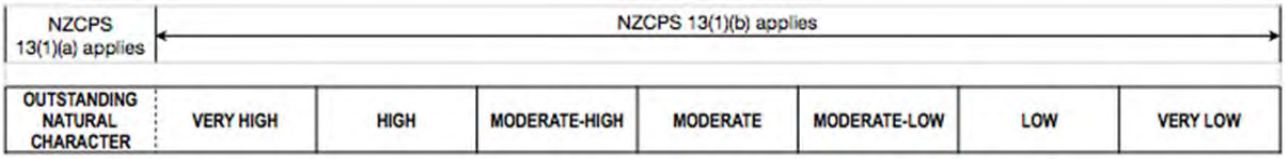

Figure 8: Alternative approach to ONC assessment: Outstanding Natural Character is understood as expressions of natural character considered at the extreme end of the Very High range of the scale, i.e. natural character approaching 'pristine' levels. It is generally accepted that pristine natural character, in the narrowest sense of the term, no longer exists, as all environments in NZ are to a degree, influenced by human agency.

193. By this approach, ONC cannot be identified within areas of the coastal environment that are otherwise identified as displaying High natural character. Only the most natural of areas rated Very High for natural character could be deemed to be ONC. The process and criteria used for identifying ONC by this approach would be the same as applies for the assessment of natural character generally - the expression of natural elements, patterns and processes and the extent to which these have been modified by human agency.

194. I consider there is insufficient information provided in the NCA to permit a critique of the technique applied to the assessment of ONC. Had this been provided, there is still the question remaining as to whether the most appropriate approach to the definition and assessment of ONC has been adopted. However, the absence of written analysis notwithstanding, I am satisfied that the issue has been given due consideration and a defensible conclusion has been reached as to the expression of ONC within the Lyall Bay coastal environment, that being that: "*...there are no areas of outstanding natural character within the Lyall Bay or its component areas, or within the south coast in the immediate vicinity of Lyall Bay*". (paragraph 7.1, p33, NCA report)

195. My approach to the assessment of ONC combines aspects of the two approaches outlined above. I agree with the principle that ONC is considered after a preliminary assessment of natural character for each of terrestrial and marine components of the coastal environment, but I do not regard areas identified as displaying High natural character as being candidates for ONC. The processes may be described simply as follows:

    195.1. The natural character of terrestrial and marine components of the coastal environment are assessed separately, and natural character is rated for each area with reference to the seven-range scale of natural character presented elsewhere in this report.

195.2. Outstanding natural character may be considered to exist in areas of the coastal environment where adjacent areas of marine and terrestrial environment are both rated Very High.

196. On the issue of the presence of ONC within the coastal environment of the project area, the NCA report concludes (paragraph 7.1) that:

> *...there are no areas of outstanding natural character within the Lyall Bay or its component areas, or within the south coast in the immediate vicinity of Lyall Bay.*

197. On the basis of the approach that I adopt, outlined above, I agree with this assessment. Neither the terrestrial nor the marine components of the Lyall Bay coastal environment rate Very High for natural character .

198. Regardless of which of the two approaches to ONC discussed above is adopted, I consider it a reasonable, defensible conclusion that ONC does not exist within the Lyall Bay area. This assessment is supported by the Boffa Miskell (2016) *Wellington City and Hutt City Coastal Natural Character Assessment*.

Restoration of Natural Character

199. Brief mention is made of NZCPS Policy 14 Restoration of Natural Character at NCA paragraph 4.9, where it is stated:

> ...more specific details relative to overall restoration and/or rehabilitation and mitigation of landscape and marine effects are reviewed and discussed in other reports.

200. I understand that significant aspects of the restoration of natural character in this context fall within the discipline of ecological restoration. While I have located some relevant references to ecological restoration proposals in the ecological technical report[16], some specific reference to these reports and a general summary of the proposed restoration initiative would have been helpful in the NCA report.

201. As noted above, I consider the Moa Point embayment to be an important location for both landscape/urban design and the restoration of natural character. Rather than accepting a reduction in natural character from moderate to low within this area, it is my opinion that landscape design and ecological restoration efforts should be directed towards at least maintaining the natural character of this area at moderate.

[16] Technical Report 19, Assessment of Ecological Effects

Natural Character Effects: Conclusions and recommendations

202. The project is clearly located within the coastal environment, and thus is subject to NZCPS Policy 13 and RMA section 6(a).

203. I consider the spatial basis for the assessment of natural character appropriate and the natural character ratings assessed by Mr Boffa to be soundly based.

204. The findings of the natural character assessments of the Lyall Bay component areas (as illustrated, NCA Figure 5) are clearly presented in tabular form in paragraph 6.57 and an overall summary provided at paragraph 6.60. I consider these tables offer rather more detail and information on the basis for natural character ratings than is often the case in natural character assessments, and such an approach is to be endorsed and encouraged.

205. It is generally recognised that the effects of different types of modification to natural character will be perceived differently between individuals or sections of the community. Much will depend upon the individual schemas that are applied to the concept of natural character and its recognition. In order that robust comparisons can be made I consider it important that assumptions and principles that underpin differing assessments be made clear, such that the basis for differences become apparent. In my opinion the NCA undertaken by Mr Boffa provides a generally well articulated, credible basis for understanding the natural character of the environs of the project, and likely effects on levels of natural character, as reported in paragraphs 6.56-6.57 and 6.60 of his report and summarised in the following table, taken from the NCA (p.33):

Natural Character	Pre-Construction	Post Construction
South Coast	High	High
Lyall Bay Overall	Moderate	Moderate
Lyall Bay Component Areas		
Hue te Taka Peninsula	High	High
Moa Point Embayment	Moderate	Low
Airport	Low	Very Low
Lyall Bay Beach	Moderate/Low	Moderate/Low
Western Shore	Moderate	Moderate
Te Raekaihau Point	High	High
Inner Bay (Marine)	Moderate	Moderate
Outer Bay (Marine)	Moderate/High	Moderate/High

Table 1: Summary of pre-construction and post-construction natural character ratings for Lyall Bay. Source: Natural Character Assessment (Technical Report 25) p.33

206. I expect that there may be opinions expressed maintaining that experiential factors should weigh more heavily in the assessment on natural character on Wellington's South Coast than has been the case in the NCA. It is certainly an environment within which the experience of natural forces and phenomena (wind, rain, atmospheric effects) feature prominently in the human experience of places such as Lyall Bay and nearby coastal environs. However, in my opinion, these experiences have more to do with the appreciation of the aesthetic quality of the South Coast landscape/seascape and amenity, than they do natural character. I consider it appropriate to place greater weight upon the more objective, tangible and less transient attributes that are indicative of the condition or state of natural character, as Mr Boffa has done.

207. I endorse the approach adopted by Mr Boffa (NCA paragraph 5.15) for considering the level of effects to be objective and in general I concur with Mr Boffa's assessment of the nature and magnitude of effects, as summarised in Table 1, above. Applying Mr Boffa's approach, only two component areas of the coastal environment will exhibit consequent reductions in natural character. These are:

    207.1. The natural character of the Moa Point Embayment will be reduced from moderate to low,

207.2. The natural character of the Airport component area will be reduced from low to very low.

208. I consider the effects on the Airport component area to be acceptable, providing the mitigation measures proposed in the ecological report are implemented. These include the roughening of Accropodes to create habitat suited to colonisation by marine organisms, and the re-establishment of marine organisms previously collected from the area of the submerged reef to be covered by the extension.

209. Regarding the Moa Point embayment component area; Mr Boffa rates the level of natural character for this area as being moderate (Pre-construction) and low (Post-construction), but does not comment on whether he considers this to be an acceptable end state, nor does he comment on the potential of mitigation measures to counter the decline in natural character within this area. While Mr Boffa's ratings may appear justifiable assessments in the absence of any mitigation, I do not regard a low natural character rating as being an acceptable outcome for this component area, post-construction. Given the mitigation proposals outlined in the Landscape and Visual Assessment Report 24, and with due regard to NZCPS Policy 14, I consider a reasonable objective would be to maintain the natural character level at moderate by means of ecological restoration and habitat creation and enhancement.

210. I also have reservations concerning Mr Boffa's comments on the likely effects on natural character of the proposed Submerged Wave Focussing Structure (SWFS) (NCA paragraph 6.49, last bullet point). As I state elsewhere in this report, the likely effects of the extension on the natural character of the marine area of Lyall Bay will depend upon (1) the effects of the proposed runway extension on natural wave patterns within Lyall Bay, and (2) the role of the SWFS in further modifying natural wave patterns. In addition, there is the effect of the structure itself (an artificial element in an otherwise predominantly natural environment), and the effects of the structure on coastal processes. I understand these to be contested or undetermined issues, and are the domain of oceanography experts to investigate and comment upon. My understanding is that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS, and on this basis it is premature to predict, as Mr Boffa does, that the effects will be "slight".

211. While largely outside of the scope of the natural character assessment undertaken by Mr Boffa, the project clearly provides a range of opportunities for the application of NZCPS Policy 14, concerning the restoration of natural character. Aspects of this fall largely within the domain of the marine ecology, ecological restoration and landscape architecture/urban design disciplines. To this end I endorse the proposed conditions of consent (Conditions 80-85) that provide for the preparation and implementation

of an Ecological Mitigation and Management Plan (EMMP) (discussed also at Section 8.3.1.8, p.228 Assessment of Environmental Effects).

PART D: Response to Pubic Submissions

General

212. While many submissions refer to the prospect of adverse effects on recreation, landscape, visual amenity and natural character, I consider that to a large extent the issues raised with respect to these areas of concern have been adequately covered in the main body of my report. I comment on submissions from Clive Anstey and Yvonne Weeber, as the issues raised by these submitters are more detailed than other submitters on the same matters. My comments on the submissions of Mr Anstey and Ms Weeber are, to a large extent, relevant to all submitters on these same matters.

213. As a general comment regarding Mr Anstey's and Ms Weeber's submissions, I note that a common issue emerging from both submissions (and submissions generally on the same matters) are differences of opinion regarding the magnitude of adverse effects. Mr Anstey's and Ms Weeber's assessment of the adversity of effects is generally higher than the assessments reached by the authors of the Landscape and Visual, and Natural Character reports (Technical Reports 24 and 25).

214. I note that in the case of Mr Evan's assessment of landscape and visual effects, he follows a structured process of assessment, within which the magnitude of effects are determined with respect to criteria or indicators. Mr Boffa follows a similar process with respect to natural character. While I have commented that Mr Evan's assessment framework, while following GLVIA3 guidelines, is somewhat idiosyncratic, it does provide for a structured, reasoned approach to the assessment of effects. Mr Anstey's assessments are not reached with reference to an explicit assessment framework, and indeed it is likely that Mr Anstey refers to a different set of assessment criteria to Mr Evans. The resolution of such differences is difficult in the absence of a common, agreed assessment framework.[17]

215. Similar issues arise in comparing opinions expressed regarding ratings of the natural character of the coastal environment. For opinions as to natural character levels to be comparable, it requires that assessors refer to the same scale of natural character. Mr Boffa apples a 7-range scale of natural character, but the scale that is referenced in Mr Anstey's and Ms Weeber's submissions is not stated. Accordingly, it cannot be

[17] I understand Mr Anstey to be a NZILA Registered Landscape Architect and as such, he has the necessary expertise and experience to assess natural character. However, I understand his submission is that of an affected stakeholder rather than an impartial expert.

assumed that a rating of 'high', as used by the submitters, refers to the same level of natural character as the same term when used by Mr Boffa (see Figure 9).

Very High	High	Moderate-High	Moderate	Moderate-Low	Low	Very Low

Very High	High	Moderate	Low	Very Low

Figure 9: The importance of assessments of natural character referencing the same scale is evident from the two scales illustrated above: the upper scale is a seven-range scale such as is used by Mr Boffa, and the below, a five-range scale. Both scales cover the same overall range of natural character, but the equivalence between individual sectors on each scale is limited: for example, high refers to a different span of natural character on each scale, and thus a high rating is not directly equivalent. Where submitters do not reference any scale, there is little basis for comparison between opinions on levels of natural character.

Clive Anstey

216. Discussing amenity effects at paragraph 7, Mr Anstey states:

> *The environmental effects of the proposal, its construction and the completed extension, are explored by various experts and consultants, each dealing with their discrete areas of responsibility. This makes it difficult to gain any sense of cumulative effects. For example the effects on 'amenity' must address the combination of noise effects, visual effects, dust effects, just to name the obvious.*

217. I agree with this comment. I am of the opinion that amenity effects should be documented in a single source, incorporating an holistic assessment of amenity effects, rather than the fragmented approach currently taken by the applicant's experts. As Mr Anstey recognises, any sense of cumulative adverse effects on amenity is lost through a fragmented approach.

218. At paragraph 9 Mr Anstey states that the South Coast has high natural character. This may reflect popular conceptions of the natural character of the South Coast. However, in the context of NZCPS assessments this can be regarded as a generalisation. The Boffa Miskell (2016) *Wellington City and Hutt City Coastal Natural Character Assessment* identified limited areas of high and very high natural character around the South Coast: Pencarrow Head is rated high, while Turakirae Head is rated very high, but otherwise the South Coast generally and Lyall Bay are rated moderate-high. Mr Boffa has undertaken an analysis of natural character at a

finer grain, and he has identified a range of levels of natural character within the marine and terrestrial environments of the Bay.

219. Mr Anstey is critical of Mr Boffa's assessment of the magnitude of effects, claiming effects to be "extremely adverse and entirely unacceptable". In my opinion Mr Boffa has undertaken his assessment on the basis of an explicit method, and he has presented a reasoned analysis of the likely scale of effects on natural character.

220. In paragraph 15 of his submission, Mr Anstey comments on the assessed magnitude of adverse visual effects, and refers to one of the assumptions drawn from the GLVIA3 and applied to Mr Evans' assessment of affects:

> *The Landscape and Amenity report argues that the effects on residents are of greater importance than the effects on visitors. In the coastal environment there are few residents and high numbers of visitors so that effects are considered to be of a lesser significance than in areas where resident numbers are high.*

221. In my opinion, such comments serve to highlight the problem of adopting untested assumptions as the basis for assessment. Concerning visitors regard for adverse effects, Mr Anstey may be correct - or Mr Evan's may be correct. However the argument that each presents cannot be substantiated in the absence of structured consultation on community perceptions of visual effects. In my opinion, many visitors to the South Coast are likely to be as sensitive to adverse visual effects as residents.

222. At paragraph 17, Mr Anstey notes:

> *None of the applicants reports attempts any serious analysis of who visits the coast and what they do. If this analysis were undertaken it would highlight the rich diversity of activities that occur and how much they depend on the quality of the marine environment*

223. Similar opinions are expressed elsewhere in his submission (paragraph 21). I have commented on the deficiencies of the on-line survey in the Recreation section of my report, and I have also commented that the participant observation studied undertaken were inadequate. The applicant has agreed to undertake further participant observation studies, which, if appropriately designed and implemented should address identified inadequacies of existing recreation investigations.

Yvonne Weeber

224. Paragraph 6.12 of Yvonne Weeber's report raises the issue of inadequacies in the participant observation study undertaken for the Assessment of Effects on Recreation:

The use of the public spaces in the Lyall Bay and Moa Point is not adequately analysed in the applicant's Technical report 6 Assessment of Effects on Recreation. The 16 days that personal observation took place would not have included recreational families swimming and playing in the area as in the height of summer. The 16 days between the 13 March and 1 April 2015 used for personal observation would be considered as autumnal sea conditions where the sea temperature is dropping and the number of swimmers would have been very low. Hence the area where the highest amount of swimming actually takes place cannot be accurately represented in this report. The report also does not appear to have been taken on a Sunday when the number of people undertaking recreational activities on Lyall Bay can be higher.

225. I agree with this comment and it is addressed in the main body of my report. The applicant has agreed to rectify this shortcoming (see also comment in response to Mr Anstey's submission, above).

226. At paragraph 11.6, Ms Weeber states:

I consider the findings of the landscape and visual assessment are incorrect and understate the effects of the proposed reclamation due to the existing situation.

...and at 11.8:

I consider the significance of visual effects of the proposed reclamation would range from high to extreme and are understated in the Boffa Miskell assessment.

227. As I have noted in my general introductory comments, and with reference to Mr Anstey's submission, I consider Mr Evan's assessment to be reasonable insofar as the assessment framework he has developed and adopted is concerned. The different conclusions reached by Ms Weeber (and Mr Anstey) are likely to be based upon a different (but unstated) assessment framework.

PART E: Overall Conclusions and Recommendations

Recreation

228. The Assessment of Effects on Recreation (Technical Report 6) paints a very generalised picture of the recreational use of Lyall Bay. While the methods selected for the investigation were sound in principle, the implementation of the methods has been inadequate in terms of survey/investigation design and sampling. The investigations have yielded data of limited relevance and utility to the issue under investigation.

229. Several submitters[18] have remarked on the failure of the recreation assessment to identify the behavioural and spatial characteristics of the recreational use of Lyall Bay. The decision of the applicant to conduct further recreation surveys prior to the hearing is acknowledged and supported.

230. Short term adverse effects during the construction period will be experienced by a wide range of recreational users. Some of these effects, such as the effects of heavy traffic on cyclists and pedestrians, may be manageable through the Construction Traffic Management Plan, or through short term recreational behaviour modification by recreationists Some recreations may refrain from certain activities during the period of construction, or may seek alternative locations for their preferred activities. I consider short term effects with respect to land-based recreational activities to be minor, or less than minor, and acceptable. If adequately constituted, I consider the proposed Community Liaison Group and associated Stakeholders and Communication Management Plan will provide an appropriate mechanism for stakeholder feedback on matters that may arise in the course of construction.

231. The effects of exclusion zones may not be fully appreciated until these areas are established and their spatial extent becomes apparent. The exclusion zone for the SWFS is likely to have the greatest impact on the activities of Lyall Bay water-based recreationists, but uncertainties regarding the design of this structure prevent an accurate estimate of effects. I consider short term effects on water-based recreational activities, such as surfing and gathering kai moana are likely to be more than minor within the areas of the exclusion zones, but acceptability will differ with activity and location. For the main construction exclusion zone, I consider the short-term effects to be acceptable.

[18] Including Dr Sea Rotmann, Mr Clive Anstey, Ms Yvonne Weeber, the Surfbreak Protection Society

232. The exclusion zone for the SWFS is likely to have the greatest impact on the activities of Lyall Bay water-based recreationists, particularly surfers. However, uncertainties regarding the design of this structure prevent an accurate estimate of effects. It is possible that adverse effects arising from the SWFS exclusion zone may be unacceptably adverse in the short term, and unable to be mitigated.

233. Other than the certain loss of the Airport Rights surf break, which I regard as a significantly adverse effect that cannot be mitigated, the likely long term (post-construction) effects on surfing amenity are uncertain. If DHI (Technical Report 11) predictions as to the likely reductions in the number of rides should prove accurate, then I regard the long term adverse effects on surfing amenity to be more than minor. However, there is some uncertainty as to likely nature of effects on waves and the implications for surfing amenity. I rely on the opinion of Dr Goring in noting that the DHI predictions may not transpire, and that effects on surfing amenity may be minor, or less than minor.

234. The lack of detail concerning the design and operation of the SWFS creates a situation of uncertainty regarding the potential of this proposal to mitigate adverse effects on surf breaks (other than the Airport Rights break, which will be lost). I rely on the opinion of Dr Goring in noting that the SWFS may not be necessary, and if constructed, may not perform as predicted.

235. Landscape and urban design proposals for publicly accessible walking areas (promenade and lookout points, and Moa Point access) will enhance recreational opportunities for walkers.

236. What are likely to be minor short term construction-period adverse effects on recreation generally may arise as a consequence of noise, dust and the possibility of suspended sediment plumes in the waters of Lyall Bay. The avoidance or management of these effects through proposed consent conditions (e.g., proposed conditions 45 (noise), dust (36-41), erosion and sediment (61-65)) and associated management plans[19] is likely to restrict such short-term effects to acceptable levels.

[19] e.g., Community Liaison and Stakeholders and Communication Management Plan (SCMP), Construction Noise and Vibration Management Plan (CNVMP) Erosion and Sediment Control Plan (ESCP), Construction Air Quality Management Plan (CAQMP), Construction Traffic Management Plan (CTMP)

Landscape and Visual

237. I agree with the definition of the landscape context of the proposal as defined in the ALVE report (Figure 8). Consistent with NZCPS Policy 15, the defined landscape incorporates terrestrial landscape, and seascape. The presence of features (as recognised in NZCPS Policy 15 is acknowledged but no specific features are identified or mapped.

238. The separate status of the Coastal Marine Area of Lyall Bay CMA as a seascape, distinct from the terrestrial landscape, has not been considered, nor has the possibility been considered that the Lyall Bay seascape could also be regarded as a seascape feature.

239. The ALVE report does not recognise the wider Lyall Bay landscape/seascape as a natural landscape/seascape for the purposes of a NZCPS Policy 15 assessment of outstanding natural landscapes (including seascapes) and features. I agree with this assessment.

240. Considering the Lyall Bay CMA area as a seascape feature, independently of the terrestrial landscape, I consider this seascape feature to rate Moderate-High to High for natural character, and as such may be regarded as a natural seascape or seascape feature, and subject to NZCPS Policy 15(b).

241. I do not regard the seascape feature of Lyall Bay to be outstanding, and consequently I do not regard the area as being subject to NZCPS Policy 15(a).

242. The ALVE report rates effects with reference to three separate 7-range Significance of Effects scales. These scale includes indicative criteria for the rating of effects that constrains the factors that may be taken into account in assessing the level of effects. A summary of effects is provided in tabular form in the ALVE report (p.44). I am in general agreement with the ALVE assessment of effects insofar as these particular scales are concerned.

243. In my opinion the effects of the proposal on Lyall Bay as a seascape feature, are not significantly adverse, and as such do not reach a level requiring avoidance by NZCPS Policy 15(b). I regard the effects as adverse, but acceptably so, and able to be mitigated to an extent through marine and terrestrial ecological restoration initiatives directed towards the restoration of natural character.

244. Regarding biophysical and landscape character effects, in my opinion the effects are more than moderately adverse, as the ALVE report (p.44) assesses them to be. The relatively small scale of the Moa Point embayment compared with Lyall Bay west, and

its immediate proximity to the extension, makes it an area more susceptible to changes in landscape character.

245. In my opinion, and with reference to the scales of biophysical and landscape character effects applied in the ALVE report, I rate the post-construction effects on the Lyall Bay east landscape area as high, rather than moderate. While high, I consider the effects to be acceptable, and able to be mitigated to an extent through landscape design and ecological restoration initiatives. I agree with the ALVE report that the landscape/seascape character effects on the western side of Lyall Bay are considered to be low with reference to the scale applied in the ALVE report, and in my opinion are acceptable.

246. The method applied to the assessment of visual amenity affects is based upon guidelines published by a recognised professional institute (GLVIA3), is transparent in its application, and the assumptions underpinning the analysis are made explicit. Within these parameters , and with reference to the criteria established by Mr Evans in his assessment, I agree with his assessment of effects, as summarised in the table presented on p.36 of the ALVE report.

247. The area that will experience the greatest level of adverse visual effects is the Moa Point embayment, where effects are estimated in the ALVE report as being High to Very High.. These adverse effects derive to a large extent from the intrusion of the proposed extension into the field of view from residences on Moa Point Road and the Moa Point embayment beach (see visualisations represented in Figures 20D and 20F, ALVE Report). I rate the visual amenity effects from the Moa Point beach and adjacent residential dwellings on Moa Point Road to be unacceptably adverse and unable to be remedied or mitigated. For all other areas I regard the adverse visual effects to be minor, or less than minor, and acceptable.

248. I consider the criteria applied by Mr Evans to the assessment of adverse visual effects may not be shared by the community. In the absence of community consultation on the matter of visual effects I consider Mr Evans' assessment to be valid and reliable insofar as his professional judgement is concerned, but not necessarily representative of community opinion.

249. While I acknowledge the unacceptable level of adverse visual amenity effects experienced from Moa Point, as represented in the visualisations I refer to above, I consider there to be aspects of visual amenity that can be mitigated at a local level. While the preservation of the natural character of the coastal environment is required in itself (as I address in the next section), the perception of natural character is an aspect of the appreciation of visual amenity generally.

250. The magnitude of changes to the landscape/seascape character and visual amenity of the Moa Point embayment justify a significant input of ecological restoration and landscape design expertise to achieve some mitigation of the natural character effects of the proposal. The ALVE acknowledges the issues, and indicative, conceptual proposals have been prepared, all of which I endorse. However I regard the level of detail provided in the design proposals as they currently stand to be insufficient for the purposes of judging the adequacy of this aspect of mitigation.

Natural Character

251. The Natural Character Assessment (NCA) locates the project within the coastal environment, and thus is subject to NZCPS Policy 13. In my opinion this is an indisputable fact.

252. A coastal natural character study has been undertaken for Wellington and Hutt City (Boffa Miskell Ltd, 2016). This study has not been cited in the NCA, but I consider it to have limited utility for the runway extension project, given the coarse level of analysis at which coastal natural character was assessed. The Boffa Miskell (2016) study identified Lyall bay as having moderate-high natural character.

253. Mr Boffa has adopted a finer grain of analysis for his study and has undertaken an appropriate spatial analysis of natural character according to component areas of Lyall Bay. In my opinion, Mr Boffa's assessment of coastal natural character is appropriate for the purposes of project-scale analysis.

254. I consider the natural character ratings assessed by Mr Boffa have been arrived at by a valid method of analysis and are soundly based. The findings of the natural character assessment of the Lyall Bay component areas are clearly presented in tabular form in paragraph 6.57 and an overall summary provided at paragraph 6.60. I consider the natural character ratings pre- and post-construction to be credible and based on sound analysis.

255. Mr Boffa has found there to be no areas of outstanding natural character (ONC) within the Lyall Bay or its component areas, or within the south coast in the immediate vicinity of Lyall Bay. I agree with Mr Boffa's assessment; I consider it a reasonable, defensible conclusion that ONC does not exist within the Lyall Bay area. This assessment is supported by the Boffa Miskell (2016) *Wellington City and Hutt City Coastal Natural Character Assessment*.

256. I endorse the approach adopted by Mr Boffa (NCA report paragraph 5.15) for considering the magnitude of adverse effects to be objective, and in general I concur with Mr Boffa's assessment of the nature and magnitude of effects. Two component

areas of the coastal environment will exhibit consequent reductions in natural character post-construction. These are:

256.1. The natural character of the Moa Point Embayment will be reduced from moderate to low,

256.2. The natural character of the Airport component area will be reduced from low to very low.

257. I consider the effects on the Airport component area to be acceptable, providing the mitigation measures proposed in Technical Report 19 (Assessment of Ecological Effects) are implemented. These include the roughening of Accropodes to create habitat suited to colonisation by marine organisms, and the re-establishment of marine organisms previously collected from the area of the submerged reef to be covered by the extension.

258. Mr Boffa rates the natural character for the Moa Point embayment area as being Moderate (Pre-construction) and Low (Post-construction). In terms of the RMA scale of adverse effects, I consider this to be an adverse effect that is more than minor, but an adverse effect which is able to be mitigated to an extent.

259. I do not regard a Low natural character rating as being an acceptable post-construction outcome for the Moa Point embayment component area. I consider it feasible to maintain the natural character rating of the Moa Point embayment at the level of Moderate by means of ecological restoration and habitat creation and enhancement.

260. Within all other component areas of Lyall Bay I consider the effects of the proposal on natural character to be less than minor, and acceptable.

261. I have reservations concerning Mr Boffa's comments on the likely effects on natural character of the proposed Submerged Wave Focussing Structure (SWFS). My understanding is that there is insufficient data available upon which to make predictions on the likely natural character effects of the SWFS, and on this basis it is premature to predict, as Mr Boffa does, that the effects will be "slight", which I take to mean less than minor.

Recommendations

262. Recommendations arising from my review of Technical Report 6 (Recreation) are;

262.1. Construction Traffic Management Plan (CTMP): I recommend that representatives of cycling advocacy groups should be involved in the preparation of this plan.

262.2. Community Liaison Group (CLG): Condition 10(a) (iv) should include a representative of the surfing and surf life-saving communities.

262.3. Participant observation investigation: I recommend that the applicant undertake a further participant observation investigation into the spatial and temporal use of Lyall Bay for recreational activities. The investigation should record participant numbers according to land and sea-based activities, and be designed to provide data on seasonal and temporal variations in use, the influences of weather on activities and user numbers, and the spatial distribution of recreational activities.

263. Recommendations arising from my review of Technical Report 24 (ALVE):

263.1. Notwithstanding the applicant's response (dated 16 July) to the request for further information (dated 16 June) (see full text, Appendix 2), I remain of the opinion that the applicant should undertake a community consultation investigation into visual effects for the purposes of validating the scale of visual amenity effects and conclusions of the ALVE report.

264. Recommendations arising from the Technical Reports 24 & 25 (ALVE, and Natural Character):

264.1. I consider the landscape and urban design proposals for the Moa Point area to be inadequately resolved and require further development prior to the hearing on this matter. Aspects requiring particular attention include: provision for safe public access within a high hazard area, the elimination of the acute angled interface between embayment and extension and the creation of a more naturalistic form to the bay, the transition and integration of materials from the natural materials of the embayment to the Accropodes of the extension, and the design of aesthetically and ecologically fitting Accropodes.

264.2. Integral to this process is the restoration and enhancement of natural character within the Moa Point embayment, with the objective of maintaining

natural character levels at the level of moderate, rather than accepting a reduction to low, as anticipated by Mr Boffa.

264.3. In my opinion, an appropriate strategy for achieving an acceptable outcome for the Moa Point embayment area would involve the preparation of an integrated ecological restoration and development plan, drawing upon the skills of terrestrial and marine ecologists, natural character experts, landscape and urban designers, coastal process experts, and such other disciplinary inputs as are considered necessary.

264.4. I am reluctant to specify the maintenance of moderate levels of natural character within the Moa Point embayment as a condition of consent, given the somewhat imprecise and conceptual nature of natural character, and variations in the methods by which it is assessed. I am unaware of any objective basis for verifying the compliance with a condition requiring the maintenance of natural character at a particular level. In lieu of a specific condition requiring the maintenance of a particular level of natural character, I consider a comprehensive, multi-disciplinary approach to ecological restoration and design, with a moderate natural character objective in mind, to be an appropriate response.

Michael Lawrence Steven

October 7, 16

Appendix 1: Requests for Further information: Recreation Effects

First Request (Dated 20 May 2016)

2.20 Participant observation has been used to investigate human behaviour in public spaces, and the application reports on data collected on seven days during March 2015. Given the limited data set, please outline any limitations that should be recognised in drawing conclusions from the data, including:

- *The design of the participant observation technique used;*
- *Any circumstances that were prevailing on the days which observations were conducted (e.g. weather) that may have influenced the data;*
- *What level of activity might have been reported had observations been made at other times of the year – particularly in peak summer months*
- *What further observation investigations need to be undertaken to understand recreational use in Lyall Bay*

Tables 7-2, 7-3 and 7-4 all refer to Scenario 1 as being a "Large Event" and not a "Common Surf Event" (or common surf conditions). Paragraph 7.3.10 of the AEE report states: "Modelling such a structure for Scenario 1 (common surf conditions) predicted a longer right hand and left hand rides with larger wave face heights in the lee of the structure". Please clarify to which surfing scenario the paragraph cited above refers.

The application proposes a number of amenity & recreational improvements in the vicinity of the project that is outside land owned by WIAL, which will form part of the overall mitigation. Please provide confirmation that landowner approval has been sought, and is likely to be forthcoming, for the establishment of such works.

First Response (Dated 13 June 2016)

The observations were carried out to quantify what type and what level of use takes place in and around Lyall Bay during March. In light of the fact that there were no data available on the levels of recreational use of Lyall Bay, the observations were carried out to provide some context. This enabled the formulation of a picture of how busy Lyall Bay gets on a sunny day in March – and from this – it is easier to make more specific assumptions about the level of use the area gets in winter, summer and spring. It is likely that observations undertaken during sunny days in summer would show higher levels of participation in recreation activities than in March.

The observation technique was structured around fine days when use of Lyall Bay would be highest and where people were likely involved in a wider range of activities than on

less-favourable weather days. While observing "low-use" days can also be useful, the need in this case was to explore how busy the place gets and what, if any, issues arise as a result. For instance, the observations provided insight into how busy The Corner car park becomes, including frequent pedestrian crossings between the car park and the

Spruce Goose Café. This in turn was raised as a potential issue for management of the haul routes.

The observations undertaken are specific to March. Undertaking observations on sunny/calm and sunny/windy days in spring, summer and winter (when most activity takes place) would provide a more complete picture of the potential maximum volumes of use that Lyall Bay could receive at any time of the year.

To clarify the reference to "common surf event" in Paragraph 7.3.10 of the AEE is incorrect and should refer to "large or high surf quality wave event".

With regard to the urban design and amenity features that are proposed, the land affected is owned by WCC and WIAL is working with the appropriate Council personnel in this regard. A Memorandum of Understanding is being prepared which sets out the proposed works and associated establishment and ongoing maintenance requirements and obligations. These works will also be set out in the Landscape and Urban Design Management Plan (refer Appendix G) which will be prepared in consultation with key stakeholders including WCC and neighbours and any conditions that imposed by the decision maker.

Second Request (Dated 16 June 2016)

4 There is a very limited data set from participant observation of recreational activity in Lyall Bay, which informed the assessment of recreational effects. The applicant's response (refer to letter dated 13 June 2016) appears to acknowledge this shortcoming but does not propose a strategy to deal with this issue. Please undertake further investigation and submit a more representative assessment of the recreational use of Lyall Bay. GWRC recommend this study is conducted through to the summer of 2016/17 (to capture a seasonal spread of recreational use), with findings available for decision makers at the consent hearing.

Second Response (Dated I July 2016)

4 The Applicant is prepared to undertake some further survey work during 2016 and for this to form part of the Applicant's evidence for the hearing.

Appendix 2: Request for further information: Landscape & Visual Effects

Request (Dated 16 June 2016)

5 The applicant's response to Question 2.21 (refer to the applicant's letter dated 13 June 2016) states the landscape and visual assessment has been undertaken with reference to UK 'best practice' guidelines. These guidelines are underpinned by a number of (probably untested) assumptions, the basis for which is unreferenced in the guidelines document. GWRC is not aware of any evidence provided by the applicant that supports the proposition that the magnitude of visual effects can be generalised between two broad groups; 'residents' and 'transients', or that the occupation of viewers has any bearing on the magnitude of visual effects and if this generalisation has some basis at the most coarse level of analysis for the UK, such assumptions also apply in NZ. Therefore, please undertake and submit a visual effects investigation or survey that provides a more valid and reliable basis for decision making than the current professionally-based assessment, based as it is upon untested assumptions from the UK context.

Response (Dated 1 July 2016)

Boffa Miskell (Mr Boyden Evans) has considered the request relating to the landscape and visual assessment and has provided the following response to this request:

- *Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3) is accepted best practice guidance in the UK and has been referenced on New Zealand's Quality Planning website (Plan Topic: Land) as relevant landscape assessment guidance material. Given this, GLVIA3 provides a basis from which a valid and reliable best practice approach of assessing landscape and visual effects can be applied.*

- *GLVIA3 identifies that the sensitivity of the viewing audience is influenced by the occupation or activity of people. This recognises that people whose attention or interest is likely to be focussed on the landscape and on particular views are more sensitive to change. An understanding of visual sensitivity is separate from an understanding of the magnitude of change which can be observed from any given viewpoint. Put simply, some viewpoints are more susceptible to change than others.*

- *Viewing audiences with the greatest levels of sensitivity are likely to include residents or visitors to attractions where views of the surroundings are an important contributor to the experience. Conversely, transient viewing audiences are likely to have less sensitivity. GLVIA3 identifies that the views of travellers, including those using road, rail and other transport routes tend to have a moderate level of sensitivity,*

whilst noting some scenic routes may have increased awareness of views and higher levels of sensitivity.

- *The magnitude of change assesses the degree to which the proposed development would change an available view. The greater the extent that development permanently changes a view, the higher the magnitude of change will be. Such change can be assessed irrespective of how sensitive the location that such change is observed from. Notwithstanding this, a change in view is not automatically negative and does not automatically generate adverse visual effects; it needs to be considered in terms of the context and sensitivity of the view available.*

- *To assess views of the WIAL runway extension, an understanding of the sensitivity of the viewing audience is combined with the magnitude of change to understand the overall significance of visual effects. Within the assessment of landscape and visual effects used to support the airport runway project, the basis through which such factors have influenced this assessment have been described for each identified viewpoint using the table set out in the methodology.*

- *It is also worth noting that sensitivity of the viewing audience is a matter that has been around for some in landscape assessment methodology; it is covered in both the first and second versions of the Guidelines for Landscape and Visual Impact Assessment published by the Landscape Institute and Institute of Environmental Assessment in the UK, which were published in 1995 and 2002 respectively.*

- *Accordingly it is considered that the visual effects assessment provided as part of the Application has utilised an appropriate methodology and no further assessment is required.*

Appendix 7

Wellington International Airport Extension Consent Application

Terrestrial Ecology: Impacts on coastal birds

Introduction

1 My full name is Philippa Noel Crisp and my role at Greater Wellington Regional Council (**GWRC**) is that of Team Leader, Terrestrial Ecosystems and Quality, Environmental Science Department. I have held this position for five years.

Qualifications and experience

2 I have a PhD Agricultural Science, La Trobe University, Melbourne, Australia and a Post-graduate Diploma in Ecological Science from Victoria University, Wellington.

3 I oversee a team of scientists and monitoring officers at GWRC who complete scientific monitoring and investigations in terrestrial ecology, soil science, groundwater quality and contaminated land.

4 I have worked in terrestrial ecology for over 20 years, spending 16 years with GWRC and prior to that, working at the Department of Conservation.

5 I am a member of NZ Ecological Society and the NZ Plant Conservation Network.

Involvement with the proposal

6 I have reviewed the resource consent application for the extension of the Wellington Airport runway in relation to terrestrial ecology and I have assessed the potential impacts on coastal birds. In particular, I have reviewed: Technical Report 19 - AES – Assessment of Ecological Effects and the applicant's response to two requests for further information under Section 92 (1) of the RMA,(letters from Mitchell Partnerships dated 13 June 2016 and 1 July 2016). I have also read Technical Report 18 - NIWA - Ecological Characterisation of Lyall Bay.

7 I have not visited the site, but the Senior Terrestrial Ecologist in my team visited on 30 June 2016 to assess the impact of the airport extension on the habitat of bird species and has provided me with feedback about those impacts. I have also reviewed available datasets describing the distribution, abundance and diversity of coastal bird species present in the CMA

within and adjacent to the project footprint. These datasets include the Wellington Harbour Bird Survey dataset curated by Birds New Zealand (the Ornithological Society of NZ) and citizen science data sourced from the NZ eBird database.

Assessment

8 In my assessment, I deal with three key issues:

8.1 Effects on habitat,

8.2 Effects on population arising from bird strike and/or culling.

8.3 Effect of sediment on feeding of peguins and shags

9 Technical Report 19 has not acknowledged that the extension site is within a ‘significant bird area' as identified in Schedule F2 of the Proposed Natural Resources Plan (**PNRP**).

10 The applicant stated in Technical Report No. 19 that ‘Most shore and seabirds and marine mammals will forage over a large area and there is no evidence that this area is particularly important’. In my view, there is existing evidence that the site is of particular importance as it has been designated a ‘significant bird area’ in the PNRP.

11 The ‘significant bird areas’ in the PNRP have been identified following a rigorous process. A panel of ornithological experts was convened to devise a means by which Policy 23 of the Wellington Regional Policy Statement criteria could be translated to be ‘fit-for-purpose’ for identifying coastal and freshwater habitats of significance for indigenous birds. The panel then applied these translation criteria to a list of 166 candidate sites that had been identified during an earlier desktop review of distribution and abundance data for threatened and ‘at risk’ birds in the Wellington region (McArthur et al 2015).

12 The existing coastal shoreline where the proposed runway extension is located is wholly within one of the significant bird areas (see Attachment 1). Four threatened or at risk indigenous species are known to be resident or regular visitors to this habitat: variable oystercatcher, red-billed gull, pied shag and white-fronted tern. The site supports a breeding population of little penguins and provides seasonal habitat or core habitat for the species mentioned previously as

well as NZ pied oystercatcher, banded dotterel, black shag, little black shag, Caspian tern and black-fronted tern, (McArthur and Lawson 2014). Additionally, reef heron (a Nationally and Regionally threatened species) use Moa Point as habitat (Hugh Robertson pers. comm).

13 As the site is a significant bird area, the effects of the proposal must be assessed against Policy 41of the PNRP:

> *Policy P41: Managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values*
> *In order to protect the ecosystems and habitats with significant indigenous biodiversity values identified in Policy P40, in the first instance activities, other than activities carried out in accordance with a restoration management plan, shall avoid these ecosystems and habitats. If the ecosystem or habitat cannot be avoided, the adverse effects of activities shall be managed by:*
> *(a) avoiding more than minor adverse effects, and*
> *(b) where more than minor adverse effects cannot be avoided, remedying them, and*
> *(c) where more than minor adverse effects cannot be remedied, mitigating them, and*
> *(d) where residual adverse effects remain it is appropriate to consider the use of biodiversity offsets.*
>
> *Proposals for mitigation and biodiversity offsets will be assessed against the principles listed in Schedule G (biodiversity offsetting). A precautionary approach shall be used when assessing the potential for adverse effects on ecosystems and habitats with significant indigenous biodiversity values.*
>
> *Where more than minor adverse effects on ecosystems and habitats with significant indigenous biodiversity values identified in Policy P40 cannot be avoided, remedied, mitigated or redressed through biodiversity offsets, the activity is inappropriate.*

14 Requests for further information were made to the applicant to provide the following information:

- an assessment of the fragility of the reef heron population located on nearby Moa Point in terms of the short-long-term effects from the construction of the runway
- an assessment of the proposed activity against Policy 41 and a question about how the consultant completed the ecological assessment for bird values
- an assessment of the risk of bird strike resulting from the change in flight path for both inland and offshore bird species, and

- an assessment of the effect of suspended sediment on little blue penguins during construction of the proposed runway

15 Further information responses from Mitchell Partnerships to GWRC on 13 June 2016 and 1 July 2016 were not satisfactory in my view for any of those points, which will be detailed below. In my view, the effects on coastal bird species will be more than minor in terms of habitat loss. It is also possible that the impact of increased bird strike (and culling) will be significant at a population level, but that would need to be determined through monitoring and addressed if it turned out to be significant.

Coastal birds

16 The Wellington south coast, which includes Moa Point, is the regional stronghold for reef heron (a Nationally Endangered species). This species has also been identified as a Regionally Critical species as numbers recorded are low and are considered to have declined by 10-50% over recent years, largely due to disturbance. The construction activities and the completed extension will cause changes in noise and proximity to the reef heron habitat at Moa Point. As mentioned previously, this is a fragile population and in my view, the precautionary approach referred to in Policy 41 should be used. All coastal bird species that are resident in the significant bird area will be affected by the noise, lighting and habitat changes caused by construction activities. It is likely that they will move away from the area.

17 The applicant has not completed an assessment against Policy 41 of the PNRP and has used for their assessment, a desktop study that did not incorporate information about the presence of bird species in the significant bird area. The loss of habitat for coastal bird species in the significant bird area has not been addressed adequately in the application. There is likely to be a permanent loss of intertidal foraging habitat within the ‘significant bird area’ and no mitigation has been proposed. The loss will occur as a result of the extension being an artificial rocky shore with a steep intertidal zone , which will reduce the shallow shore habitats used by shags and oystercatchers.

18 There is also likely to be a permanent increase in the risk of aircraft strike for some of the coastal birds species present. The applicant maintains that birds will adapt their behaviour in relation to obstacles, that the airport will control the birds and that it is not an area that is used extensively by birds as a flyway. Despite current bird control, there are still plenty of birds in

the vicinity of the end of the airport, and commuting along the coastline. It is an existing flyway for many coastal bird species. Increased rates of bird strike will potentially increase mortality rates of threatened species such as reef heron, red-billed gulls and variable oystercatchers in two ways; more birds will be hit, and the perceived risk may lead to an increase in control (culling) of birds in the vicinity of the airport.

19 Policy P41 states that a "*precautionary approach shall be used when assessing the potential for adverse effects on ecosystems and habitats with significant indigenous biodiversity values."* As such, no quantitative evidence has been provided by the applicant that shows there is no permanently increased risk of bird strike once the runway juts further out into Lyall Bay.

20 With reference to Point 18 above, there is likely to be an increase in shags roosting on the new seawall, as the habitat created is likely to attract these species. If the airport aims to control bird species on the runway to prevent bird strike (ie, by culling), there is likely to be a regional decrease in shag numbers. Shags will use the coastal flyway to move to and from their nesting sites and so will be affected on an ongoing basis. Pied shag, a regular visitor to the significant bird area are a Nationally Vulnerable and Regionally Critical species (less than 250 birds in the region) while Little shag (resident in the area) are a Regionally Vulnerable species (undergoing a 10-50% decline in numbers)

21 Limits for suspend sediments/turbidity proposed in Technical Report 19 are based on information for visual foraging by terns and gannets. As penguins dive for prey, they require light penetration through the whole water column to forage efficiently since they hunt by sight. Areas affected by turbidity plumes may be unsuitable or less suitable for foraging by little blue penguins when the plume is present. Shags pursue their prey underwater and little is known about the level of turbidity plumes that could be acceptable for these species.

22 It was acknowledged in Technical Report 19 that "the 'zone of disturbance' for marine mammals and seabirds that forage within the water column (blue penguin and shags) could extend beyond the immediate vicinity of any construction through noise generated" and that "It is also possible that any breeding blue penguins near to the construction zone could be disturbed to the extent that breeding is deferred, abandoned or breeding birds move to areas away from the construction zone", so effects on penguins are likely.

23 There are no measures proposed to avoid, remedy and mitigate the impacts of the proposal on the significant bird area habitat. The mitigation and monitoring actions I consider appropriate are detailed in the following sections.

24 I support the approach taken by Donald Morrisey in monitoring and minimising sediment plumes to lower impacts on marine life in relation to the effects of sediment in the water on penguin and shag foraging behaviour. .

Mitigation and monitoring

25 I have reviewed the Ecological Mitigation and Monitoring Plan (EMMP). For penguins, the applicant states that "the exposed nature of the site and proposed construction of the runway extension ….may provide little opportunity for the inclusion of artificial nesting boxes". There appears also to be no account for penguins in the EMMP In my view they should be provided for and a variety of boulder sizes in the seawall would provide better nesting habitat for little penguins. A paragraph should be added to condition 81 that specifies the addition of a range of rock sizes to the wall so penguins can find caves under rocks and locate ledges with smaller rocks, pebbles and gravel to construct nests.

26 In my view, a new section for mitigation of impacts on coastal bird species needs to be added to the EMMP. This would cover mitigation for resident species (particularly penguins, variable oystercatcher and reef heron) that will be impacted by the runway construction by improving outcomes for those bird populations at other nearby sites. At the time of putting together the EMMP, these measures could be considered. It is suggested that predator control and habitat enhancement be put in place for pengions, variable oystercatcher and reef heron from Seatoun to Lyall bay and around Island Bay (to better protect birds nesting on Taputeranga Island). Wellington City Council have indicated that they would support this work if a coastal bird mitigation plan was prepared in consultation with them.

27 Structures that would prevent the roosting of shags on the newly created seawall should also be installed, rather than controlling the numbers of these birds through culling. The structures would be spikes or netting that would deter the birds from settling on the seawall. A paragraph should be added to Condition 81 (b) (vi) Methods to determine how shags and other coastal bird species will be deterred from roosting on the seawall.

28 Finally, monitoring of bird species (especially of regionally or nationally threatened species) that fly across the proposed airport runway extension area should be put in place prior to construction. Information should also be gathered about numbers and species type affected by bird strike following construction and through culling. This would be a new matter added to the EMMP to the following effect:

- Prior to the commencement of construction, the Consent Holder shall undertake monitoring to determine the diversity and abundance of coastal bird species using the flyway around the coast in the vicinity of the proposed runway extension. The sampling regime and reporting will be as agreed with GWRC.

- Following construction, an annual report on the number of species type of birds killed through birdstrike or airport culling practices will be provided to GWRC

- Three years following contruction, monitoring of the bird species using the flyway will be completed and reported to GWRC.

29 The information gathered from the monitoring completed as detailed in the section above would be used to determine if the impact on regional bird populations was significant. If that was found to be the case, biodiversity offsetting could be implemented for the specific species of concern in agreement with GWRC.

Conclusion

30 An adequate assessment of the impact of the proposed runway extension on the 'significant bird area' identified in the PNRP has not been completed by the applicant.

31 In my view, the adverse effects of the extension proposal on coastal birds will be more than minor. Penguins, reef heron, shags and variable oystercatchers will be the species most affected by the construction of the runway. Mitigation of these adverse effects is required as per Policy41(c). It is also possible that the impact of increased bird strike (and culling) will be significant at a population level, but that would need to be determined through monitoring and addressed though offsets if it turned out to be significant, as per Policy 41(d).

32 Mitigation and monitoring actions in keeping with Policy 41 of the PNRP are detailed in sections 25-29 I consider that the potential effects will be acceptable if appropriate mitigation and monitoring is put in place as detailed.

Date: 7 October 2016

. . . . . .

Philippa Noel Crisp

References

McArthur N. and Lawson J. 2014. Coastal and freshwater sites of significance for indigenous birds in the Wellington region. Greater Wellington Regional Council, Publication No. GW/ESCI-T-14/67, Wellington.

McArthur N, Robertson H, Adams L and Small D. 2015. A review of coastal and freshwater habitats of significance for indigenous birds in the Wellington Region. Greater Wellington Regional Council, Publication No. GW/ESCI-T-14/68, Wellington.

Attachment 1: Significant bird areas relevant to the Wellington Airport proposal

Appendix 8

S87F REPORT

Proposed Runway Extension at Wellington International Airport

Economic Assessment: Review of the Cost Benefit Analysis and the Economic Impact Assessment

Introduction

1 My full name is Gregory Michael Akehurst. I have 20 years consulting and project experience, working for commercial and public sector clients. During this time, I have worked on over 400 projects, the majority addressing issues of spatial distribution of activities and services to meet needs of specific markets and communities, as well as assessing the economic effects of developments, growth and change on regional economies.

2 I specialise in the assessment of demand and markets, the structure and nature of economic sectors, the form and function of urban economies, preparation of economic projections, and evaluation of impacts, outcomes and effects. I have applied these specialties in studies throughout New Zealand, across many sectors of the economy.

Qualifications and experience

3 I have a Bachelor of Arts, majoring in Geography and a Bachelor of Commerce, majoring in Economics from the University of Auckland. I am a Director of Market Economics Limited, an independent research consultancy.

4 The key aspects of my experience that are directly relevant to this case include; infrastructure impact modelling, regional economic modelling, tourism flows and expenditure modelling, retail and business modelling and projections, as well as cost benefit analysis.

5 I have significant experience in modelling and assessing the economic role that major infrastructure providers play in regional and national economies. I have carried out studies for a number of airports and seaports and my company has assessed the impacts of major roading projects, rail networks and other transport infrastructure work.

6 My company has developed a suite of regional economic impact models that I have applied widely across New Zealand over the past 20 years. These models provide detailed disaggregations of local economies, and economic linkages to trace how

spending flows through and generates employment, household income and contributions to regional domestic product. I also model how tourist spending patterns impact local and regional economies. This is based on a robust understanding of tourism markets, spending patterns, forecasts and the infrastructure required to facilitate their requirements.

7 I have been involved in a number of similar projects, including: economic assessments of Auckland International Airport Limited, Ports of Auckland Limited, and Queenstown International Airport Limited. In addition, I have assessed the economic effects of New Zealand's Cruise Tourism on regions and New Zealand as a whole for Cruise New Zealand since 1996.

8 I have applied these studies or assessment of effects in evidence for Council hearings, in the Environment Court and have prepared affidavits for the High Court.

Involvement with the proposal

9 I have been asked to review Technical Report 4: Sapere Research Group – Cost Benefit Analysis as well as Technical Report 27: EY – Economic Impact of the Proposed Runway Extension by both Wellington City Council and Greater Wellington Regional Council (the Councils). These two reports relate to the economic assessment of the proposed runway extension. I have also assisted with requests for additional information and reviewing the provided information.

10 I have reviewed submissions received by the Councils that have identified economic aspects of the proposed development.

11 I confirm that I have read the Expert Witness Code of Conduct set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing this evidence and I agree to comply with it while giving oral evidence. Except where I state that I am relying on the evidence of another person, this written evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed in this evidence.

12 I have not carried out a site visit of the proposed runway extension.

13 I have had discussions with Sapere as part of preparing this report to clarify aspects of their assessment (including meetings on 22nd June 2016 and 26th of September 2016). As part of those discussions, I have obtained additional data and further explanation around existing data. Where I have relied on that additional data, I have stated what that data is, and referred to it where it was oral discussions.

Summary of Key Points

14 The Sapere Research Group have prepared a national cost-benefit assessment of the proposed runway extension and have identified $2.3bn in net additional national benefits in today's dollars. This is predicated on a set of passenger forecasts developed by InterVISTAS that have a high share of additional future passengers coming to Wellington from long haul destinations and a low share coming from short haul destinations.

15 I believe that while CBA provides an overview of the scale and direction of the economic effects at the regional level, and it provides good information as to whether the outcome of a particular investment will result in a net improvement or otherwise in economic wellbeing, it provides no insight into the nature and distribution of those effects, both positive and negative. This means that it is not clear from the Sapere report how much employment is sustained, how many families can expect to be supported, or even which sections of the economy are likely to receive the most benefit. A CBA is agnostic to who receives benefits or bears costs, it simply tells us, after adding all costs and benefits (wherever they fall) that the benefits outweigh the costs by a particular ratio.

16 The national level assessment is important, but it is necessary to understand the effects at a regional level. To this end, Sapere prepared a summary regional CBA based on their assessment of the potential distribution of both the costs and the benefits.

17 The CBA as summarised by Sapere captures costs and benefits across 4 main categories; Airports, Airlines, Users and Other Sections of the Community. This is an appropriate framework in which to assess the economic effects. In summary, the majority of the effects estimated by Sapere are in line with the findings of my review. However, there are three key areas where my assessment differs from Sapere's that affect the outcome and one that may be important distributionally but not in terms of quantum at the national level:

17.1 Airport: costs to build the extension do not appear to include sufficient optimism bias in their estimates. As a rule, developers tend to under-estimate the costs especially if the projects are unique or non-standard in any way. This is a well-documented effect that needs to be acknowledged in a study such as this.

17.2 Airlines: No account of any increase in landing charges has been identified. It may be that they do not increase, in which case the costs sit against the appropriate category. However, if the airport seeks to fund the extension

through landing charges, then the distribution of costs, both sectorally and geographically changes. BARNZ in their submission state that the increase could be as high as $47m annually, however that is likely to exaggerate returns on the capital investment. Note that in my review these figures are identified but have not been factored into the final cost benefit splits.

17.3 Users: Sapere have estimated the value of travel time for leisure travellers by translating the Australian values into New Zealand dollar terms. This results in a figure of $57/hour associated with the time savings from flying direct. This is significantly higher than my estimate based on adopting the NZTA land based leisure travel cost and factoring it up to reflect the air travel ($31.36/hour). The difference this makes is approximately $196m in net terms to the outcome at the national level.

17.4 Other Sections of the Community: Costs, Sapere have adopted an incremental approach to assessing the cost footprint of the net additional tourists attracted to Wellington. This is similar to a marginal analysis and assumes that the majority of tourism infrastructure and assets exist, and represent sunk costs. The additional tourists therefore only place a very small cost burden on New Zealand providers of goods and services. Sapere do not have information to allow this to be quantified, so have adopted MBIE's Value Added estimation process from the draft event evaluation guidelines. This indicates that every dollar spend can be split 25% to costs and 75% to benefits. I think this is too low and doesn't accurately reflect the totality of tourism costs. I believe that they are best represented by the average cost structures embodied in the Statistics New Zealand's Tourism Satellite Accounts (TSA) (especially in the long run) and Input Output tables produced by Statistics New Zealand. Relying on these values sees costs rise to approximately 48% of every additional dollar spent in New Zealand. It is likely that in the short run, i.e. within the first few years, that the cost structures better reflect the incremental values adopted by Sapere, however in the long run, they are more likely to reflect the average costs as hotels are renovated or new ones built. This means that the true cost figure to meet tourists additional needs, likely lies somewhere between the average costs as I have outlined and the incremental or marginal costs – if they were able to be determined.

18 These differences increase economic costs, or lower the benefits generated by the extension to a greater or lesser degree. Sapere estimate the total national costs faced by the country will be approximately $1.79bn in NPV terms over 40 years. My more conservative adjustments increase this to approximately $2.39bn, or $597m more.

19 The reduction in the value of travel time saving's I have applied reduces the benefits by approximately 5%. That is, the generalised cost of travel savings to users of the airport estimated by Sapere to be approximately $1.6bn reduces to approximately $1.4bn in my estimation using a lower VoTT figure.

20 Adjusting for these changes lowers the total incremental economic benefits to $3.9bn from $4.1bn as reported by Sapere at the national level. The net effect of these changes is to reduce net benefits to $1.53bn from the $2.3bn reported by Sapere and the Benefit Cost Ratio (BCR) from 2.3 as reported by Sapere, to 1.64. These figures are still strongly positive in CBA terms, meaning that if the proposed runway extension proceeds, the result would be a strong economic wellbeing lift for New Zealand.

21 In addition to the work carried out by Sapere, WIAL commissioned Ernst & Young (EY) to carry out a national economic impact assessment to provide background information to the proposed runway extension (Technical Report 27). I have a number of significant concerns about the technical robustness of this report. In my opinion, it is of limited use.

22 To address the limited regional information provided initially in the national CBA and to address the shortage of a robust regional EIA, Sapere provided a breakdown from the national to regional level for the CBA and the summary EIA they provided. In essence, the Sapere regionalisation relies on a very simple multiplication of the national expenditures by 31% to reflect the share of spending expected to be captured by Wellingtons role as a gateway city.

23 In my view, the regional effects that result from this are likely to be overstated because, at the national level there are no inter-industry trade flows generating effects outside of the region where the spending occurs, at the regional level there are inter-regional imports to consider meaning that the regional effects will always be lower than national on a per dollar basis. This is not reflected by applying a single ratio to the national effects.

24 Finally, there appears to be an issue with the manner in which the NPV calculations have been carried out. The result is that the figures presented in the Sapere work are approximately 7% over stated – either that or the dates in the Sapere spreadsheet are wrong.

25 The key conclusion I have reached having read the evidence, in the form of supporting reports to the resource consent application and the wider submissions is that, if the passenger projections relied upon by Sapere and WIAL are accurate, then the runway extension will deliver a net benefit to the Wellington region of approximately $465m

(assuming a 31% capture rate of tourist spending) and approximately $1.53bn in net terms to the nation.

26 These are lower figures than estimated by Sapere in their assessment. The key reasons for the difference are the more conservative estimates of the value of travel time I have adopted (for leisure travellers), my adoption of average cost structures to describe the economic footprint of additional tourists and my inclusion of higher construction costs by including an optimism bias – in line with international best practice. I acknowledge that my figures are more conservative and I accept that the overall net regional and national economic benefit might be higher, somewhere between my estimate and Sapere's.

27 The economic activity generated by the additional international visitors that Sapere anticipate arriving into Wellington stimulates employment. Employment required to meet tourist needs rises from around 200 in 2021 to over 1,000 by 2059 (the final year of assessment). In addition to this are the approximately 600 jobs annually generated in Construction over the three years of the proposed build.

28 These employment effects are significant, however the tourism related ones are directly dependent on the traffic forecasts prepared by InterVISTAS materialising.

29 I have also found that the net benefit presented in the CBA is sensitive to changes in input parameters. This adds a degree of uncertainty that surrounds the benefits. For example, the share of spend captured within the Wellington economy is driven by the type and nature of tourism that manifests. If this were to increase to, for example 50%, employment peaks at close to 1,800 job equivalents by 2059 and $635m net regional economic benefits.

30 However, the share of spend captured by Wellington as a city is likely to fluctuate in-line with passenger numbers. This means that a narrow, more Wellington focused tourism future is characterised by higher shares of capture but potentially lower actual passenger numbers and vice versa. This means that the 31% share adopted by Sapere is possibly a true reflection of the scale of effect in the Wellington economy.

31 Evidence prepared by Ailevon Pacific (APAC) on behalf of BARNZ has identified what they believe are significant issues with the passenger projections that Sapere rely upon to generate their impacts. That evidence casts doubt upon the starting points InterVISTAS use for their projections and the assumptions InterVISTAS rely upon to generate their projections. APAC go so far as to state that the InterVISTAS reports are

"fundamentally flawed[1]" and that the projections "provide an overly optimistic view of Wellington International Airport's long haul service potential[2]".

32 If the passenger projections are overstated, then the economic benefits will not materialise as described in the Sapere report.

33 In addition to the raw economic benefit numbers, the levels of employment the tourism expenditure would support (more than 1,000 jobs by 2059 at the Wellington Regional level), confirm that this extension will bring a significant benefit to the Wellington economy and that the benefits are likely to be distributed widely.

Assessment

34 My assessment focuses on the economic effects of the proposed runway extension, as identified in technical reports accompanying the application for Resource Consent submitted by WIAL, including:

34.1 Technical Report 4: Sapere Research Group – Cost Benefit Analysis (19 April 2016) (**CBA).**

34.2 Technical Report 27: EY – Economic Impact of the Proposed Runway Extension (24 February 2014) (**EIA**).

34.3 The additional information provided by the applicant, including the response to the Request for Further Information (1 July 2016), particularly Attachment 2 that deals with the CBA and the EIA as prepared by Sapere, as well as explanations and information provided to me by Sapere.

34.4 The submissions that have an economic aspect as identified by the Councils.

35 I have relied on other data sources and reports to inform my review. The main ones including:

35.1 The Ministry of Business, Innovation and Employment's Post Event Economic Evaluation Guidelines.

35.2 Statistics New Zealand's Tourism Satellite Accounts (TSA) and related datasets.

[1] Wellington International Airport Passenger Forecast Review, prepared for Ailevon Pacific Aviation Consulting (APAC), submission No. 688 (BARNZ), July 2016, page 2.
[2] Ibid.

35.3 Market Economics' economic accounts[3] of the Greater Wellington region and New Zealand's economic accounts.

36 The assessment covers both the CBA and the EIA reports. I have covered the regional assessments as well as the national level CBA and EIA that are included in the application.

Background

37 The application for a Resource Consent to extend the Wellington Airport runway was accompanied by reports from Sapere and EY who were commissioned to provide assessments of the economic effects. The EY report was prepared before the CBA and focuses on the potential economic impacts of the proposed extension and uses multipliers to estimate the total effect.

38 The CBA focused on the net economic benefit position at the national level and took into account a wide range of factors likely to impact on the costs and benefits at the national level. The CBA report includes a short discussion on the likely regional effects. In addition, Sapere ran sensitivity analyses to assess the potential effects/outcomes at a national level. These included altering passenger volumes, capital costs, discount rates, shifts in the proportion of existing users that use direct flights and different proportions of Value Added by NZ businesses during business processes.

39 As part of the assessment, Sapere made assumptions (out of necessity) as to the manner in which the proposed runway extension (and Code E gates) would be funded. Sapere have assumed that the proposed runway extension would be funded by central government through general taxation. It is my belief that the funding mechanism used for the proposed runway extension would have a fundamental effect on the economic outcomes for both regional and national residents. The manner in which a project is funded either regionally, nationally or privately influences the level of benefit that is delivered and distribution of costs across communities.

40 I do not believe that a national level CBA provides sufficient insight into the type, scale and nature of economic effects because it does not show a detailed and robust assessment of the regional level effects i.e. the distribution of costs and benefits. To this end, I requested further information that described and quantified the potential effects at the regional level. My assessment below covers both the original Sapere report and the additional information they provided.

[3] Economic accounts show the economic activity in a region and the level of interaction between sectors and industries both within and outside the region.

41 In addition to the CBA, I reviewed the Economic Impact Assessment (**EIA**) prepared by EY. The EIA has a number of significant issues. Importantly, it was based on an earlier set of air traffic projections. The EY report estimates that the additional passenger services (capacity) would add 711,000 seats by 2060, translating to an additional 576,000 pax. The InterVISTAS' estimate puts the passenger growth at around 387,000 additional international passengers (not seat capacity) when comparing the most likely growth options (with and without the proposed runway extension in 2060). Sapere provided additional information about the regional economic impacts assessment in the response to the additional information requested.

42 I summarise my assessment of the regional CBA and EIA after commenting on the national level CBA and EIA.

National level CBA

43 Sapere's CBA focuses on the potential national effects of the proposed runway extension. The CBA estimates the net benefit that could accrue to the nation and it looks at aspects such as the value of the nation's resources that would be used up in extending the proposed runway as well as providing goods and services to additional visitors. The net benefit is estimated by subtracting the overall costs from the overall benefits. The CBA considers a range of effects on different segments, including:

43.1 The effects on airports.

43.2 The effects on airlines.

43.3 The effects on users (passengers and freighters).

43.4 The effects on other sections of the community.

44 I have focused on the approach, as well as the key inputs and implications for the CBA.

45 Sapere's CBA is directly informed by the InterVISTAS assessment of passenger numbers and Sapere presents a summary of the forecast passenger traffic in Section 3 of the CBA report. Economic outcomes of the project captured in the CBA are directly dependent on the accuracy and robustness of the traffic forecasts. Apart from construction costs, all the main cost and benefit items in the CBA rely (directly or indirectly) on the InterVISTAS assessment. If the InterVISTAS assessment is wrong (over or understated), then those errors flow through in to the CBA analysis.

46 Sapere's CBA provides three scenarios based on different traffic forecasts. The low and high scenarios reflect the 5th and 95th percentile outcomes. In effect, only 10 percent of outcomes modelled are excluded from the assessment. This is a very wide spread and while it provides an indication of the distribution of effects, it doesn't assist much in focusing around the 'most likely' scenario (based on InterVISTAS median 'median' estimate).

MBIE Expenditure to Benefit Ratio

47 One of the key ratios used in the CBA is the additional tourist expenditure to NZ benefit share. Sapere has applied the Ministry for Business Innovation and Employment's (MBIE) "*Major Events Development Fund – Post-event Economic Evaluation Guidelines*" to estimate costs and benefits associated with additional visitor spend. As the name suggest, these guidelines were prepared to assess events rather than major infrastructure projects. The MBIE guidelines are designed to estimate the share of 'value add' to the economy arising from additional tourist expenditure generated specifically by the event[4].

48 Value add is similar to GDP, in that it contains the value of payments to wage and salary earners as well as operating surplus, depreciation, subsidies and taxes. It is true to say that Value Add or GDP is not the same as benefit.

49 Sapere, by using this ratio as a proxy for benefit, implies that benefit to spending is based on GDP. This is important because GDP includes salaries and wages, consumption of fixed capital and taxes – these items are regarded as business costs in CBA terms. If they are simply included in the CBA without appropriate adjustments, then benefits would be overstated.

50 I note that Sapere's original CBA (November 2015)[5] used information from TSA to derive the proportions of visitor expenditure that are costs and benefits. The MBIE guidelines recommend using a benefit ratio (% of $1 spending that is a benefit) that is higher than that implied by the TSA. The TSA presents an average cost approach in that it sums all of the receipts from tourist expenditure and the manner in which all sections of the economy have met their needs. Therefore, the TSA captures a significant proportion of the tourism infrastructure costs that an incremental approach might not include.

[4] Page 21, "Economic Evaluation Outcomes: Major Events development Fund", (May 2013), MBIE. These Guidelines are currently under review.
[5] This report is mentioned in section 1.3 of the CBA.

51 It is not clear why Sapere changed their approach. On page 7 of the CBA report, Sapere state that; "*As a primary purpose of a CBA is to allow comparisons of initiatives across policy and industry areas, a lack of consistency in methodology, as is evident in these studies, undermines the usefulness of the CBA to decision-makers. There is, therefore, a case for adopting the present draft guidelines to achieve consistency in approach between this CBA and other assessments which estimate the net benefit from additional visitors*". In my view, this assessment is for a proposed runway extension and the resulting visitor spending profile is likely to differ from spending associated with a Major Event. Therefore, relying on the MBIE value add estimation guideline to assess benefits from tourism expenditure will tend to overstate benefits and understate costs.

52 I understand that Sapere have utilised the MBIE guidelines as a proxy for the benefit share of their incremental approach to assessing the economic footprint of the additional tourists. I understand from discussions with Sapere that they have done this because they believe that the additional tourists are a small portion of the total tourists in any one year. They believe that this marginal approach presents a more accurate picture of costs and benefits.

53 I believe that in the short run, this is an appropriate response as across the initial years there will be limited change to Wellington's tourism infrastructure to meet these needs. However, if the passenger projections are accurate the numbers rise to more than 380,000 each year over the 44 year time horizon.

54 In my view these numbers are sufficient to begin estimating the costs of meeting their needs using an average cost approach that captures costs to fund new tourist infrastructure (hotels, retail outlets, recreational facilities, and other infrastructure). While it is clear that the volume of demand arising specifically from the additional tourists might not generate the need for their own set of hotels, shops and facilities, they are part of the growth in tourism that does. This means that in the medium to long run, it is more likely to be the average cost approach that better reflects their impacts.

55 Given that Sapere have relied on an incremental approach that states only 25% of all tourist expenditure is cost and my analysis indicates that approximately 48% of tourist expenditure is cost (on average), the actual effect likely lies somewhere between these 2 figures (assuming the 25% cost adopted is robust). It is likely to sit closer to the incremental end in the short term and at the average cost end in the medium to long run. Given this study covers more than a generation; I would argue that the medium to long run outcomes should dominate.

56 Sapere did use the TSA information in the November 2015 CBA report (as referred to in section 1.4.2, page 6 in the current report). In my assessment, I have taken into account a range of Statistics New Zealand (SNZ) and MBIE published datasets (including the International Visitor Survey) that provide a detailed assessment of visitor spending, and the costs to businesses of delivering goods and services to visitors. For example, the Regional Tourism Estimates (RTE) dataset provides a breakdown of visitor spending on eight tourism products, by type of visitor (domestic or international) and origin of the visitor (breakdown of NZ region or eleven international regions). I have associated this spending information with the Statistics New Zealand published Supply-Use Tables (or Input-Output Tables) to estimate how much it would cost businesses to deliver services to tourists.

57 Sapere indicated (p7) in the CBA that *"…average cost of all goods and services sold in New Zealand provides a poor indicator of the typical costs of supplying the additional goods and services demanded by the additional tourists that visit Wellington*". Sapere asserts that "*This is because the mix of goods and services purchased by international visitors differs from the mix purchased by locals*". In addition, Sapere highlights that domestic and international tourists have different spending profiles. While I agree that domestic and international visitors have different spending profiles, this does not mean that business costs to service these two groups differ. For example, the input costs of a café to provide a cup of coffee is the same irrespective of whether it is purchased by a local, a non-Wellington resident or an international visitor. The cost structures of businesses are relatively stable so therefore, it would be appropriate to use the input structures (i.e. costs per unit output) to estimate the cost to businesses of meeting incremental demand arising from the proposed runway extension, including international visitor spending.

58 Combining more detailed information on visitors' spending profiles with information on businesses' input structures provides a robust assessment of the net benefit position. For example, the latest Statistics New Zealand, Input-Output Tables show that for every $1 of output produced by 'accommodation', 'food and beverage service' and 'transport', $0.494 is used to pay suppliers i.e. the direct costs or intermediate consumption (these are direct inputs and excludes salaries, wages, taxes, and imports) accounts for 49.4% of every $1. Clearly, costs are greater than the 25% implied by the MBIE guidelines and used by Sapere.

59 In 2015, these sectors accounted for 53% of international visitors' spending (based on the TSA) meaning that it is an important segment in understanding total costs and benefits. By adhering to the MBIE guidelines for estimating value add, Sapere applies a lower cost base to over half of the visitor spending covered by their study. The effect is to understate the costs and overstate the benefits.

60 Changing the ratio used to estimate benefits from expenditure will change both the scale of costs and benefits. Sapere's sensitivity analysis highlights this effect and shows that under the higher portion of 54.1%[6] of spending that is treated as a cost (compared to 25% used), the cost-benefit ratio comes down from 2.3 to 1.7 – a 39% decrease. This sensitivity highlights the importance of using an appropriate ratio or method to derive the cost to benefit relationship for visitor spending.

61 In my view, relying solely on the MBIE value add estimation guidelines does not provide an accurate estimate of all the tourist expenditure costs and benefits over the duration of the study period. Similarly, it does not accurately reflect the medium to long run costs that New Zealand businesses would incur in delivering the goods and services to these visitors. Using the MBIE value add estimation guidelines by themselves is likely to overstate the net benefits because it understates the cost components.

62 Sapere argues (in Section 1.4.2 on page 7) that there is a need for consistency in the ratios used in assessments of this nature (i.e. the MBIE guidelines). However, these guidelines have been prepared to provide consistency across events when evaluating government funding of events as part of a government programme. In my view there is no need to maintain consistency with that programme because Sapere state that this CBA is not designed to determine whether government funding is appropriate or not, it is to support WIALs application for Resource Consent under the RMA.

63 In my view, a more robust approach would be to assess the short term impacts using a marginal or incremental approach, and combine that with a medium to long run estimate of effects using an average cost approach. To this end, I have provided a range in my summary table of costs and benefits. At the high benefit end the values rely solely on the Sapere figures, at the lower net benefit end, the figures rely on the average cost of tourism values.

Funding load

64 The CBA assumes that capital costs would be funded through general taxation. The assessment then considers alternative funding approaches (p. 100) and comments on the different impacts on economic efficiency and distributional equity. The assessment does not quantify the potential scale of the benefits or costs that could be expected under different funding approaches – in particular at the regional level.

65 This is an important gap because if the extension is funded using a different approach to general taxation, then the degree to which benefits would be realised is liable to

[6] This value corresponds with 45.9% of the spending that is viewed as Value Added that Sapere derived from the TSA

change. For example, the extension could be funded using debt such as a WIAL bond. For simplicity, assuming that the bond is structured over 12 years at an interest rate of 4%, the interest payments[7] would be $12.2m per year. This annual payment would need to be recovered in some way and landing charges could be one possibility. If these costs were then passed to passengers in the form of higher airfares, then the total demand for seats would be lower. The effect of this would be to reduce the number of visitors coming to Wellington, thereby lowering the economic benefits that the proposed runway extension would deliver. This simple example shows the potential effects of one alternative funding mechanism and highlights the potential interplay between the funding approach and economic effects as well as the distribution of those cost and benefits.

66 These are important aspects and I would expect an economic assessment to consider the effects of alternative funding approaches in sufficient detail and to quantify any potential changes to effects they result in. The CBA provides high level commentary on alternative funding mechanisms, but it does not quantify the effects.

67 This is also an important gap because it is likely that the project would not be funded using the general taxation approach given that the airport is part owned by the public and private sectors. While it is true that at the national level, the manner in which the extension is funded is not especially relevant, it is extremely important at the regional or local level as it has a direct bearing on who pays the costs to be compared with who receives the benefits.

68 In the sensitivity analysis, the CBA provides an indication of the potential cost-benefit ratios under different air traffic levels. Under the low traffic scenario, the cost-benefit ratio is materially lower than the 'most likely' scenario. The cost-benefit ratios, for the low scenario across all the sensitivities, are on average only 65% of the cost-benefit ratio of the 'most likely' scenario. The average cost-benefit ratios under the high scenario (again across the sensitivities) are 16% higher than the most likely scenario. This variation implies that the downside risk is greater than the upside potential – if the air traffic forecasts (most likely scenario) do not materialise then the implications are more severe than if the growth forecasts are exceeded. This points to the importance of understanding the potential effects on air traffic volumes (and therefore the costs and benefits) under different funding approaches.

69 A potential issue that is not canvassed in the CBA is the potential funding implications and effects on the domestic network if a portion (or all) of the funding load is recovered from existing users on the domestic network. Similarly, if the cost to airlines increase due to a shift in the value of the runway infrastructure (i.e. the asset

[7] Technically called the 'coupon' and excludes any repayment of the principle. The principle would also need to be repaid at maturity.

value), and airlines then increase their airfares on domestic or existing international flights, then existing users would be worse off. Further, price increases are likely to reduce demand for air travel and freight at the margin, resulting in lower levels of economic activity. The domestic air network and the connections it facilitates are important to the NZ economy and NZ's wellbeing. If the proposed runway extension reduces the level of traffic on the domestic network due to an increase in overall costs, then it is safe to assume that it would have a detrimental effect on national level economic outcomes and wellbeing.

70 In the BARNZ submission the potential for additional landing charges to existing airport users is estimated to be as high as $47m annually. Should this be applied, over the duration of the study period additional landing fees translate to over $446.7m (in $NPV_{7\%}$ terms). These would redirect the costs from the airport sector to the airline sector at the national level. Sapere have assessed as though only central government funding occurs at the national level and regional level funding at the local or regional level. They have not assessed the effect at the regional level if the airlines fund the extension.

71 However, there are issues with the BARNZ estimates as they would imply a level of return on capital for the airport that is significantly higher usual and may cause problems with bodies established to oversee the business activities and returns on investment for natural monopolies such as Wellington Airport.

72 It is also not clear if the capital cost (or any of the other costs) associated with the proposed runway extension includes costs associated with mitigating and managing the environmental effects during and after construction. If these costs are not included in Sapere's assessment then the net benefits are likely to be overstated.

Passenger and Freight

73 In estimating the incremental economic benefits for users of airline services, Sapere estimates the generalised cost of freight. This is done by using the opportunity cost of time based on the road freight transport (not air travel) between Wellington and Auckland. The current domestic route network provides the ability to transport goods between Wellington and Auckland by air. It is not evident from the CBA why Sapere opted to use road freight as the mode to estimate opportunity costs.

74 With reference to the freight capacity, it appears that the assessment is based on the tonnes of freight capacity that would be available if the routes (and flights) are added. In reality, only a portion of the available capacity would be used. This is similar to the 'load factor' that is used to show what portion of the available seats is filled by fee paying passengers. It is unlikely that 100% of the freight capacity would be used on

the new routes. It is not clear if the assessment is based on 100% of the capacity or if freight demand has been adjusted to reflect a 'load factor'. If a 100% utilisation has been used, then the assessment would need to be adjusted downward to reflect the situation where the flights do not operate at 100% capacity. Such an adjustment is likely to have a marginal effect on the overall assessment by reducing the cost effectiveness of the services underpinning the air traffic (i.e. more flights needed to service the freight demand, or the same number of flights with less freight carried per flight).

General Comments

75 In addition to the above points, I have also identified some other areas of difference (I address the first two in more detail in the following section on the regional CBA):

75.1 The sensitivity of the CBA to changing the value of travellers time parameters.

75.2 It is not clear if the assessment included sufficient allowance for optimism bias covering the construction costs.

75.3 The assessment does not fully discuss all the costs and benefits and how these could be interpreted in different ways. For example, salaries and wages are included as a benefit but they are also a cost to businesses. For this reason, it is worthwhile to express some of these effects in an economic impact assessment (EIA) because it provides a useful context within which to understand the scale and nature of these effects.

75.4 The sensitivity analysis uses a very wide range (distribution) of settings. For example, the low and high traffic forecasts adopted in the sensitivity analysis applied the 5^{th} and 95^{th} percentile projections, for the low and high scenarios respectively. The low scenario projects an extra 263,900 passenger movements (in 2060) and the high scenario projects 935,300 extra movements compared to the most likely scenario with 578,200 extra movements (as presented in the *Spreadsheet in support of Sapere CBA 19.4.16 – Release for consultation*" attached to the BARNZ submission (Appendix Three)). The way in which the sensitivity analysis is presented appears to show that the cost-benefit ratio remains above 1.0 (i.e. a net benefit position) for most scenarios. However, the assessment does not show the potential effects and outcomes if some of the drivers are combined. For example, the assessment does not comment on the cost benefit ratio under a high construction cost scenario combined with lower use of direct flights by existing users. Combining the sensitivity analyses in

such a way would show the potential outcomes if regional demand does not materialise and estimated construction costs overshoot estimates.

76 In addition to the above, I have identified a potential issue with the Net Present Value (NPV) calculations in the "*Unprotected - Spreadsheet in support of Sapere CBA 19.4.16 – Release for consultation.xlsx"*. While I understand that this spreadsheet has not been submitted as part of the resource consent application (but was an attachment to the BARNZ submission), the tables in the current report match the tables as presented in the spreadsheet, implying that the calculations are the same. Also, while I did not audit the spreadsheet, the NPV figures are not calculated in the way that I would expect. If I recalculate the NPV of the "Total Construction Cost (risk adjusted including contingency)", using the same 7% discount rate, then I get $278.6m compared to Sapere's value of $298.1m. Similarly, if I recalculate the 'Total additional expenditure by non-resident visitors to NZ on goods and services supplied by NZ businesses (excluding GST)' then I get a value of $2.06bn compared to Sapere's value of $2.20bn. These two examples are 6.5% lower than Sapere's stated figures.

77 I suspect that this difference arises either because in the Spreadsheet the discount rates are expressed as at a date (1 April 2015) that may not be correct. If it is, then the calculations Sapere have carried out fail to discount any expenditure that occurs in the first year following 1 April 2015. Each subsequent years expenditure is then discounted by the rate for the previous year – that is, by 7% less than it should. By assuming that the date is correct (1 April 2015) and that everything is being discounted back to this date, then Sapere has treated the first year as though no discount should apply.

78 If however, it is simply that the date is incorrect in the spreadsheet, then other than spreading a little confusion, there is no real harm done. However, the outcome is not clear.

79 Given that the CBA assessment reports virtually all of its findings in NPV terms, the above means that the cost and benefit figures could be overstated by 7%. It is my belief that this error (either the wrong model start date, or the exclusion of the first year from the discounting) remains in the final version of the report as presented in support of the Resource Consent application.

80 With reference to capital costs and their timing, Sapere indicates (page 50) that the "*…nominal capital cost has been spread equally over the assumed three year construction period (i.e. 2017/18 to 2019/20)…*". However, in the spreadsheet (mentioned in paragraph 76) the first year in which capital costs are incurred is labelled year ending '31 Mar 2017'. It is my understanding that 31 March 2017 should

be grouped in 2016/17 not 2017/18. This again adds to the confusion and makes it difficult to determine the correct values.

National CBA Summary

81 In summary, the national level CBA highlights a strongly positive outcome. As Table 1 shows, the net effect based on my more conservative stance due to the factors discussed in this report still generates a $1.53bn economic wellbeing gain for New Zealand. While this is some $793m lower than the Sapere estimates ($2.3bn), it still generates a strong BCR of 1.64.

Table 1: National Summary of Costs and Benefits of the Wellington Airport Runway Extension, ($NPV_{7\%}$ $'000)

Costs	**Low Cost**	**High Cost**
Airports	343,869	420,265
Airlines	-	-
Users	834,316	834,316
Other sections of the community	611,630	1,132,264
Total Incremental Economic Costs	**1,789,815**	**2,386,845**
Costs Difference		*597,030*
Benefits	**High Benefit**	**Low Benefit**
Airports	121,744	121,744
Airlines	5,826	5,826
Users	1,601,085	1,404,266
Other sections of the community	2,385,447	2,385,447
Total Incremental Economic Benefits	**4,114,102**	**3,917,283**
Benefit Difference		- *196,819*
Cost Benefit Assessment	**2.30**	**1.64**
Total National Net Benefit	**2,324,287**	**1,530,438**
Net Difference		*793,849*

82 The national level CBA does not provide a detailed assessment of the regional costs and benefits, particularly the costs that would fall to Wellington region. Sapere provided a high level summary of the regional CBA in response to a request for

additional information. I comment on the Sapere's regional CBA and EIA after presenting my observations about the national level EIA.

National level EIA – Ernst Young Report

83 As mentioned above, I have been asked to review both the CBA and EIA reports. In this section, I summarise the findings of my review of Technical Report 27: EY – Economic Impact of the Proposed Runway Extension (24 February 2014) (EIA).

84 It is very important to note that the EY report is based on a different set of air traffic forecast figures. Therefore, the EIA it is not consistent with the CBA. The EIA is unclear on the size of the net change that is it assessing. I did request a breakdown of the net change that is assessed, but this information was not provided.

85 In spite of the different air traffic forecasts and the limited information about the change that is assessed, I have reviewed the EIA and have identified a number of critical issues, including:

85.1 The EIA uses a multiplier approach. It is based on a derived multiplier and also included a number of factors to adjust the spending before converting it (the spending) into Value Added (VA is similar to GDP). The EIA is unclear on the rationale for the adjustments or the source(s) of the adjustment factors used. Further, the assessment uses a multiplier of 2.5 to estimate the total impacts delivered by the direct effects. However the report states (in footnote 52) that an indirect multiplier of 1.5 has been used. The reason for this discrepancy is unclear. A number of economic studies have been completed for Wellington International Airport and it is unknown why the EIA didn't use the information and estimates in those studies as a guide. It is also unknown what sort and type of multipliers are used. The multiplier could be Value Added or Gross Output multipliers or it could be a Type 1 or a Type 2 multiplier. Type 1 multipliers exclude the flow-on effects associated with people spending their salaries and wages and Type 2 multipliers include these effects.

85.2 The assessment does not include the effects of project fundeding. Normally, the funding approach is included in an assessment to estimate the counterfactual (i.e. the potential economic effects of the funding if it was spent in another way) and how the project is financed. By including a counterfactual, the net economic impact can be assessed and understood in an appropriate context.

85.3 The EIA does not include the economic effects associated with the construction phase i.e. Value Added in the economy due to the spending during the construction activity, and number of jobs that are supported by the construction and supply industries. Extending a runway is a substantial project and the construction activity alone is likely to have a real impact on the regional economy. By excluding the construction effects, the assessment is understating the total economic impacts. In addition, a large portion of the construction effects would be felt within the region and excluding them is likely to understate the effects on the regional economy.

86 The EIA describes the additional visitor expenditure as benefits. However, from my perspective neither the expenditure nor the economic impacts are benefits. An EIA traces the flow of goods and services through the economy that are used to deliver/service the visitor expenditure. Importantly, an EIA reports on the change in the level of economic activity that is needed to deliver the projected change (i.e. the economic shock). An EIA then expresses the economic change using metrics such as Gross Output, Value Added (or GDP), employment levels and income. Note that these are economic metrics and they are not 'benefits'. For example, GDP includes taxes, salaries and wages and other 'costs'. GDP is a measure of economic activity, not 'benefit' as used (incorrectly) in the EIA.

87 The EIA (Technical Report 27) provides an indication of the economic impacts using value added. Value added is very similar to GDP so this is an appropriate measure. However, this is the only metric provided in the EIA. In my view, a comprehensive EIA needs to cover GDP as well as employment effects and household income.

88 Further, for large infrastructure investments such as the proposed runway extension, an economic impact assessment should also reflect inter regional flow-on effects. As an economy, the Wellington region interacts with the rest of the country, buying inputs from other regions. In turn, these regions transact with other regions, including Wellington, highlighting the integrated nature of the economy. This suggests that some of the economic effects of the proposed runway will be felt outside of Wellington region and it is important to understand these effects fully.

89 In summary, the EIA report has a number of critical methodological issues that undermines its usefulness. Further, the fact that it is based on earlier air traffic forecasts means that it cannot be viewed in conjunction with the CBA to get a fuller picture of the proposed runway extension's economic effects. Therefore, in my view the EIA contributes little to the discussion.

Regional CBA - Sapere Research

90 Using the additional information provided in the 'Response for Further Information' (dated 1 July 2016) and the tables in CBA report that Sapere referenced in this response, I comment on Sapere's regional CBA.

91 Sapere's response to the additional information request (1 July 2016) emphasised that a CBA, in Sapere's view, is the most appropriate way to assess contributions to economic wellbeing from a project such as the airport expansion and that the manner in which it might be funded should be addressed in a business case and is for the Board of WIAL to determine. The response states that the CBA does not assume that the project will be funded by the Government – yet in section 7.1 of Technical Report 4, (page 100) Sapere state "The estimates presented above (including the sensitivity analyses) assumed, for simplicity, that all of the additional capital costs under each option would be funded through general taxation revenue".

92 This is an important assumption as the cost loading on regional residents is very different if they are asked to fund the proposed runway extension via rates (partially or totally), compared with funding through general taxation revenue (with the cost spread across all NZ) that Sapere has assumed occurs.

93 Simple maths highlights these differences. If the total construction cost is spread among Wellington households[8] the funding load that falls on each household is estimated at $1,692 per household. That is, the total construction cost divided by the number of households. If the proposed runway extension is funded via general taxation revenue, then the expected cost to each household in New Zealand is some $192. That is, the total construction cost divided by the total number of households[9]. These figures are very different. This example clearly illustrates that the regional (cost) effects are subject to the manner in which the project is funded i.e. where the funding load falls.

94 If nationally funded, Wellington households could expect to cover some 11% of the direct construction costs compared with 100% if funded entirely from the region's ratepayer base (out of rates). Funding the proposed runway extension nationally suggests that some $264m of the cost is transferred out of the Wellington region to the rest of New Zealand (notwithstanding income differences and business concentrations).

[8] This example ignores the fact that a portion of the rates and tax load falls on commercial and industrial properties and business.
[9] This example uses households and not taxpayers.

95 In the Response for Further Information (dated 1 July 2016; Appendix 2) Sapere states that it is important to assess all the costs and benefits that arise from the project regardless of where they occur. They go on to state that "Reducing an assessment to any particular geographic region risks counting transfers between regions, with no net effect on wellbeing, as either a cost or a benefit".

96 However, it is entirely necessary to assess the effects at the regional level as well as at the national level because the transfers between regions are vitally important to understand when assessing the effects on the region, or the community in question. To ignore them is to misrepresent the nature and distribution of effects.

97 The spatial distribution of effects, their concentration and loading are important to the decision, therefore, a national CBA alone, is not sufficient, as it does not capture these regional effects.

98 Having said that, Sapere in presenting a regional disaggregation of costs and benefits, do err on the side of caution by sheeting home all the costs to the Wellington region. This means that if the regional CBA comes back with a positive outcome – that is, the benefits outweigh the costs, then regional authorities can be confident that the development of the extension will improve the overall economic wellbeing of the region. If the costs are borne more widely, then local economic wellbeing improves further.

99 Sapere have extracted information from its national CBA "*the net economic benefits which are likely to accrue to the Wellington region and show how those benefits greatly exceed all of the costs of constructing the extension*" in order to provide a regional perspective. Sapere's approach to estimating the regional CBA is to derive the costs and benefits from the national CBA by either allocating a portion of the national level costs and benefits to the region or to allocate all of the costs and benefits to the region. Deciding between the options appears to be based on where the costs and benefits are expected to fall/arise.

100 The response provides the net benefits for the following segments:

100.1 Wellington Airport,

100.2 Airlines,

100.3 Passengers and freight,

100.4 Local business/other sections of the community.

101 All the figures are in Net Present Value (NPV) terms out to 2060 and are based on Sapere's figures[10].

Benefits

102 **Wellington Airport**: It is also worth noting that a portion of benefit is the residual value of the asset (proposed runway extension and presumably the gates) at the end of the assessment period. The report states that the residual value is $19.3m based on increasing real construction costs over time. They have adopted a 1.5% average annual increase in those costs as part of the residual value. In other words 1.5% asset value growth over the study time period. I accept that this provides a more accurate estimate of the value than if 0% was selected.

103 **Passenger and Freight Services**: This segment is a key driver of the overall benefit that the extension is estimated to deliver. Economic benefits arise in the form of improvements in the generalised cost of travel (for passengers) and freighting.

104 A time saving accrues to outbound residents from not having to first travel to Auckland or Christchurch to travel internationally. By 2060, this segment is estimated to be equal to 461,500 passenger movements (annual movements in 2060 including enplane and deplane) on the domestic network (that is 230,750 travellers). The Sapere analysis translates these movements into costs and benefits.

105 With reference to the costs for the users of additional airline services, this relates to the costs incurred by users (PAX) that take up the 'new services'. I interpret 'additional' as those passengers that would not have travelled internationally if it were not for the extension.

106 Users (passengers) are estimated to experience a benefit of some $723.1m arising from improvements in generalised costs (for outbound travellers). This benefit is a function of the value of time used in the assessment. Based on my analysis of Sapere's supporting spreadsheets, their assessment used $57.02 per hour for leisure travelling individuals (although the report reads $53.60 per hour) and $76.42 per hour for business travellers. If this cost (unit prices per hour) changes, then the benefits accruing to this segment will also change.

107 Having assessed the process Sapere adopted to arrive at the Value of Travel Time (VoTT)[11] I believe the benefit is overstated. I understand that the figures used are

[10] The figures quoted in this section are based on Sapere's data and have not been adjusted for the calculation issue mentioned in paragraph 76.

[11] Value of travel time refers to the cost of time spent on transport, including waiting and actual travel

based on extrapolations from international studies, however the one definitive piece of New Zealand based information available is overlooked. In Appendix 4 Sapere (in the CBA report) state that the difference between business VoTT and leisure VoTT is large (i.e. business is 3.46 times greater than leisure). This is higher than elsewhere in the world. Instead of assuming this is relevant in the New Zealand context they adjust the figures to reflect international differences. However, in doing so they move from the base information to exceed the average overseas examples.

108 NZTA estimate the VoTT for land based leisure travel is $9.80 and $33.87 for business – a 3.46 differential (Table 35 of the national CBA). Sapere also record in Table 36 a range of differences between Air based and land based travel VoTT estimates to assist in converting the land based figures to air based. Only 2 examples exist for leisure travel, both from the US. The first shows a 1.9 ratio, the second a 3.2 differential.

109 Sapere end up applying a 5.8 ratio, that is, the VoTT for land based leisure travel is $9.80 and the value applied for the purposes of estimating the benefits accruing to leisure airport users in the CBA is $57.02. This has a significant effect on the total economic benefits accruing as a result of the runway extension because leisure travellers make up over 90% of total travellers.

110 I have re-estimated the economic benefits for Users by adjusting the VoTT down to reflect the international information provided. I have done this by starting with the NZTA land based leisure travel time cost, and factored it up by 3.2 (the highest non business scale up ratio presented in Sapere's Table 36 on page 124). This produces a leisure travel value of time of $31.36 and has the effect, when applied to the leisure travel portion, of reducing the benefit to users to $527.3m which is $196.8m less than Sapere's figure of $724.1m (Table 20 in the CBA report). Note that I haven't adjusted the business value Sapere have applied. It seems broadly appropriate and as it only applies to a very small share of total travel time savings have very little impact on the outcome.

111 Sapere estimates the net benefit to the region from the additional freight that is expected to be flown in to, and out of, Wellington due to the extra services, using information in the EY report (the economic impact assessment). The EY report implies that the imports and exports would grow to 25,000 tonnes (p. 61 of the CBA) per year by 2058/59. This assumes that all (100%) the freight capacity on the added flights is taken up[12]. Over the past decade, the average annual freight moved out of/in to Wellington (internationally) has been 1,402t[13]. For the freight movement to grow to 25,000t from the current level (by 2060), it would need to grow at 6.6% (compound).

[12] It is unclear if a load factor is applied.
[13] Statistics New Zealand. Overseas Merchandise Trade data.

Total freight movement (weight inbound and outbound) has been trending down for the past 25 years[14]. Nevertheless, if the growth rate used in the Sapere analysis (as estimated by EY) is applied to current freight totals, then the total freight by 2060 is estimated at around 5,872t.

112 The 25,000t figure is 4.3 times greater than the estimated 5,872t (using the current freight movements and applying EY growth rates). This suggests that the additional freight 'costs' as reported in the CBA could be around four (4.3) times lower. Similarly, the benefits would be lower by the same ratio. Sapere put the benefit to freighters at $1.96m and applying the factor (4.3 mentioned above) reduces this benefit to $0.5m.

113 With the above adjustments for the alternative VOTT and lower imports and exports, the net benefit to Wellington region is estimated at $558.4m – some $208.4m less than Sapere's estimate of regional benefits. The vast majority of this shift is due to changing the parameter used to value travellers time. This highlights the sensitivity of the benefit analysis to the VoTT value. It also underscores the point that the freight component's contribution to the costs and benefits is relatively small.

114 **Local business and other sections of the community**: is the final segment included in Sapere's analysis. Sapere assumes that 75 per cent of the spending is a benefit (and 25 per cent is a cost). This is as per the MBIE guidelines, which (as already noted) are for events (not tourism activity in general) and are for estimating 'value add' not benefit. I have outlined my concerns about relying on this ratio in paragraph 47. Using the TSA delivers different results – every $1 spent by a visitor would generate $0.678 of Value Added (after adjusting for GST and including the flow on effects). If only the direct effects (not flow on effects) are considered, then $1 of spending would generate $0.388 of VA. The same information (TSA) can be used to estimate the costs. For every $1 spent by visitors, businesses incur $0.477 of cost (excluding imports, a cost that adds another $0.135).

115 The Sapere approach at the national level (p. 88 of the National CBA Report) uses the median spending of international visitors and multiplies it with the estimated number of visitors to derive the total spending. It then adjusts the spending for GST – GST is seen as a benefit for New Zealand. The national figures used are:

115.1	Total Spending	$2.4bn (incl GST)
115.2	GST collected	$183.4m
115.3	Spending that is 'benefit'	$2.2bn (p. 87)

[14] Calculations based on Statistic New Zealand.

115.4	Cost to service visitors	$550m (p. 63)

116 The Sapere analysis reviewed international visitor spending by region and the arrival port for international visitors to try to estimate a possible 'gateway effect' – an important part of the regional analysis (p. 93 of the Sapere national CBA report). Visitor expenditure is 'allocated' to Wellington region based on this gateway portion. In turn, this portion is then multiplied by 75% to estimate the benefits associated with the expenditure.

117 Essentially, Sapere estimate the net benefits that accrue to the Wellington region as 31% of the national benefit (less the same portion of the national cost). The figures in Tables 14 and 28 of Sapere's national CBA report, give a net benefit to Wellington region of $512.0m[15]. I note that MBIE indicates that when assessing the regional benefits of an event, only 50 per cent of the international visitor expenditure should be included as it is assumed that the rest (25 per cent) flows out to other regions.

118 It is necessary to adjust the estimated benefits that arise from expenditure by removing imported goods from the total because the value associated with these transactions flow out of the region and country. Using the figures published in the TSA suggests 13.5 per cent of the total value of goods and services sold (directly) to visitors relate to imported goods[16]. Applying this to Sapere's estimated spending would reduce the 'benefit' by the same percentage. Sapere use 25 per cent of expenditure as the cost of goods sold. This approach is based on the MBIE guidelines for assessing events based spending. It is however important to realise that parts of the benefits could be interpreted as costs.

119 The difference between visitor expenditure and the cost of goods sold shows 'primary inputs'. Primary inputs include, compensation of employees, operating surplus, consumption of fixed capital, other taxes on production, tax of products, subsidies and imports. These are the components, other than imports, that make up GDP and excluding taxes on products, value add. This is the value that the MBIE approach is seeking to estimate - with the 75%:25% split. Sapere are using this to reflect benefits, however a number of these aspects are actually business costs (wages and salaries, for example).

120 Compensation of employees and consumption of fixed capital account for 50% and 22% per cent of the total primary inputs and tax on products (e.g. rates) account for a further 13.6% of primary inputs. In the Sapere analysis, all of these components are

[15] This is slightly lower than the figure Sapere quotes. We suspect that this is due to rounding.

[16] This is imports sold directly to tourists by retailers as a share of direct tourist demand. It does not include the indirect tourist demand and the cost of inputs used to satisfy the flow on effects (to supplier industries). It is not clear if Sapere adjusted the figures for imports.

treated as benefits (by default) as they have adopted a more generalised proxy for assessing benefits. However, some of these items can be seen as a cost as well as a benefit and others (e.g. labour) also have an 'opportunity cost'. For example, salaries and wages are a business cost but they are also a benefit insofar as they represent a payment to households i.e. provide households with income. Both perspectives need to be assessed.

121 Normally, the flow on effects of wages and salaries paid are quantified as part of an economic impact assessment. In my view, it is important to put the employment effect in context and to highlight the wider economic considerations and effects such as total employment, GDP and income effects. An EIA aligned with a CBA usually does this.

122 Consumption of fixed capital is a cost that should be included in the assessment because it is a cost. Sapere include this component in their estimates of costs and benefits only in so far as the real discount rate captures the consumption of fixed capital (depreciation) associated with the airport extension. Consumption of fixed capital varies between 8.1% and 9.8% for retailers and for accommodation and food services respectively (for the Greater Wellington Region, sourced from M.E's estimates of the Greater Wellington economic accounts[17]). Using a weighted average value suggests that the benefits, as stated by Sapere would be overstated by approximately $56m.

123 In addition to the above, it is not clear how Sapere takes into account interregional trade flows (imports and exports between NZ's regions). Around a third (31.4%) of retailers' and accommodation and food services' inputs are sourced from outside the region, but from within NZ. This suggests that a portion of the effects flow out of the region, generating benefits outside the region while the costs are incurred locally. The consequence of Sapere not including interregional flows in their assessment is that the net benefit to the Wellington region has been overstated.

124 It is possible to recalculate the net benefit that accrues to Wellington region using an average costing approach and compare it to using the incremental or marginal cost approach that Sapere use by adopting the MBIE value add estimation process as a proxy.

125 Table 2 summarises the key benefit figures I have described above in comparison with the Sapere benefit figures at the Regional level.

[17] Greater Wellington Economic Futures Model, 2014, developed for Greater Wellington under the Sustainable Pathways 2 to 6 year project, funded by the Ministry of Science and Innovation, by M.E Massey University and RIKS.

Table 2: Present Value of Regional Costs and Benefits of Wellington Runway Extension ($000)

Benefits	High Benefit	Low Benefit
Airports	87,200	87,200
Airlines	-	-
Users	766,800	558,384
Other sections of the community	512,100	277,906
Total Incremental Economic Benefits	**1,366,100**	**923,490**

126 The above results provide a range of outcomes. At the high benefit end are Sapere's values for Users, and other sections of the community to generate a total Incremental economic benefit of $1.36bn. For the low benefit values I have adopted more conservative assessments of VoTT and higher average costs to meet tourist needs (plus I have removed inter-regional imports). This produces an incremental economic benefit of $923m, some $442m lower than the high benefit scenario (on Sapere's estimates).

127 I believe that the bounds reflected in the above table define the edges within which the true benefit figure may sit. I understand the processes Sapere have adopted to generate their estimates of benefit but do not believe they fully reflect the range of outcomes likely to occur. For example, in adopting an incremental approach for tourism expenditure, they always remain with short run estimates of effects, whereas in the long run, the impact of expenditures will tend towards the average cost approach I have applied. I accept that the true figure may lie between these estimates.

128 Given the nature of the type of tourism likely to be focused on Wellington from the new routes opened up by the Runway extension, it may be the case that assuming 31% of spend occurs within the Wellington Region is too low.

129 This is because Wellington does not operate as a true gateway the way that Auckland or Christchurch does. This means that people who choose Wellington over Auckland or Christchurch do so for more Wellington specific reasons. This means that Wellington is likely to receive a higher share of their expenditure than the norm for gateway cities.

130 I have attempted to model the effect of this by increasing the share of expenditure captured to 50%. This has the effect of raising the benefits to other sections of the community from $277m to over $448m and the net position to over $635m (compared with $465m (see Table 3).

131 This highlights the sensitivity of the outcomes to changes in assumptions – especially assumptions that cover aspects with a high degree of uncertainty, such as tourist behaviour in response to a new offer (e.g. direct long haul flights to Wellington). For the purposes of assessing Costs and Benefits it is appropriate to view the lower share of spend occurs within Wellington.

Costs

132 In addition to the benefit side of the discussion, Sapere comment on the capital cost of the proposed runway extension. The above discussion (net benefits) does not include the construction cost and the deadweight costs. Sapere included these two items in the regional assessment to illustrate the balance between the costs and benefits of the proposed runway extension if it was all funded from within the region. In addition to the proposed runway extension of $298.1m that Sapere use in their regional assessment, I also include the cost of the Code E gates ($7.5m) so that this cost is also treated as a regional cost. For simplicity, I combine these two items into one value – $305.6m. The associated deadweight cost (at 20%) is therefore estimated at $61.1m, the same as Sapere (prior to optimism bias).

133 With reference to the construction cost, I have assumed[18] that the values used include allowances for contingencies and cost overruns. It is not clear if the costs have been adjusted sufficiently for "optimism bias". Sapere inform me that the construction estimates do take into account a 10% cost plus factor. This falls at the bottom end of the range suggested for non-standard civil construction projects, and may still underestimate true costs.

134 The NZ Treasury highlights[19] that "*optimism bias occurs when favourable estimates of net benefits are presented as the most likely or mean estimates. It is an endemic problem in cost-benefit analysis and may reflect overestimation of future benefits or underestimation of costs*". The UK Treasury's 'Green Book Guidelines of Cost-Benefit Analysis' describes optimism bias in detail in 'Supplementary Green 'Book Guidance' on optimism bias[20] and it suggests that the capital expenditure for the proposed runway extension should be adjusted by between 10 per cent and 66 per cent to capture optimism bias as a non-standard civil engineering project. Standard civil engineering projects have an optimism bias range of 3% to 44%. Using the ratios of 10% to 66% suggests that the construction cost could be between $336.1m and

[18] The report states that (p 50) that AECOM provided median, risk adjusted, nominal capital cost of construction, amounting to $287.5m.
[19] NZ Treasury Guide to Social CBA. p 31.
[20] Accessed from:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191507/Optimism_bias.pdf.

$507.3m. I have used an optimism bias rate of 25% in order to assess the effect of cost over-runs impacting on the overall project viability (in cost benefit terms).

135 Next, the deadweight costs are applied to the adjusted construction costs to capture the effects of funding the project using general taxation. The CBA guidelines highlight that the range of the effects vary between 14 per cent and 50 per of the revenue collected and suggest that a rate of 20 per cent be used[21]. Using a optimism bias (25%) and the 20 per cent deadweight ratio, returns an estimated cost of $458.4m. In my view, this adjusted figure provides a more realistic view of the costs of the runway.

Net Position

136 The Sapere assessment of the regional costs and benefits suggests a net position of $1bn benefit to the region. My alternative assessment, based on Sapere's approach but with a stricter application of regional trade flows, lower VoTT for Leisure travellers, lower freight benefits and higher overall share of costs to meet tourists needs, represents a more conservative view of potential outcomes and returns a lower net benefit result of $465.2m (Table 3).

Table 3: Regional Costs and Benefits of Wellington Airport Runway Extension, ($NPV_{7\%}$ $000's)

Costs	**Low Cost**	**High Cost**
Airports	298,100	381,938
Airlines	-	-
Users	-	
Deadweight Cost	61,117	76,388
Total Incremental Economic Costs	**359,217**	**458,325**
Benefits	**High Benefit**	**Low Benefit**
Airports	87,200	87,200
Airlines	-	-
Users	766,800	558,384
Other sections of the community	512,100	277,906
Total Incremental Economic Benefits	**1,366,100**	**923,490**
Cost Benefit Assessment	**3.80**	**2.01**
Total Regional Net Benefit	1,006,883	465,165
Net Difference		*541,718*

137 I accept that the net position is likely to fall between the Sapere's 'Low cost High benefit' and my 'High Cost low benefit' outcomes presented above. Sapere's

[21] Both the Australian CBA guide and the US 'Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs' suggest that the marginal deadweight loss of general taxation is around 25 per cent.

assessment generates the highest level of net regional benefits at just over $1bn in present value terms, whereas my more conservative approach generates a net benefit position of $465m to Wellington Region (in present value terms over 40 years).

138 It is important to note that under both approaches, the proposed extension to the Wellington Airport runway still returns a significantly positive benefit position to the Wellington Region. Based on my analysis the runway extension returns a healthy BCR of over 2.0 at the regional level (compared with 3.8 for the higher benefit approach). In other words economic wellbeing improves by more than twice the associated regional costs.

Regional Economic Impact Assessment (by Sapere)

139 I have reviewed Sapere's discussion of regional economic impacts of the proposed extension (as presented in the response to Request for Further Information dated 1 July 2016). A CBA provides useful information about the net effect of the proposed runway extension on economic wellbeing. However, a CBA approach does not necessarily capture all the effects. For example, employment effects (and the salaries and wages paid to households) are important because they provide a useful measure of how a proposal could impact the community. It is important to note that impacts are not benefits and I do not assume or imply that these two measures are synonymous. However, understanding the total economic impact and expressing it in GDP terms is important because the GDP effects can then be expressed in per capita terms and put in the context of the size of the economy. GDP is a measure of economic activity and combining it with population (i.e. per capita) offers an ability to express the shift in economic activity in relative terms. It is also possible to express economic effects in employment terms so that it is possible to express the effects in meaningful terms, providing some context.

140 Sapere indicated that the measures such as GDP or employment have no special characteristics that make them more valuable or preferable to net benefit. However, net benefit tells nothing about the distribution of effects. There is no way of knowing whether very few individuals or sectors capture the entirety of an effect, unless you understand both its sectoral and spatial distribution.

141 In my view, assessing the economic effects of the proposed runway extension needs a CBA as well as an EIA in order to understand the distributional effects of the change. Assessing the proposed runway extension using multiple assessment approaches would provide a more varied and richer understanding of the economic effects. GDP and employment are also used in other economic assessments that are undertaken under the RMA (specifically Section 32 assessments) so it is worthwhile including these metrics in assessing the proposed runway extension.

142 In its regional EIA (presented in the response to Request for Further Information dated 1 July 2016), Sapere list a number of caveats. Most of these caveats apply to multiplier analysis and not economic impact assessments per se. Multiplier analysis is one approach used when assessing the economic impacts. Other economic assessment tools and models, such as Input-Output models and Computable General Equilibrium (CGE) models) can be used to address some of the issues and limitations raised by Sapere. However, Sapere have used multiplier analysis to assess the economic impacts. Multiplier analysis is one of the most basic approaches used when assessing economic effects and is not widely used. Multipliers are derived from Input-Output tables and are summary measures of the economic relationships. However, IO tables can be used to provide a more refined indication of the economic impacts – including the sectoral and spatial distribution of effects.

143 With reference to the limitations and issues mentioned by Sapere[22], I disagree with two, specifically:

143.1 That there is no accounting for "displacement" effects, where increased expenditure in one region simply displaces expenditure in another region with no improvement in net economic wellbeing, and;

143.2 Relying on counting expenditures that multiply across different markets and summing the series of expenditures to come up with a total benefit impact/estimate. This is in essence double counting as the additional resources available to the economy are just the direct impacts or shocks, not the subsequent rounds of resulting expenditure.

144 With reference to the first limitation (displacement), designing or defining how the economic shock is introduced in the model is key to avoiding this situation. In addition, in multi-regional models (including Input Output models), transfers between regions are captured and reflected. Recent advances in regionalisation techniques mean that it is now possible to provide greater resolution around interregional trade.

145 The second point on 'double counting' does not portray how IO models are typically applied. Expenditures are translated in to the economic 'shock' (the change), adjusted for imports (interregional and international), retail margins, and transfer effects and then expressed in terms of changes in final demand. Next the economic effects associated with the estimated 'final demand' can be estimated and the associated GDP and employment effects derived. Importantly, these estimated impacts are measures of GDP, employment and income (economic impacts) but they are not

[22] Contained in Attachment 2, Wellington International Airport's response to Request for Further Information, 1 July 2016, Mitchell Partnerships, Page 3.

benefits. GDP is an indicator of economic activity and is not a measure of 'benefit'. Therefore, double counting is avoided and Sapere is mistaken.

146 In preparing their EIA, Sapere extracted information from three reports to estimate the economic impacts, including:

146.1 The economic impact of the NZ cruise sector (by M.E),

146.2 Economy of the Arts in Wellington (by Martin Jenkins),

146.3 The EY report (Technical Report 27).

147 Using the information in these reports, Sapere derived a set of ratios from these reports to estimate the flow on economic impacts of the proposed runway expenditure on the spending on the regional economy.

148 In my view it is not appropriate, to use the first two reports for the following reasons:

148.1 The cruise report reflects the economic impacts associated with cruise ship passengers and ship visits. Intuitively, the spending profiles of cruise passengers and visitors arriving by airplane vary considerably. For example, a cruise passenger is likely to spend less on accommodation and transport (e.g. taxis) relative to a visitor arriving by airplane. Therefore, due to these spending differences it is not appropriate to use the cruise report.

148.2 With reference to the Martin Jenkins report, there are three points that make it inappropriate to use this report:

148.2.1 Firstly, the report uses economic relationships developed by M.E for Auckland's creative sector. It is not appropriate to use Auckland's ratios in Wellington due to differences in the structure of both economies.

148.2.2 Secondly, the report covers the arts sector and uses six broad sub-groups, including Performing Arts (including Music), Museum / Library / Archives, Publishing, Design, Screen Production and Radio, as well as Visual Arts, Crafts and Photography. These sectors have unique production and employment structures that are not transferrable to the sectors that are related to visitor expenditure.

148.2.3 Thirdly, the report is based on another report that was done in 2005. More recent datasets are available that could be used to derive more accurate impacts.

149 Therefore, the Sapere economic impact assessment (presented in Appendix 2 of the Request for Further Information 16 July 2016), does not accurately reflect the Wellington situation because:

149.1 It is based on the wrong sectors,

149.2 It is based on Auckland information (and economic relationships), and

149.3 It relies on old data.

150 In addition to the above, the assessment does not consider:

150.1 The one-off effects associated with the construction activity,

150.2 The effects of how the project is funded e.g. debt funded, rates funded or funded using offshore capital).

151 Finally, Sapere's regional economic impact assessment does not report, or reflect, other economic measures. The assessment reports on Value Added (similar to GDP) but it does not include detail on employment (or income) effects. Therefore, the regional economic impact assessment undertaken by Sapere does not add to the discussion because it is not robust or accurate.

Submissions

152 In addition to reviewing the reports, I have reviewed the economic submissions as identified by the Councils. Of the submissions that oppose the proposed runway extension, the reasons for opposing revolve around:

152.1 The traffic forecasts being too optimistic and the identified additional routes are commercially unviable.

152.2 The effect of an increase in asset value (of the proposed runway extension) on the domestic network resulting in an increase in user charges.

152.3 The manner in which the extension is likely to be funded, and the impact that will have on residents or existing users of the airport.

153 I comment on each submission below and highlight the implications of the points raised from an economic perspective.

Air New Zealand Limited (Air NZ)

154 Air NZ is NZ's largest airline, servicing domestic and international routes. The airline is opposing the application for a number of reasons.

155 Air NZ indicate that the "*current regulatory model for airport aeronautical assets also means that to the extent that new infrastructure is unused or underused, the total or net cost of those infrastructure assets is imposed on existing airport users, increasing the cost to incumbent airlines and travellers with no corresponding benefit to them*".

156 This is an important point because it suggests that the proposed runway extension could lead to an increase in the cost to existing users, including the domestic routes. In turn, this could then lead to an increase in domestic fares (rest of NZ to WIAL flights) without any commensurate increase in the benefits that the passengers on these routes receive. An increase in airfares will most likely reduce demand for flights on the wider network resulting in lower economic benefits across the rest of NZ (due to the shift in passenger and freight demand). If the proposed runway extension results in higher passenger fares, then the effective outcome is an additional tax on the domestic network without an improvement in levels of service. The CBA is silent on this potential scenario and the flow on effects.

157 I have run some preliminary numbers based on broad estimates on the scale of the potential landing charge increases and have found that the overall effect on the benefits that flow from the extension is very small (both nationally and regionally) and would make no material difference to the outcome.

158 Other specific points raised by Air NZ, in support of its opposition relate to the air traffic forecasts. According to Air NZ, the route forecasts are not credible and are unlikely to eventuate. As mentioned above, the CBA and EIA both rely on traffic forecasts prepared by InterVISTAS. If the forecasts do not materialise, then the economic benefits would not manifest.

159 Air NZ believe that the routes are not commercially viable because of market demand (is small) meaning that the market offer is likely to be uncompetitive therefore airlines have a limited ability to effectively service those routes at a profitable price point.

160 In addition, Air NZ claims that the application over-estimates the time and cost savings that would be derived from the proposed routes. Therefore, Air NZ indicates that the wider economic benefits are overstated. It is my understanding that Air NZ

formed this view based on its understanding of the potential for long haul flights and route development.

161 Air NZ's position is clear; it does not support the InterVISTAS traffic forecasts. However, Air NZ does not provide an alternative set of forecasts but it appears that Air NZ is suggesting that the routes are not viable (at all). If none of the routes are viable and none of the routes are developed, as Air NZ asserts, then the CBA and EIA assessments will be overstating the benefits as they rely on the InterVISTAS projections to drive their passenger numbers and the resulting expenditure flows.

Board of Airline Representatives New Zealand Inc (BARNZ)

162 BARNZ opposes the proposed runway extension and contends that the economic analyses (CBA and EIA) and the traffic forecasts are "fundamentally flawed".

163 With reference to the traffic forecasts, BARNZ highlights 5 reasons why the InterVISTAS projections are optimistic. They include; the small size of the Wellington market, the catchment used by InterVISTAS is too large, long haul demand is overstated, assumptions about the attractiveness of Wellington to connect with other cities and the role of Auckland and Sydney (and other airports) in catering to non-stop long haul demand are overstated.

164 BARNZ commissioned Ailevon Pacific Aviation Consulting (APAC) to review the InterVISTAS reports. APAC considers that the InterVISTAS forecasts provide an overly optimistic view of WIAL's long haul service potential. Further, APAC asserts that InterVISTAS has significantly over-estimated the Airport's existing and potential demand in particular for long haul. APAC also claims that based on its assessment, InterVISTAS' proposed nonstop long haul services at WIAL fall well short of commercial viability.

165 From my perspective, it is critical to note the material difference in APAC and InterVISTAS position. APAC suggests that none of the routes are viable whereas InterVISTAS finds a positive growth outlook. Clearly these two position have very different economic effects. Under the APAC approach the proposed runway extension will impose costs (construction and operational) without delivering many, if any, benefits. Conversely, InterVISTAS suggest growth in air traffic and this projected growth is then used to generate the economic effects as reported by Sapere and EY.

166 It would be helpful if there was an agreed position (or range) for the air traffic forecasts to inform the economic assessment. The economic assessment is predicated on air traffic forecasts, therefore if the forecasts change, then the associated economic effects will also change. Given that the range across which they may change

includes negative or very small benefits, it becomes important to understand whether the passenger numbers will eventuate.

167 In APAC's view, some of the long-haul possibilities included by InterVISTAS are open to WIAL with the current runaway infrastructure. APAC states that wide body aircraft have operated at WIAL and Singapore Airlines will shortly commence a trans-Tasman service. APAC asserts that there are possibilities for wide-body aircraft but "no airline currently chooses to fly to Wellington using wide-body aircraft". From an economic assessment perspective, only change that is facilitated by the proposed runway extension should be included. If any of the routes included in the economic assessment could in fact be serviced with the current runway infrastructure, then those routes should be excluded from the assessment otherwise changes that are not attributable to the proposed runway extension would be included and result in an overstating of economic benefits.

168 In addition to the issues with the InterVISTAS projections, BARNZ states that the CBA itself misleading due to the following reasons:

169 BARNZ asserts that the CBA approach does not properly account for labour costs and fixed capital costs. Further, BARNZ points to value of travel time savings and comments that these values are overstated in the CBA assessment. BARNZ claims that this is due to the parameters used to value travellers' time. I highlight this issue in paragraph 106.

170 BARNZ points to anomalies in the spreadsheets underpinning the CBA, specifically the passenger forecasts. I have investigated this claim and have received more detailed information from Sapere[23] including detailed annual passenger forecasts that show Sapere have used the correct information and have not front-loaded their projections.

171 BARNZ contends that the CBA needs to include the cost of the environmental effects, including the mitigations. I agree with this point because excluding these costs would understate the total cost and overstate the cost-benefit ratio. If all these costs are not included as part of the construction costs then total costs are understated.

172 BARNZ also raise the issue that WIAL could increase its charges to existing users by way of the increased asset value (of the runway). However, I believe they have over-estimated the amount of this charge as discussed above. In addition, were the airport extension to be funded from landing charges, then the effect is to simply transfer the

[23] "Annual Most Likely Updated Forecast Summaries 11Mar2016.xlsx", spreadsheet containing annual passenger origin/destination projections by market. Provided by Sapere to me directly.

cost burden to a different section of the community, rather than increase the total costs.

Guardians of the Bays Incorporated Society (the Society)

173 The Society comments on a number of areas in its submission, including environmental, economic, urban design and others. I comment on the passenger forecasts and economic analysis areas as raised by the Society.

174 With reference to the passenger forecasts, the Society asserts that the "passenger forecasts that are predicted by the Applicant are based on flawed data resulting in an overstatement of forecast passenger numbers". The Society states that this overstatement is due to the large catchment (including areas such as Kaikoura) that the airport draws from in the analysis. The Society also questions the viability and probability that airlines would establish the long-haul routes when other options exist – including short haul links across the Tasman, currently possible.

175 The Society submitted that the CBA relies on traffic forecasts to estimate the economic benefits. The Society correctly points to the fact that if the traffic forecasts are not achieved, then the economic benefits would not be realised. I agree they are the key, however I have not reviewed the traffic forecasts, but both the CBA and EIA rely directly on the air traffic forecasts. I agree with the Society insofar as that it is crucial to base the CBA and EIA on accurate and robust air traffic forecasts.

176 The Society also points a need to assess potential economic effects at a regional as well as a national level. I agree with the Society on this point and I have discussed this point (and Sapere's response) above.

177 The final economic point raised by the Society relates to the funding mechanism and the fact that ratepayers could contribute to the proposed project. My understanding of the Society's point is that if ratepayers' funds are used then other projects would not be progressed due to funding constraints. This is dealt with in the Sapere assessment by treating the entire cost of the extension as a cost to Wellington Region (ultimately its rate payers). If the CBA under these conditions still returns a positive outcome for the Region, then economic wellbeing is enhanced.

178 The CBA includes a deadweight cost to reflect the effects of increasing the cost on ratepayers, particularly the effects of the distortions caused by it. However, reducing discretionary spending will have additional economic effects on the regional economy because households and businesses will have less money to spend in the regional economy. The CBA does not include this effect, rather it relies on the net improvement in economic wellbeing.

Dr Rotmann

179 I note that Dr Rotmann is one of the signatories of the Guardians of the Bay Society Incorporated submission. Dr Rotmann's submission covers similar areas as the Guardians of the Bays Incorporated Society's submission. I comment on the points where Dr Rothman's submission differs from those raised by the Society.

180 The key points raised by Dr Rotmann relate to:

180.1 The CBA's reliance on the traffic forecasts that have been the subject of "significant critique". I have addressed this issue above.

180.2 The potential for cost and time overruns and the potential pressure on the ratepayer base. This point relates to optimism bias and I have addressed this point elsewhere.

180.3 The need for a business case based on Treasury's Better Business Case framework. The CBA and EIA assessments are prepared for an RMA process and I do not agree with Dr Rotmann that this assessment requires a business case. While I do agree that a business case (or similar) would be needed to inform a decision to fund (or not) the proposed runway extension, such a decision is beyond the scope of this assessment. Nevertheless, a CBA needs to consider the economic costs of alternative funding approaches and how those costs fall on the communities bearing the funding load.

180.4 Dr Rotmann also points to the potential effect of the proposed runway extension on WIAL's asset base and the potential effect on landing charges. This point is raised by BARNZ and I comment on this point in my assessment of the BARNZ submission.

180.5 Dr Rotmann asserts that he has never had an issue connecting through the existing hubs and that connecting through the larger hubs increases his options both in terms of routes, flight times and costs. This points to his experience and travel preferences. It can be argued that other residents will have the same/similar preferences. This issue is presumably able to be addressed in traffic forecasts by adjusting the expected travel patterns for user preferences. The potential effect of such an adjustment would be to lower the net benefit accruing to the region. If the traffic forecasts do not reflect such an adjustment, then the benefits are likely to be overstated and the costs understated. This will then translate into an overstatement of the net benefits.

Mr Walbran

181 In general, Mr Walbran does not support the application on the grounds that the economic benefits do not justify the negative environmental effects.

182 Assessing the economic values of the environmental effects is complex and this is a known issue in CBA. At the core of this issue is how to 'value' the environment. One approach to this is to use a multi-criteria approach (MCA) to understand the potential effects in qualitative terms. The Sapere CBA includes a qualitative indication of the environmental costs (table 4 on p 63).

183 In addition, Mr Walbran asserts that the economic benefits have been overstated but he does not explain why.

184 With reference to the EIA (Technical Report 27), Mr Walbran states that the air travel growth used in the assessment appears high based on jet fuel use. He refers to Business New Zealand's Energy Scenarios[24]. That report points to jet fuel use growth of around 1%.

185 The mentioned report shows two scenarios and the supporting datasets (downloaded separately) show that the compound growth rate for jet fuel use in NZ is 1.6% under the one scenario and 1.3% under the other. This is lower than the total traffic growth for the most likely scenario (in the CBA) with a projected 2.3% growth under the most likely option (under the base case option). Mr Walbran states that the EIA assumptions are outlined in Section 2.3 and that using this information the growth rate is approximately 7% per annum. However, Section 2.3 presents a "Disclaimer on the Demand Scenarios". I am unclear how Mr Walbran calculated the 7%.

186 Notwithstanding this uncertainty, it is not appropriate to compare the traffic forecasts with NZ jet fuel use and projected outlook because the proposed runway extension would enable inbound as well as outbound flights and the inbound flights would carry fuel from their origin to burn on the inbound flight. The outbound flight would load fuel in Wellington to burn on the outbound flights. Only the new outbound flights would add to NZ jet fuel use suggesting that the jet fuel use vs traffic forecasts is not appropriate.

[24] The report can be downloaded from here: https://www.bec.org.nz/projects/bec2050

Mr Kile (JumpJet)

187 The main issue raised by this submitter relates to the "probability of regular disruption". The level of disruption that could be expected during the construction phase is beyond my expertise and I don't comment on this point.

188 However, the submitter also raises a number of points that are relevant from an economic perspective and I deal with those points.

189 Mr Kile discusses the possibility of cost blowouts and the potential for the costs to 'double the original construction cost'. The CBA assessment uses 'risk adjusted' costs to inform the cost-benefit ratio. In my assessment, I expand on this and include an adjustment for optimism bias. In my view, this adjustment reflects the point raised by Mr Kile. The effects of this adjustment are discussed in paragraphs 133 and 135.

190 Mr Kile also highlights that there are potential costs relating to subsidising airlines to deliver the potential long haul services. This matter is not included in the CBA assessment. Any subsidy should be included in the assessment if the airlines would not deliver the service if a subsidy is not paid. In other words, if the traffic forecasts are dependent upon the subsidy then the cost should be included in the assessment as this cost could be material.

191 For example, assuming that a $9/passenger subsidy is paid on the international flights (under the most likely scenario) for the first 10 years, then an extra $7.9m in cost is added (in NPV terms align with the assessment period).

192 I do not know if a subsidy would be required to attract any additional airline services but neither InterVISTAS nor APAC discuss this point.

Mr Sanderson and Mrs Stokes

193 These submitters support the application and the CBA accompanying it and comment that the "net direct benefits which are generally of a scale that we would expect" and that the results "will be found to be accurate". Further, the submitters highlight that they have undertaken work in 2008 and 2012 and in these studies they found that direct benefits in terms of reduced travel times, new visitor expenditure and lower fares.

194 I am aware of two studies that these submitters (as key members of the economic consulting firm BERL) have completed about Wellington Airport. These include a 2009

study titled: “Current Economic Impact of Wellington International Airport” and a 2012 study titled: “Economic impact of a Wellington long haul air link”.

195 Judging by the titles, these studies were economic impact assessments and not cost-benefit analysis.

196 I did not review these studies but they have been referenced in various articles and other reports. In fact, I questioned why Sapere did not consult these studies when preparing the regional EIA because I would expect these studies to provide specific figures about the airport, passenger figures and spending and the economic impacts that the airport is generating.

197 Nevertheless, it is not surprising that the submitters found that the similar effects as those identified in the CBA because the type of effects that should be included in an EIA and CBA are similar.

198 There is little information in the submission that is additional to the overall discussion but it is worth nothing that Mr Sanderson asserts that the “analyses could have been extended to measure some of the benefits which Sapere state as ‘not able to be quantified’ and that they believe “that most of these elements of wider benefits are measurable”. However, the submitters do not reflect on the likely implications of including these matters in the assessment.

Porirua City Council (Mrs Walker)

199 The Porirua City Council supports the application because “it will bring benefits to the national and regional economy”. However the Council states that “clear positive economic benefits for Porirua City from the project need to be proven”.

200 I agree that it is necessary to understand the regional effects (costs and benefits) of the proposed development. While it is possible to estimate the region wide effects of the proposal, the assessment carried out is unlikely to provide more insight into the net benefits at the sub-regional level. It is possible to provide insight into the distribution of costs and benefits within the region. This could provide an indication of the net regional (city level) effects to identify any negative economic effects (at the city level).

201 This work has not been carried out as it does not contribute to the national or regional outcome and is beyond the scope of my review.

Qantas Airways

202 Qantas Airways (Qantas) is opposing the application and raise a number of points in support of its submission.

203 Qantas does not believe that there is a need for substantial investment in the proposed runway extension at this time. In addition, Qantas states that there is sufficient capacity to service the needs of the aviation sector in the short term and that there is adequate capacity to respond to growth.

204 Qantas highlighted that it is not aware of a need for (demand) wide-body aircraft to service the Wellington market. The limited demand is ascribed to available capacity at Auckland, Christchurch and other ports as well as the nature of the domestic network. In essence, the point Qantas is making is that the traffic forecasts and the expected (potential) demand for the services underpinning the CBA are inaccurate. It appears that Qantas does not believe there is demand for the services potentially enabled by the extension. Qantas states that it may be possible to deliver the services using route-based economics as oppose to "building for growth" that may not materialise.

205 Qantas also raises concerns regarding the possibility that the proposed runway extension investment could lead to an increase in the ticket prices that would, in turn reduce demand for flights with negative effects on the performance of the domestic network. My interpretation of this point is that Qantas has concerns about how the proposed runway extension would be funded and the potential exposure of the domestic routes to changes in landing fees that would need to be passed on to passengers and freighters.

206 The main points of the Qantas submission can be summarised as:

206.1 The need for robust traffic forecasts to inform the CBA and EIA, and

206.2 A thorough assessment of the financial implications and where the funding load falls and then using this to inform in the CBA.

207 The main points are consistent with the issues and points that I raise in my assessment.

Mr Harrison (Tail risk)

208 Mr Harrison (principal at Tailrisk Economics) opposes the application. In his submission he states that the "national benefit numbers have been grossly exaggerated" and that "the benefits are primarily based on the number of additional tourists that will be attracted to New Zealand". Mr Harrison also questions the methodological foundations of the cost benefit analysis.

209 Mr Harrison's submission included a report he prepared in which he comments on the traffic forecasts and the CBA. This report is dated December 2015, so it is not directly related to the CBA in the application (dated 19 April 2016). Nevertheless, the points Mr Harrison raises are still relevant.

210 Mr Harrison highlights his concerns about the air traffic forecasts and makes the point that the CBA relies on it. Mr Harrison states that: "The benefits are dependent on the projections of New Zealand passenger numbers" and I agree with him on this point.

211 Mr Harrison lists the reasons why he believed the CBA is overstating the net benefits of the proposed runway extension. He states that the values used to estimate the value of travel time "are materially higher than the figures that would be used for transport related cost benefit analysis in New Zealand". However, he does not suggest an alternative. I point to the sensitivity of the CBA to changes in these value (paragraph 106).

212 Mr Harrison claims that the ratios used to translate visitor expenditure into benefits should include the opportunity costs of all inputs and not just the intermediate goods. I interpret this is suggesting that the labour costs should also be included in the CBA and accounted for as an opportunity cost. Mr Harrison's point is consistent with Air NZ's submission.

213 However, Sapere have accounted for costs by assuming that some 75% of expenditure is net benefit to the region (and the nation). I believe this is too high a share and have provided a more conservative view above. In both of our assessments, labour costs are a component part of the cost structures and have therefore been accounted for.

214 Another point raised by Mr Harrison relates to user charges. Mr Harrison states that in the assessment's approach to user charges, it is assumed that existing users of the airport would be levied, and it is argued that this would be inefficient compared to broad based tax funding (general taxation). Mr Harrison asserts that "existing users of the airport should not be charged for a capital investment that does not provide them with benefits. But the long-haul users, who will benefit, certainly should bear the cost". In my view, Mr Harrison is essentially suggesting a need to link the funding

mechanism (payment) to the long haul flights. However this does not address a possible situation where the expected long haul flights do not materialise meaning that it would not be possible to recover the costs from a specific segment. This then raises the question of where the funding load would fall if the long haul flights fail to materialise. The CBA does not address this issue in its assessment and comparison of the alternative funding approach.

Conclusion

215 Wellington International Airport Limited has applied for a Resource Consent and as part of the application submitted an Assessment of Environmental Effects (AEE). The AEE included a CBA and an EIA. The CBA focused on the national level and was subsequently backed up with a more detailed regional assessment of effects following a request for further information. The EIA provided with the application was undertaken by EY, and Sapere also provided a brief regional EIA following a request for further information.

216 The CBA (national and regional level) relies on the InterVISTAS air traffic forecasts. Submitters have presented alternative air traffic demand analysis (APAC as part of the BARNZ submission) that are materially different from the InterVISTAS figure relied upon by Sapere. If they prove to be accurate, then the proposed runway extension would have very limited, if not negative, impacts on both the regional and national economies and economic wellbeing.

217 At the national level, both the work carried out by Sapere and the assessment I have carried out (that relies on some more conservative assumptions) highlight a strong economic benefit to New Zealand with a Benefit Cost Ratio that ranges between 1.64 and 2.3, and a net economic benefit over 40 years in current discounted terms of between $1.53bn and $2.34bn.

218 By adjusting the input values and by refining the information used in the CBA, my opinion is that the net regional benefits estimated to accrue to Wellington region are $465m. This is lower than Sapere's estimate, but still significant, especially in light of the employment sustained by the tourism flows. I acknowledge that my figures are more conservative and I accept that the overall net regional and national economic benefit might be higher, somewhere between my estimate and Sapere's.

219 The EY economic impact assessment was based on an earlier set of passenger projections so it is not consistent with the CBA. Sapere derived their own set of multipliers to estimate the regional economic effects of the proposed extension. However, there are a number of issues with the Sapere approach meaning that this part of the assessment is not accurate. Further, the Sapere assessment does not

provide any indication of the economic impacts using any other metrics[25], such as employment or income.

220 Using the Sapere visitor spending estimates suggests that employment sustained by the tourism flows grows to be equivalent to more than 1,000 jobs in Wellington Region by 2059 plus approximately 600 jobs annually throughout the three year construction period. The number of jobs and economic activity they represent is a significant positive effect.

221 Based on the work I have carried out and the information provided by Sapere, I am confident that the development of the runway extension will result in a substantial and positive net economic benefit to both New Zealand as a whole and Wellington Region – assuming the passenger forecasts are accurate.

Date:	7 October 2016
	 . . . . . . **Gregory Michael Akehurst**

[25] In the request for additional information (16 June 2016), the importance of understanding the GDP and employment effects across the regions is highlighted.

Appendix 9

Heritage Assessment

Wellington International Airport Runway Extension

Introduction

1 My full name is Vanessa Anne Tanner. I am a Senior Heritage Advisor at Wellington City Council (**Council**).

Qualifications and experience

1 I hold a Master of Arts degree in Anthropology, majoring in archaeology from the University of Otago. I also hold a Bachelor of Arts combined honours degree in Geography and Anthropology from the University of Otago.

2 I have 19 years' experience in cultural resource management in New Zealand, in particular undertaking and reviewing assessments of effects on historic heritage for Resource Management Act 1991 (**RMA**) and Heritage New Zealand Pouhere Taonga Act 2014 (**HNZPTA**) purposes.

3 I have worked for the Council since December 2013. Prior to working for the Council I was employed for thirteen years in the Heritage Department of Auckland Council, and Auckland Regional Council prior to amalgamation.

4 I provide advice to Council on methods to avoid, mitigate and manage effects on historic heritage, on the land Council owns and administers. I also provide advice across Council on the management and protection of historic heritage places, from funding opportunities to the practical application of ICOMOS NZ Charter 2010 principles for the conservation of heritage sites. A primary function of my role is the assessment of Resource Consent applications against the Heritage Objectives and Policies of the Wellington City District Plan (**District Plan**).

Involvement with the proposal

5 I have reviewed the effects of the Wellington International Airport Runway extension (**project**) on historic heritage. I have primarily relied on the information supplied as part of the application to inform my assessment of effects on historic heritage.

6 I visited the site on Friday the 5th of August 2016.

Assessment

7 This report reviews the following document which assesses the effects of the proposal on historic heritage:

7.1 Technical Report 22: Jones, K. L. (21 April 2016) Archaeological assessment of southern extension of runway for Wellington International Airport Ltd (WIAL) for the Wellington International Airport Ltd.

8 In undertaking this review I also read the following document:

8.1 Technical Report 13: Raukura Consultants (March 2016) Cultural Impact Assessment Wellington Airport Limited Southern Runway Extension prepared for the Wellington International Airport Ltd.

9 My purpose in reading Technical Report 13 was to develop an understanding of places of cultural value which are part of the RMA definition of historic heritage and which may correlate with archaeological values.

10 However, this review does not address matters of cultural significance to Maori, this may only be undertaken by the appropriate tangata whenua.

Subject site and context

11 The site of the proposal is situated on the eastern side of Lyall Bay extending 350m south of the current terminus of the runway into the Bay and includes associated land based works and activities.

12 Under section 2 of the RMA 'historic heritage' means those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, deriving from any of the following qualities:

(i) archaeological:

(ii) architectural:

(iii) cultural:

(iv) historic:

(v) scientific:

(vi) technological; and

(b) includes-

(i) historic sites, structures, places, and areas; and

(ii) archaeological sites; and

(iii) sites of significance to Maori, including wahi tapu; and

(iv) surroundings associated with the natural and physical resources

14 A number of historic heritage items are situated within the vicinity of the proposed runway extension area. These items and their various levels of recognition are included in Tables 1 to 3 and illustrated in Figure 1 below.

Table 1: Historic heritage items in the vicinity of the Wellington International Airport Runway extension recognised in regional and district plans and the Heritage New Zealand List.

Name	WCC District Plan Heritage List	GWRC Operative Regional Coastal Plan Appendix 4	GWRC Proposed Natural Resources Plan	Heritage New Zealand List
Hue te para Beach	Site of significance to Maori - M78			
Hue te Taka/Moa Point			Mana whenua site of significance - Schedule C4	
Rangitatau	Rangitatau Reserve Precinct			Wahi Tapu Area List Number 9468
Lyall Bay Seawall	Map 4/5, Symbol 33	Lyall Bay Sea Wall		

Table 2: New Zealand Archaeological Association recorded archaeological sites in the vicinity of the Wellington International Airport Runway extension.

NZAA Number	Site Type	Location	Name
R27/554	Midden/ovens	Hue te Para/Lyall Bay	
R27/113	Midden/oven	Rangitatau Reserve Precinct	
R27/55	Pa	Rangitatau Reserve Precinct	Rangitatau Pa
R27/457	Oven	Rangitatau Reserve Precinct	
R27/460	Historic drain/tunnel	Moa Point Road	

Table 3: Other historic heritage items in the vicinity of the Wellington International Airport Runway extension.

Site type	Age	Location	NZAA Number
Gun emplacement	Constructed prior to WWII	Palmer Head	R27/171
WWII Radar Station	WWII	Palmer Head	R27/172
Telegraph Cable	1866	Lyall Bay	
Sewer Pipe	1895	Wellington Airport	
Wreck of the Winwick	1841	Unknown/Lyall Bay	
Moa-hunter middens	Pre-1450	Airport	

15 The historic heritage items recorded in the vicinity of the project comprise a range of sites representing occupation (middens, ovens), utilitarian (pipes, drains), communication and defensive structures (pa, WWII coastal defence structures). Collectively they provide evidence of a long history of use of the area from pre-European Maori settlement and resource consumption to early European arrival and communication. An important theme represented by sites in this vicinity is defence; being strategically located at the entrance to the harbour Maori utilised high, easily defendable headlands around the coast to construct pa, more recently such places were used as sites for coastal defence structures during WWII.

Figure 1: Map illustrating location of historic heritage items in the vicinity of the airport[1]

[1] Does not include items where locational information is insufficient to accurately map them

Assessment of effects

Historic heritage items

16 The proposal will not physically affect any of the historic heritage items listed in Tables 1, 2 or 3 above because they all lie outside the footprint of the project. However, the proposal will affect the context in which these historic heritage places exist. For example, the proposed 350 extra metres of runway in the coastal marine area may affect one's ability to appreciate and understand the WWII structures which were constructed to observe and defend Wellington's coast. In my opinion however, this effect is not significant.

17 The archaeological assessment for the project (Technical Report 22) has not assessed the significance of any of the historic heritage items recorded within the vicinity of the airport or the effect that the proposal will have on those places. Instead it has assessed the historic heritage significance of the project area using criteria set out in section 66 of the HNZPTA and concluded that the project area may have some historic heritage value (p 12) which will not be affected by the proposal. While this is not the approach I would have taken to the assessment, I generally agree with the conclusions on the impact of historic heritage items in the vicinity of the project.

Archaeological sites

18 Jones (2016) in Technical Report 22 finds the likelihood of encountering unreported archaeological sites on the land based component of the project area to be low and correspondingly recommends an Accidental Discovery Protocol (ADP) be put in place. I agree with this assessment, and recommend that an ADP be included as a condition of Resource Consent, should consent for the proposal be granted. I consider condition 87 proposed by the applicant to be an appropriate ADP condition.

19 However, I do not consider that Mr Jones (in Technical report 22) has undertaken a full archaeological assessment of the seabed where the reclamation is to take place. In pre-lodgement feedback to the applicant it was recommended that a maritime archaeological assessment be undertaken as part of the assessment of effects on historic heritage. The archaeological assessment makes reference to the fact that several ships have wrecked in the vicinity of the entrance to Wellington Harbour, including the Winwick, which was reportedly

wrecked at Lyall Bay in 1841 (p 8). The archaeological assessment did not involve an archaeological survey of the seabed, instead it relied on the fact that the Wellington Dive Guide does not list any shipwrecks in that location as evidence that there is no archaeological evidence on the seabed. This is not an appropriate information source to base an archaeological assessment on.

20 It is my opinion that until a full archaeological assessment, including a survey of the seabed, is undertaken by a suitably qualified maritime archaeologist it cannot be concluded that there is no archaeological evidence on the seabed (whether it is artefactual material or ship wreck sites) within the area proposed for reclamation. As such, I suggest a condition requiring an archaeological survey of the seabed across the area proposed for reclamation.

21 Depending on whether any archaeological evidence is found as a result of an archaeological survey of the seabed, mitigation of any adverse effects on historic heritage may be required. Despite the uncertainty as to whether or not any historic heritage values on the seabed will be affected, it is likely that archaeological investigation and recording of any artefactual material or ship wreck sites would be adequate mitigation for effects that the proposed reclamation may present. The requirements of the HNZPTA would apply to ship wreck sites where that wreck occurred before 1900; archaeological investigation and recording may be required under that Act if such evidence is found as a result of an archaeological survey of the seabed.

Planning Requirements

22 Under section 6(f) of the RMA the protection of historic heritage from inappropriate subdivision, use, and development is a matter of national importance.

23 The Wellington Regional Policy Statement, Objective 15, relates to identifying and protecting historic heritage from inappropriate modification, use and development.

24 As the proposal does not physically affect District Plan listed Heritage Buildings, Objects or Areas, there are no specific rules in Chapter 21 of the District Plan Chapter that are triggered by this application. The rules are triggered when works occur on the site of a listed item; no archaeological sites are listed in the District Plan. However, as the application is for a Discretionary (Unrestricted) Activity, all relevant matters must be considered.

25 I have considered the relevant policies and objectives of the District Plan relevant to heritage as detailed by Mr Daly, and I consider they will be met by the proposal with the condition requiring an ADP and the new condition I have suggested related to a maritime archaeological survey.

Matters raised in submissions

26 Submission 511 presents concern that the proposal would adversely affect the heritage value of the Moa Point cottages. The cottages are not included in the District Plan's Heritage List. The historic heritage value and the effects of this proposal on those values was not assessed as part of the application.

27 Submission 446 describes Lyall Bay as holding cultural heritage significance as a result of Hawaiian surfer and Olympic swimmer Duke Kahanamoku (1890-1968) having introduced surfing to the Bay. The submission also cites Lyall Bay's surf lifesaving history as contributing to its historic and cultural heritage value. The historic and cultural value of Lyall Bay to New Zealand's surfing history is not recognised in the District Plan. The historic heritage value and the effects of this proposal on those values were not considered in the applicant's assessment of effects.

Conclusion

28 There are no confirmed historic heritage resources located within the project area with exception of the sea bed which has not been systematically surveyed for archaeological sites. There are no physical or direct effects of the proposal on any known historic heritage items located within the vicinity of the Wellington International Airport.

29 There is a low likelihood of the proposal adversely affecting historic heritage items listed in the District Plan or archaeological sites on the land. As such, I consider the ADP proposed in condition 87 of the application to be an appropriate condition of any consent granted for the proposal.

30 However, an archaeological survey of the seabed should be undertaken across the area proposed for reclamation to conclusively determine whether or not the proposal will affect any

material from, or produce any information relating to, ships that have historically wrecked in, and in the vicinity of, Lyall Bay. An archaeological survey of the seabed could be required as a condition of any consent granted for the proposal, to be undertaken prior to construction commencing.

31 Should any archaeological evidence be found as a result of an archaeological survey of the seabed and be adversely affected by the proposed reclamation it is likely that those effects would be able to be adequately mitigated through archaeological investigation and recording.

32 The proposal, with conditions of consent in place including an ADP (proposed condition 87) and the requirement to undertake an archaeological survey of the seabed, including methods for mitigating adverse effects by requiring recording of any archaeological sites or evidence (should they be required), would in my opinion be appropriate, mitigate any potential adverse effects on historic heritage, and would be consistent with the objectives and policies of the District Plan.

Date: 7 October 2016

. . . . . .
Vanessa Anne Tanner

Appendix 10: Written advice from GWRC staff

MEMO

TO	Jude Chittock
COPIED TO	Kirsty van Reenen
FROM	Dr Claire Conwell
DATE	7 October 2016

ESci advice for WIAL extension sediment contaminants and stormwater management issues

This memo summarises advice in response to specific questions regarding the WIAL extension proposal by Greater Wellington Regional Council planning officers. Comments here are in the context of relevant contaminants assessments undertaken for the WIAL extension application, with cross reference to the draft 'Sediment characterisation' assessment undertaken for the CentrePort dredge application (report by Tonkin & Taylor, T&T). For the purpose of citing the relevant information from CentrePort's assessment to answer questions specifically about sediment contaminants for the WIAL application, I clarify here that the T&T report was provided to GWRC during the pre-application process for the harbour dredging project. I have been involved in reviewing the T&T report for the purpose of providing comments back to CentrePort during that process. The draft T&T report states that its purpose is to support a resource consent application to GWRC for the harbour dredging project. A resource consent application has not yet been submitted but the report is publicly available on the CentrePort website.

I have not referred to the ecological characteristics of baseline studies which I haven't been involved with.

Summary background and qualifications

My full name is Claire Elaine Conwell.

I hold the position of Environmental Scientist (Coast) in the Aquatic Ecosystem and Quality Team, Environmental Science Department at Greater Wellington Regional Council. I have been employed at GWRC for 5 years, which included a period assessing and managing the contaminated land consents and database. Prior to GWRC, I was employed as an environmental consultant with the Cawthron Institute (Nelson) for 5 years, undertaking a range of AEEs for a variety of activities in near shore coastal environments around New Zealand. This commonly included assessment of contaminants in benthic sediments in urban coastal areas and port environments.

Qualifications and experience

I have a BSc and First Class Honours in Applied Biology/Biotechnology (specialist in marine ecotoxicology). I hold a PhD in marine ecotoxicology.

I have expertise in assessment of contaminants in aquatic ecosystems, in particular sediments. Recent experience relevant to the proposal includes review of the CentrePort Dredging application (sediment contamination technical report), and providing ongoing advice to Wellington Water Limited and GWRC Environmental Regulation staff regarding stormwater consenting processes. I am currently overseeing project management of the 2016 Wellington Harbour subtidal survey which involves assessment of the sediment and ecological health of up to 17 sites in Wellington Harbour for a variety of heavy metal and organic contaminants.

Involvement with the proposal

I was requested by Environmental Regulation to review the relevant technical report for the application for both the Wellington Airport Extension (Technical Report 16, prepared by NIWA) as well as the CentrePort Dredging technical report (sediment characterisation, prepared by Tonkin & Taylor).

NIWA characterisation study:

Was the assessment sufficient to understand baseline characteristics?

I reviewed Technical Report 16 (Marine sediments and contaminants Lyall Bay, NIWA Report HAM2015-004). This report investigated the contaminate status of subtidal benthic sediments in Lyall Bay, including those typically associated with urban and stormwater runoff.

Overall the assessment is sufficient to understand the baseline sediment quality of the Lyall Bay area adjacent to the proposed runway extension. It is of sufficient quality that the results of any future monitoring or assessments can be compared against this data.

Stormwater discharges from the runway extension post construction:

Ongoing stormwater discharges once the runway extension is established are expected to be minimal and will be collected and managed in a manner that is consistent with the current management regime at the Airport. Do we know enough at this stage to agree with this assessment?

On the basis of the information provided in the WIAL AEE there is not enough information to agree with this assessment. Several information gaps include the following:

- What is meant by ‘minimal’ – this is ambiguous and requires clarification.
- What is the current management regime at the existing airport? As far as I am aware there is no current stormwater consent in place, and no information to my knowledge regarding Stormwater Management Plans for the existing airport.

A response to further information requested by GWRC on 20 May 2016 (including further information regarding stormwater management) was supplied in the applicant response dated 13 June 2016. Under item 1.1 regarding stormwater quality and management, the applicant states:

'Monitoring data from the existing stormwater system undertaken between 2013 – 2015 located at the Airport shows that the contaminants levels from the outfalls are negligible. This data is ***attached*** *as* ***Annexure A*** *to this response. This data supports NIWA's analyses that water quality in Lyall Bay is high (refer Technical Report 18[1]), with no significant levels of contaminants being recorded.'*

In my view the data supplied in Annexure A does not support this statement. After reviewing the laboratory reports in Annexure A, I make the following comments:

- There are no site descriptors of where the samples were taken (i.e. location at the airport, where it drains from, is it an end of pipe or after mixing?).
- The Hills laboratory reports do not include a sample time (this is listed only on the ELS Eurofins report), and the laboratory analysing the samples changes between 2014 to 2015.
- The list of parameters analysed does not include any metals (e.g. copper, zinc, lead), polycyclic aromatic hydrocarbons (PAHs) or Benzene, Toluene, Ethylbenze, Xylene (BTEX) which I would expect to see analysed for this type of land use on at least a series of first-flush occasions to gauge an indication of the presence and potential concentrations of these analytes under a range of scenarios (e.g. worst case to ambient conditions).
- Interpretation of sample results need to be matched with rainfall/dry period events – this is not provided and is not discussed (i.e. does this represent a 'first flush', after what dry period was the rain even, what was the magnitude of the rain event etc).
- Results indicate that only one sample was analysed on one sampling occasion per year to provide a measure of Total Suspended Sediment (TSS), Total Petroleum Hydrocarbons (TPH) and hydrocarbon bands.
- One sample on an annual basis for only 3 years (i.e. 3 grab samples) does not constitute a 'baseline' of what represents typical stormwater discharging off a site (i.e. what is the median and 95% confidence interval of these parameters).

The conditions affecting the quality of the stormwater (e.g. if it is after extended heavy rainfall) are unknown/not described – these would significantly influence the quality of the stormwater under any 'first-flush' sampling conditions. On the basis of the results listed in Annexure A it would be impossible to make a justified statement regarding whether water quality discharging off site has improved or deteriorated over time.

What monitoring is proposed in conditions or should be done?

Under the pNRP, it is my understanding that the site will be classed as a 'large site' and will therefore require a resource consent to permit stormwater discharges off site (as listed in the AEE consent requirements). Given there is no available data, to my knowledge, of the quality of current stormwater discharging from the existing airport area, the quality of the stormwater discharge at this site remains unknown.

1 Technical Report 18 refers to NIWA Report WLG2015-10 'Ecological characterisation of Lyall Bay, Wellington'. The water quality assessment referred to was for water optical quality parameters, not for stormwater derived contaminants such as metals or hydrocarbons. Technical Report 18 does not assess the marine receiving environments specifically in terms of contributions from stormwater outfalls, and I interpret the statement above to be in general terms only.

The site will be an area of high fuel and vehicle use, and expected contaminants will be associated with high grade fuel, vehicle emissions, vehicle brake wear and tear (and associate particulate emissions). The area will be largely sealed and impermeable.

A Stormwater Management Plan will be required, this should set out the baseline characteristics of the discharge coming off the existing site, this includes:

- Expected volume of discharge,
- Quality of discharge (including TSS, clarity, Volatile Organic Compounds, Semi-volatile organic compounds, TPH, metals),
- Description of expected concentration range (e.g. as a 95% confidence range and median values),
- Description of potential risk to the receiving environment.

The technical reports presented in WIAL Technical Reports 16 and 17 present detailed information that can inform the assessment of potential risk to the receiving environment (e.g. low potential for stormwater related contaminants to accumulate, low potential of depositional zones to be created from the extension structure). The information in those reports, as well as detailed information around the first 3 dot points listed above will inform the potential risk to the receiving environment. In the absence of site specific descriptors under these first 3 items it is difficult to robustly assess this in the context of the proposed runway extension.

I also point out here that Wellington Water (WWL) are currently in the process of developing Stage 2 ICMPs for 5 sub-catchments draining into Wellington Harbour and southern coast CMA ; these include catchment management plans for both Lyall Bay and Evan's Bay catchments. I recommend that the development of the airport SMP is consistent with the objectives of the WWL ICMP process, and vice versa, given that there is an overlap in the broader objectives of reducing stormwater derived contaminants discharging and cumulatively affecting the CMA.

Suitability of stormwater treatment via soakage pits

A potential treatment option for the stormwater coming off the airport site is to treat this via soakage pits/basins. I am not a technical expert in the design and efficacy of these treatment systems, and my comments refer to generic aspects of soakage basin design only. If this is being considered further I strongly suggest technical advice from a stormwater infrastructure specialist is sought.

For a soakage basin to function for the purpose of stormwater contaminant entrainment the following needs to be accounted for:

- Hydrodynamic flow to the treatment basin – what is the expected design capacity it will be able to accommodate in a high intensity rainfall event?
- What screening treatments (if any) will be used?
- What is the surface area footprint this will cover?
- Assessment of infiltration rates – these are a fundamental aspect of the performance of the soakage basin,

- Specification of filtration media and planting,
- Long term site maintenance (including any plants, rubbish accumulation, clogging) and performance/review schedule.

Harbour dredge material quality (using information received through CentrePort pre-consent discussions):

Submissions raised concern that harbour dredge material is contaminated and shouldn't be used as fill for the airport runway. Is there reason for concern?

Dredge material from the proposed CentrePort dredge application will be sourced from two locations: the harbour entrance, and an area adjacent to the Thorndon Container Wharf (TCW). Only the sediment from the TCW area is contaminated. The material dredged from this site will only be deposited at a nearby site within the harbour that has comparable sediment contaminant concentrations, i.e. it will not be moved outside the harbour entrance, and the deposition of the dredged material will not create a new contaminated zone on the seabed floor. This sediment should not be used for any fill purposes at the airport, and to my knowledge the use of the sediment from the TCW has not been discussed for this purpose.

Sediment in the harbour entrance has very low levels of detectable contaminants; it is only this material that is designated for disposal at the Fitzroy Bay spoil site, and only this material that may potentially be used for proposed airport reclamation activities. From a receiving environment perspective, the material from the harbour entrance poses a very low contaminant risk. The suitability for the use at the airport comes down to whether the sediment meets the structural aspects of the reclamation which I am not qualified to assess.

If dredged material was to be used for the airport extension does it need to be tested prior to it being used as fill? Or is there enough information to be confident that the contaminant levels of the material at the harbour entrance are so low that testing is not warranted and that any effects from the discharge of the material into Lyall Bay/Moa Point will be acceptable?

The results of sediment analyses from the 'Harbour entrance' (presented in Appendix 2 of the CentrePort Sediment Characterisation report as '*Contamination assessment : method and results'*) indicate contaminant concentrations are very low, and well below the ANZECC (2000) sediment quality guideline values. These results were consistent with analyses done in 2003 by SKM. There were no concerns regarding this analyses presented in the current Tonkin and Taylor assessment either from myself or from the independent review undertaken by Cawthron scientists (included in Appendix 3 of the T&T report).

In terms of further testing, I do not consider that any further chemical analyses to assess contaminants is required – there are no historical indications of contaminants, no known sources of contaminants, and it is not a depositional zone for stormwater related and fine particulate contaminants.

By comparison, I have looked at the reported range of indicator contaminants (copper, lead, zinc), from the 'Harbour entrance' reported for the CentrePort assessment against the Lyall Bay sampling reported for the WIAL application (Table 1). The reported ranges of indicator contaminants are very

similar between the two assessments, and well below receiving environments guidelines. The dredge material from the harbour entrance will not contribute significantly to Lyall Bay sediment contaminant concentrations; all ranges are very low at both sites.

Table 1: Range of indicator sediment contaminants (mg/kg) in the' Harbour Entrance' and Lyall Bay compared against receiving environment sediment quality guidelines

	Harbour entrance[1]	Lyall Bay[2]	ISQG-Low	ISQG-High
Copper	2.58-3.94	2.4 - 3.5	60	270
Lead	4.45-6.7	6.9 – 7.9	50	220
Zinc	24.4-36.4	30.0 – 34.0	200	410

ANZECC (2000) Interim Sediment Quality Guidelines (ISQG) low, and high levels.

[1]Data from Table 11.2, Appendix 2 of CentrePort Shipping Channel Deepening Project Sediment Characterisation Report (for consultation). Tonkin & Taylor Technical Report, Contamination assessment: method and results, Prepared for CentrePort. March 2016

[2]Data from Table 3.1, Technical Report 16. NIWA Report HAM2015-004 Prepared for WIAL. February 2015 (revised February2016).

Is the 'Harbour entrance' a defined area or would we require them to include a map in the monitoring plan which clearly shows what area(s) they could use dredged material as fill (subject to our approval)?

Yes the 'Harbour entrance' is a defined area with respect to the dredging application. This is marked on Figure 2.1 of the Appendix 2 report "Contamination assessment: method and results".

The sites sampled for chemical analyses are marked on Figure 7.1 of this report; these are within the main area designated for dredging activities. I would still suggest a map be included for cross referencing where material was sourced from in case this information is required for other assessments (e.g. validation of the dredge material structural compatibility for the runway construction, sediment plume assessment etc).

Dr Claire Conwell
Environmental Scientist - Coast
Aquatic Ecosystems and Quality Team

greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

MEMO

TO	Environment Regulation Department, GWRC
FROM	Mike Pryce, Manager Harbours Department , GWRC
DATE	7 October 2016
FILE NUMBER	WGN160274, **WIAL Resource Consent Application**

I have been asked to respond to questions raised by Environmental Regulation Resource Advisors about navigational safety matters related to the Wellington International Airport Ltd consent application for the proposed runway extension.

My name is Captain Mike Pryce, Manager Harbours/Regional Harbour Master for the Greater Wellington Region, holding a Master's Foreign-Going Certificate of Competency, and Wellington Harbourmaster since April 1989.

The regulations that apply to navigation and safety within and around the Wellington Harbour entrance and the Lyall Bay construction zone are Maritime Rules made under the Maritime Transport Act, Wellington Region Navigation and Safety Bylaws and the GWRC Proposed Natural Resources plan.

Barge Movements

The proposed barge movements fall within the Navigation Protection Areas shown on Map 49 of the Proposed Natural Resources Plan.

I have reviewed the feasible barge movement options as outlined in the Construction Programme provided and assessed these against current typical movements of vessels transiting the harbour entrance. Key regular vessel movements include the Cook Strait ferry operations of InterIsland Line and Strait Shipping (Bluebridge), commercial shipping movements to and from CentrePort berths (container ships, oil tankers, log-ships and cruise ships), smaller fishing vessels and various recreational vessel movements. Commercial shipping movements including ferries would typically account for approximately 25 transits of the harbour entrance during a 24 hour period, at any time. Smaller commercial vessels and recreational vessel movements would be additional to that number, with more over the summer period.

All barge movements would need to comply with existing Maritime Rules and requirements of Part 6 of the Navigation and Safety Bylaws which are specific to Wellington Harbour. That includes, but is not limited to, radio communications and recommended tracks.

Moorings

The temporary moorings shown do not affect any current vessel movements or other moorings except for the existing Airport Exclusion Zone marker buoys which we presume will need to be removed to enable the works to take place.

Management Plan

I suggest that a Management Plan should be prepared for the marine operations as part of this work. This plan should include but not be limited to the following:

- Route planning in and out of the harbour, including the loading point(s),
- Weather limits (including swell) for operations, there may be different criteria for different parts of the operation,
- Lay-up options for when the barges are not required or halted due to weather,
- Contact details and radio procedure for marine vessels,
- Assess the proposed vessel(s) against Maritime Rule Part 90 (Pilotage) to establish if the Masters require Pilotage Exemption Certificates to operate; if so communication with GWRC and Centerport as to how to best achieve this,
- Confirmation of Maritime NZ certification, where appropriate, for vessels involved,
- Confirmation of marine insurance for vessels involved,
- Emergency and breakdown contingency plans.

I would recommend that the marine contractor(s) and marine operations management for the applicant meet with the Harbourmaster's Department to discuss this prior to preparing the plan.

Lighting

Any lighting installed on the construction works must not be able to be confused for existing navigation aids as shown on the Nautical Chart for Wellington Harbour, NZ 4633.

Barges and supporting vessels must display correct lighting and day shapes as defined in the Maritime Rules.

Exclusion Zones

The proposed exclusion zones do not affect known current vessel movements.

Captain M H Pryce

Regional Harbourmaster,
Manager, Harbours
GREATER WELLINGTON REGIONAL COUNCIL

Appendix 11: Recommended consent conditions

Consent number	Consent description	General conditions	Specific conditions
Resource consents from GWRC			
[34044]	<u>Reclamation</u> Coastal permit to reclaim and use approximately 11 hectares of the coastal marine area to the south of the Wellington Airport runway in Lyall Bay, including any: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the reclamation; • disturbance of the foreshore and seabed associated with the mooring of vessels during construction of the reclamation; • diversion and dewatering during construction of the reclamation; • generation of construction related noise.	1 – 6	7 – 33, 40 – 65, 67 – 79, 81 – 87, 112 – 121
[34047]	<u>Temporary structures</u> Coastal permit to construct, use and maintain temporary structures including moorings for construction related purposes, lighting structures, site establishment facilities, machinery and equipment in the coastal marine area associated with the construction of the proposed runway extension and associated project works, including any: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the structures; • disturbance of the foreshore and seabed associated with the mooring of vessels during construction;	1 – 6	7 – 33, 40 – 65, 67 – 76, 80 – 87, 112 –113, 119 – 121

	• diversion and dewatering during construction of the structures; • generation of construction related noise.		
[34048]	<u>Earthworks</u> Land use consent and discharge permit to undertake earthworks associated with the construction of the proposed runway extension and associated project works including the removal of a hillock to develop a construction compound site and any associated discharges of sediment laden water to land where it may enter water.	1 – 6	7 – 33, 40 – 65, 67 – 76, 78, 81 – 87, 119 – 121
[34049]	<u>Discharges to air during construction</u> Discharge permit to discharge dust to air from earthworks activities associated with the construction of the proposed runway extension and associated project works including the removal of a hillock, stockpiling and handling of fill and construction materials.	1 – 6	7 – 33, 40 – 65, 67 – 76, 81 – 87, 117
[34050]	<u>Beach nourishment</u> Coastal permit to deposit natural materials onto the Moa Point Beach foreshore for the purpose of beach and amenity enhancement.	1 – 6	7 – 33, 40 – 65, 67 – 76, 81 – 87, 117, 119 – 121
[34045]	<u>Construction of permanent structures</u> Coastal permit to construct permanent structures associated with the proposed runway extension and related project works including a submerged surf wave focussing structure in Lyall Bay, a protection structure over part of the Moa Point wastewater outfall pipeline and all other ancillary structures, including: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air during construction of the structures; • disturbance of the foreshore and seabed	1 – 6	7 – 33, 41 – 65, 67 – 76, 77 – 98, 106 – 121

	associated with the mooring of vessels during construction; • diversion and dewatering during construction of the structures; • generation of construction related noise.		
[34046]	<u>Occupation of the coastal marine area</u> Coastal permit to occupy the coastal marine area for construction purposes, temporary and permanent structures, and ongoing maintenance works associated with the proposed runway extension and related project works including the toe of the reclamation below mean high water mark, a submerged surf wave focussing structure in Lyall Bay and a protection structure over part of the Moa Point wastewater outfall pipeline including: • associated destruction, disturbance, deposition and discharge of sediment and dust to the foreshore and seabed and to air from the maintenance of these structures; • generation of noise from maintenance activities.	1 – 6	12 – 13, 18 – 29, 42, 74 – 76, 79, 80 – 117, 119 – 127
[34051]	<u>Stormwater discharges post construction</u> Coastal permit to discharge stormwater from the extended Wellington Airport runway directly to the coastal marine area (CMA) and to land adjacent to the CMA where it may enter the waters of the CMA.	1 – 6	12 – 13, 128 – 136
Resource consents from WCC		**General conditions**	**Specific conditions**
SR357837	<u>Land-use activities</u> Land-use consent for the construction, operation and maintenance of the proposed runway extension and associated project works on land and road reserve including: • temporary site offices and associated facilities; • laydown and stockpiling	1 – 6	7 – 76, 80 – 87, 117 – 121

	areas; • construction, modification, upgrading and use of internal site access ways; • construction, alteration and upgrading of existing network utilities to provide for construction related activities and the long term use of the runway and taxiway; • earthworks, including associated transport, and vegetation clearance; • modification and upgrading of the Moa Point Road underpass and other associated roading upgrades; • generation of construction related noise; • construction and use of runway infrastructure and structures on land including (but not limited to) ancillary structures, fencing and navigational aids, beach remediation and landscape/amenity improvements; • the continued use of reclaimed land for airport purposes.		

Definitions	
AEE	Means the Wellington Airport Runway Extension Assessment of Effects on the Environment Volumes 1 to 2, dated April 2016
BMP	Biosecurity Management Plan
CAQMP	Construction Air Quality Management Plan
CBMP	Coastal Bird Management Plan
City Council or WCC	Means the Wellington City Council
CLG	Means the Community Liaison Group
CMA	Coastal Marine Area
CMP	Construction Management Plan
CNVMP	Construction Noise and Vibration Management Plan
Commencement of Construction	Means the commencement of Stage 0 as per the AEE and Construction Sequencing Programme required by condition 14.
Construction Phase	Means the duration of the construction of the Project from site establishment (Stage 0) through to completion of all construction related activities (Stage K).
Construction or	Means the areas identified in Figure 1-5 of the AEE and includes all construction

Project Site	related activities landward of mean high water springs and out to the 300m temporary occupation areas of the CMA.
CTMP	Construction Traffic Management Plan
CTP	Chemical Treatment Plan
EMMP	Ecological Mitigation and Monitoring Plan
ESCP	Erosion and Sediment Control Plan
Heavy Vehicle	Comprising of a truck and trailer unit approximately 23m long
LUDMP	Landscape and Urban Design Management Plan
Manager GWRC	Means the Manager, Environmental Regulation, Greater Wellington Regional Council
Manager WCC	Means the Manager, Environmental Regulation, Wellington City Council
MMP	Maintenance Monitoring Plan
MHWS	Mean high water springs
MOMP	Marine Operations Management Plan
NUMP	Network Utilities Management Plan
Project	Means the construction, maintenance and operation of the Wellington Airport Runway Extension, as described in Chapter 1 of the AEE.
Project Website	www.connectwellington.co.nz
Regional Council or GWRC	Means the Greater Wellington Regional Council
RMA or 'the Act'	Means the Resource Management Act 1991
SCMP	Stakeholder and Communications Management Plan
SMAMP	Surf Mitigation Adaptive Management Plan
Stage	Means a stage of the Construction Phase as defined in the construction sequencing programme in accordance with condition 14.
SWFS	Submerged Wave Focussing Structure
TSP	Total Suspended Particulate
TSS	Total Suspended Sediment
Work	Means any activity or activities undertaken in relation to the Project
Working Day	Has the same meaning as in section 2 of the Resource Management Act 1991

Condition Number	**General conditions**
1	The Project shall be undertaken in general accordance with the plans and information submitted with the application and statutory forms documented as consent numbers WGN160274 [34044, 34045, 34046, 34047, 34048, 34049, 34050, 34051] and SR357837, subject to such amendments as may be required by the following conditions of consent. The plans and information include: a) Assessment of Environmental Effects report, dated April 2016 b) Technical Reports contained in Volume 2 of the application c) Further information provided to GWRC and WCC on 10 June 2016, 13 June 2016, 1 July 2016, 17 August 2016 and 22 August 2016 (Letters from Mitchell

	Partnerships) and 27 September 2016 (spreadsheet and emails from Sapere Research Group) and clarification memos provided on 15 July 2016 and 2 August 2016 (from Mitchell Partnerships) and 25 August 2016 (from Sapere Research Group). d) Plans and information presented in support of the application at the hearing. Where there is conflict between the documents lodged and the conditions, the conditions shall prevail. Where there is an inconsistency between the information and plans lodged with the application and at the hearing, the most recent approved plans and information shall prevail. e) The relevant section of any technical report referred to in these conditions shall be regarded as part of these conditions, and a copy of each shall be appended to these conditions. f) The Project Website shall provide online access to these conditions and the plans and reports referred to in these conditions throughout the construction of the Project, and hard copies shall be available at the Project site office, and presented to any City or Regional Council enforcement officer on request.
2	a) The Consent Holder shall permit the agents and enforcement officers of the City and Regional Council to have unlimited supervised access to relevant parts of the construction site for the purpose of carrying out inspections, surveys, investigations, tests, measurements and/or to take samples to enable the City and Regional Councils to undertake their monitoring functions in relation to the Project.
3	Monitoring of wind speed, wind direction, air temperature and rainfall shall be undertaken: a) In general accordance with the *Good Practice Guide for Air Quality Monitoring and Data Management*, Ministry for Environment, 2009; and b) Continuously for the duration of the Construction Phase of the Project, at a location that is representative of the local weather conditions across the construction site which is to the satisfaction of the Manager, GWRC. All meteorological monitoring shall be sited, as far as practicable, in accordance with AS 3580.14:2014 *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications*.
	Consent Lapse and Expiry
4	Pursuant to section 125(1) of the Act, this consent WGN160274 [34044, 34045, 34046, 34047, 34048, 34049, 34050, 34051] and SR357837 shall lapse 10 years from the date of its commencement unless it has been given effect, surrendered or been cancelled at an earlier date.
5	Pursuant to section 123(a) of the Act, the following consents WGN160274 [34044] - Reclamation shall have an **unlimited duration** Pursuant to section 123(c) of the Act, the following consents: WGN160274 [34047] – coastal permit for construction of temporary structures WGN160274 [34048] – landuse consent for earthwork activities WGN160274 [34049] – discharge permit for discharges to air WGN160274 [34050] - coastal permit for beach nourishment WGN160274 [34045] – coastal permit for construction of permanent structures shall expire **10 years** from the date of commencement. Pursuant to section 123(c) of the Act, the following consents: WGN160274 [34046] – coastal permit for occupation and ongoing maintenance of permanent structures shall expire **35 years** from the date of its commencement.

	WGN160274 [34051] – coastal permit for stormwater discharges from the runway extension shall expire **5** years from the date of its commencement.
	Review of Consents
6	The Manager GWRC and the Manager WCC may review any or all conditions of this consent by giving notice of their intention to do so pursuant to section 128 of the Act, at any time within three months of the 30 June each year for the duration of this consent, for any of the following purposes: a) To deal with any adverse effects on the environment, which may arise from the exercise of this consent, and which it is appropriate to deal with at a later date; b) To review the adequacy of any monitoring plans proposed and/or monitoring requirements so as to incorporate into the consent any monitoring or other requirements which may become necessary to deal with any adverse effects on the environment arising from the exercise of this consent; and c) Ensuring the conditions of this consent are consistent with any National Environmental Standards, Regulations, relevant plans and/or the Wellington Regional Policy Statement. The review of conditions shall allow for the deletion or amendment of conditions of this consent; and the addition of such new conditions as are shown to be necessary to avoid, remedy or mitigate any significant adverse effects on the environment.
	Pre-construction Administration
7	a) The Consent Holder shall arrange a pre-construction site meeting between the WCC Compliance Monitoring Officer and Regional Council and any other relevant party nominated by the City and Regional Council (Invited Parties), including the primary contractor, at least 10 working days prior to commencement of each Stage of work as outlined in the Construction Sequencing Programme. The purpose of the meeting is to identify the immediate forward works programme and how conditions have been, or will be, met. b) The Consent Holder shall ensure that additional site meetings for the same purpose as (a) above are held between the Consent Holder/Requiring Authority, and Invited Parties, at appropriate intervals, and not less than every six months following Commencement of Construction.
	Duration of construction works
8	The construction work outlined in Stages O to K of the Indicative Construction Sequence in Table 4-4 of the Assessment of Environmental Effects report, dated April 2016 (i.e. from site establishment to the completion of runway extension drainage and pavements and Moa Point Road and beach amenity improvements) shall not exceed a period of 4 years.
	Community Liaison
9	A Community Liaison person shall be appointed by the Consent Holder for the duration of the Construction Phase of the Project. The Consent Holder shall take appropriate steps to advise the Community Liaison Group (in accordance with condition 11), the Surf Steering Committee (in accordance with condition 92), GWRC and WCC of the Community Liaison person's name and contact details. If the Community Liaison person will not be available for any reason, an alternative contact person shall be nominated, to ensure that a Project contact person is reasonably available at all times during the construction phase of the Project. *Advice note: The intent of this condition is to ensure that someone is available 24 hours a day for affected parties to contact during the Construction Phase. If direct contact cannot be made with the Community Liaison Person, follow-up will occur*

	as soon as reasonably practicable.
10	a) The Consent Holder shall prepare a Stakeholder and Communications Management Plan (SCMP) in consultation with the Community Liaison Group that sets out procedures detailing how the public and stakeholders will be communicated with throughout the Construction Phase of the Project. The stakeholders comprise the Moa Point and Rongotai communities, road users and the residents affected by construction activities. b) The purpose of the SCMP is to provide a framework to: (i) Inform the community of construction progress; (ii) Engage with the community in order to foster good relationships and to provide opportunities for learning about the Project; (iii) Provide early information on key Project milestones; and (iv) Respond to queries and complaints. c) As a minimum, the SCMP shall include: (i) Details of a contact person available on-site at all times during Work. Contact details shall be prominently displayed at the entrance to the site(s) so that they are clearly visible to the public at all times. (ii) Procedures for recording and responding to all complaints; (iii) Methods to consult on and to communicate the proposed hours of construction activities outside of normal working hours and on weekends and public holidays, to surrounding residential communities, and methods to deal with concerns raised about such hours. (iv) Any stakeholder specific communication plans required. (v) Monitoring and review procedures for the SCMP. (vi) A definition of what would constitute a 'minor change' to the SCMP. (vii) Details of communications activities proposed including: • Publication of a newsletter, or similar, and its proposed delivery area. • Newspaper advertising. • Notification and consultation with individual property owners and occupiers with dwellings along Moa Point Road, and along the proposed haulage routes. • The use of the Project Website for public information. The SCMP shall include linkages and cross-references to methods set out in other management plans where relevant. The SCMP shall be provided at least 10 working days prior to construction commencing, to the Manager GWRC, the Compliance Monitoring Officer WCC and the Community Liaison Group. The SCMP shall be implemented and maintained throughout the entire Construction Phase and following construction as necessary, and updated if required.
11	The Consent Holder shall establish a Community Liaison Group. a) Membership of the Community Liaison Group shall include (but not be limited to): (i) The Community Liaison person; (ii) Representatives of Wellington International Airport Ltd; (iii) A representative of the Contractor appointed to undertake the works; (iv) Representatives of the local community including at least one resident of Moa Point Road; (v) A representative of Iwi mana whenua; (vi) A representative council officer from WCC and GWRC. b) The purpose of this group shall be to provide a means for monitoring the effects of constructing the Project on the community by providing a regular forum through which information about the Project can be provided to the community and the community can provide information about the effects of the Project to the consent holder. c) Matters to be considered by the Community Liaison Group shall include, but not be limited to:

	(i) The traffic, noise, dust, lighting, landscaping, and other related aspects. (ii) Likely times and duration of night time construction work, likely traffic disruption and establishing a reasonable means of communication with affected persons on this. (iii) The suitable content and form for dissemination of information to the public. The Consent Holder may also separately disseminate information to the public. (iv) How the Community Liaison Group can assist the Consent Holder in monitoring the effects during the construction period and monitoring the contractor's compliance with the conditions of consent relating to the construction work. d) The Consent Holder shall ensure that: (i) Invitations to attend meetings are issued to the Community Liaison Group at least once every three months throughout the Construction Phase so that the intentions of this condition are fulfilled; (ii) Invitations are sent to the Community Liaison Group at least 10 working days prior to the scheduled meeting date; (iii) Meeting are held at an appropriate venue; and (iv) Meeting minutes of all Community Liaison Meetings are recorded and distributed to the Community Liaison Group within 10 working days of the meeting being held. *Advice Notes:* *1. The Consent Holder shall consider any feedback or recommendations provided to it by the Community Liaison Group in a meaningful and transparent way. For the avoidance of doubt the Community Liaison Group does not have any delegated authority as a decision maker.* *2. The community liaison group is considered "established" when the consent holder has collated contact details for all persons joining the group, and the group has been provided with the first meeting date.*
	Complaints
12	a) The Consent Holder shall maintain a permanent register of any complaints received alleging adverse effects from, or related to, the exercise of these consents. The record shall include: (i) the name and address (where this has been provided) of the complainant; (ii) identification of the nature of the complaint; (iii) location, date and time of the complaint and of the alleged event; (iv) weather conditions at the time of the complaint (as far as practicable), including wind direction and approximate wind speed if the complaint relates to air discharges; (v) the outcome of the Consent Holder's investigation into the complaint; (vi) measures taken to respond to the complaint; and (vii) any other activities in the area, unrelated to the Project that may have contributed to the complaint, such as noisy or dusty conditions. b) The consent holder shall notify the Manager GWRC and the Compliance Monitoring Officer WCC within **24 hours** of receiving a complaint. c) The Consent Holder shall respond to the complainant within **3 working days** of the complaint; d) The Consent Holder shall also maintain a record of its responses and any remedial actions undertaken; e) This record shall be maintained on site and shall be made available to the Compliance Monitoring Officer WCC and the Manager, GWRC, upon request. The Consent Holder shall provide the Compliance Monitoring Officer WCC and the Manager GWRC with a copy of any complaints register every six

	months as required by condition 17.
	Incident Notification
13	In the event of any incident that has or could have resulted in a condition or conditions of this permit being contravened, the permit holder shall: a) Notify the Manager, Wellington Regional Council and the Compliance Monitoring Officer WCC within 24 hours of the consent holder becoming aware of the incident, or the next working day.
	Sequencing and Schedule of Construction Activities
14	a) The Consent Holder shall submit to the Compliance Monitoring Officer WCC and the Manager GWRC at least 30 working days prior to commencement of construction a detailed programme outlining the proposed sequencing and/or staging of the Construction Phase activities and confirmation of when draft and final Landscape and Urban Design Management Plan and Maintenance Management Plan will be provided to the Council Managers for certification. b) In addition to (a) above and condition 16 below, the Consent Holder shall provide the Compliance Monitoring Officer WCC and Manager GWRC with any updated construction sequencing programme if significant changes occur in the programme. Any updated programme shall be submitted at least 5 working days before any such changes in scheduling or sequencing occurs.
15	The Consent Holder shall provide detailed engineering plans and drawings (including dimensioned, cross-sections, elevations and site plans) of all areas of proposed construction of the Project (including associated permanent and temporary CMA occupation), permanent structures and temporary structures to the Manager GWRC with at least 30 working days before the proposed date of commencement of the construction of the reclamation or any ancillary temporary structures.
16	The Consent Holder shall provide the Manager GWRC, the Compliance Monitoring Officer WCC and the CLG with a schedule of construction activities for the Project at monthly intervals throughout the construction phase of the Project. Each monthly schedule shall demonstrate how it fits into the overall construction sequencing programme required by condition 14 and shall indicate appropriate intervals at which an invitation will be made to the Council Managers to meet on-site to discuss the next stage or stages of construction activities.
	Six Monthly Monitoring
17	The Consent Holder shall provide a six monthly monitoring report to the Compliance Monitoring Officer WCC, the Manager GWRC and the CLG on 1 June and 1 December each year (or on an alternative date as otherwise agreed to by the Council Manager(s)) for the duration of the Construction Phase. The purpose of this report is to provide an overview of the monitoring and reporting work undertaken, and any environmental issues that have arisen during the Construction Phase of the Project. As a minimum, this report shall include: a) All monitoring data required in accordance with the conditions of this consent and a summarised interpretation of this data. This shall include complaints, monitoring data for TSP, PM_{10}, meteorology, nitrogen dioxide, visible dust, construction noise and vibration, cleanfill testing, all monitoring required under the ESDP and CTP, and data from turbidity and clarity monitoring at the boundary of the reasonable mixing zone; b) A record, as required by condition 12, of all complaints received over the previous six months and the outcomes of any investigation and actions taken. c) Any work that has been undertaken to improve the environmental performance on the site or that is proposed to be undertaken in the up-coming six months; d) Recommendations on alterations to the monitoring required and how and when these will be implemented through changes to the relevant

	management plans; and e) Any other issues considered important by the Consent Holder or requested by the consent authority.
	Management Plans – General
18	a) All construction work shall be carried out in accordance with the applicable certified management plan(s) and other plans required by these conditions. b) The draft management plans listed in c) that were lodged with the resource consent application shall be updated, and all other management plans listed in c) shall be prepared by the Consent Holder and provided in draft form to the Manager GWRC and the Compliance Monitoring Officer WCC for initial comment at least 30 working days prior to the Commencement of Construction. c) The following final management plans must be provided to the Council Manager(s) for certification at least 20 working days prior to Commencement of Construction : i. Construction Management Plan; ii. Construction Noise and Vibration Management Plan; iii. Construction Air Quality Management Plan; iv. Erosion and Sediment Control Plan; v. Construction Traffic Management Plan; vi. Ecological Mitigation and Monitoring Plan; vii. Chemical Treatment Management Plan; viii. Stakeholder Communications Management Plan; ix. Biosecurity Management Plan; x. Marine Operations Management Plan; xi. Network Utility Management Plan; xii. Coastal Birds Monitoring Plan. d) The following management plans must be provided to the Council Manager(s) in draft form for initial comment and final form for certification at the Construction Phase as indicated in the Construction Sequencing Programme required by condition 14: i. Landscape and Urban Design Management Plan; and ii. Maintenance Management Plan e) The Surf Mitigation Adaptive Management Plan shall be provided to the Manager GWRC for certification at least 6 months prior to the Commencement of Construction in accordance with condition 89. f) All management plans shall be prepared in general accordance with any relevant consent conditions. Prior to being submitted to the Compliance Monitoring Officer WCC or the Manager GWRC for certification, the management plans listed in c)(i)-(xii) above shall be reviewed by a suitably qualified person. Any comments and inputs received from the reviewer shall be clearly documented, along with a clear explanation of where any comments have not been incorporated and the reasons why. The Commencement of Construction shall not start until the Consent Holder has received the Council Managers' written certification for the management plans in c) and e). g) The management plans listed in c), d) and e) above provide the overarching principles, methodologies and procedures for managing the effects of construction of the Project to achieve the environmental outcomes and performance standards required by these conditions. h) A copy of the certified management plans listed in c), d) and e) above will be provided to the CLG and made publicly accessible on the Project website. The management plans are not required to include all details for every construction stage at the time the plan is submitted for certification. If further details are to be provided later, the construction management plan shall specify

	which stages require further certification at a later date. Further details shall be submitted to the Council Manager for certification prior to construction commencing in the relevant stage
19	If the Consent Holder seeks to make a 'minor' change to a certified management plan, the change shall be submitted to the Council Manager for certification at least **two working days** prior to any changes taking effect. For the purpose of this condition, 'minor change' is defined in the relevant management plan. If the Consent Holder seeks to make a more than minor change to a management plan, the change shall be submitted to the Council Manager for certification at least **five working days** prior to that change taking effect.
20	Where a management plan is required to be prepared in consultation with any third party, the management plan shall demonstrate how the views of that party (or parties) have been incorporated, and where they have not, and the reasons why.
	Construction Management Plan
21	In accordance with condition 18, the Consent Holder shall prepare a **Construction Management Plan (CMP).** The purpose of the CMP shall be to confirm construction methodologies, plant equipment and construction timeframes, including staging, and identify the measures to avoid, remedy or mitigate adverse effects from construction activities. The CMP shall include, as appendices, the suite of management plans required under condition 18 which must be certified prior to the Commencement of Construction, except for the Landscape and Urban Design Management Plan, Maintenance Management Plan and Surf Mitigation Adaptive Management Plan which is required to be submitted at an earlier date.
22	The CMP shall include details of: a) The management of construction activities; a) A detailed construction methodology for the reclamation works, including how it is proposed to ensure that the rock dyke is sealed; b) Public access restrictions including areas and notification requirements; c) Marine equipment and operational requirements; d) Details of how the consent holder will ensure that all fill material used for the reclamation meets the Ministry for the Environments definition of "cleanfill" as detailed in Publication ME418 "*A Guide to the Management of Cleanfills"* (2000) using previous contaminant testing, the history of the source location and a testing regime. e) Staff and contractors' responsibilities; f) Training requirements for employees, sub-contractors and visitors; g) Environmental incident and emergency management; h) Communication and interface procedures; i) Environmental complaints management (required under condition 12); j) Compliance monitoring; k) Environmental reporting; l) A definition of what constitutes a 'minor change' to the CMP; and m) CMP review.
23	The CMP shall confirm the material (e.g. rock, fill, and accropodes) requirements and sources of material that will be utilised in the construction of the Project. Details of the transportation of the material to the construction site and management of the material once it has reached the Project site (i.e. storage/stockpiles) shall also be provided in the CMP. If any of the material is to be transported to the site via a barge, details of any mooring and vessel management systems that will be utilised shall also be provided.
24	The CMP shall provide details relating to the site preparation, establishment, laydown areas, plant equipment and post construction rehabilitation, including but

	not limited to: a) Location of site offices and other construction staff facilities (car parking, amenities); b) Location of storage and laydown areas; c) Location and extent of fill stockpiles; d) Plant equipment including both landside and marine based equipment, as well as mooring requirements; e) Machine and vehicle refueling areas; f) Project lighting; and g) Details of the site demobilisation and rehabilitation of the site post construction of the Project. *Advice note: No storage or laydown area, including plant or equipment of any type, may occupy any WCC land, including legal road, without the prior written approval of WCC.*
25	The CMP shall include a lighting plan for the Project. The purpose of this plan shall be to ensure that lighting overspill and illumination to airside activities, passing vessels, adjoining land uses and marine species is appropriately managed. The lighting plan shall also demonstrate that all lighting installed cannot be confused with navigation aids. The Plan shall identify the methods to manage light spill on adjacent land uses as far as is practicable and to minimise the risk of bird attraction and strikes.
26	The Consent Holder shall ensure that personnel responsible for supervising contractor site staff (e.g. foremen, supervisors, and managers) undergo environmental awareness training required by the CMP. Specifically, training may include (as relevant) but not be limited to: a) Design details for erosion and sediment control measures and associated methodologies; b) The sensitivity of the coastal marine area and how these aspects should be managed (i.e. the presence of marine mammals, birds, etc.); c) Briefing on the requirements for any cultural ceremonies to occur before commencement of construction or during work; and d) Dust mitigation, dust complaint management and all conditions of consent relating to dust management including trigger levels and actions to be undertaken in the event these are exceeded.
27	The CMP shall confirm final details, staging and sequencing of construction, and sufficient engineering design information to ensure that the Project remains within the limits and standards approved under this consent and that the construction activities avoid, remedy or mitigate adverse effects on the environment in accordance with the conditions of this consent.
28	The CMP shall be implemented and maintained throughout the entire Construction Phase and following construction as necessary.
29	A copy of the CMP shall be held on the construction site at all times and be available for inspection by the WCC and GWRC, and be made publicly accessible on the Project website.
	Marine Operations Management
30	In accordance with condition 18, the Consent Holder shall prepare a **Marine Operations Management Plan (MOMP)** in consultation with the Harbourmaster, GWRC. The purpose of the MOMP shall be to confirm details of marine operations for the runway extension and identify measures to avoid, remedy or mitigate adverse effects from marine operations on the environment including navigational safety.
31	The MOMP shall include, as a minimum, its objectives and intended outcomes and

	address the following: • Transport route planning in and out of the harbour, including the loading points; • Weather limits (including swell) for each part of marine operations; • Lay-up options for when barges are not required or halted due to bad weather; • Construction, use, inspection and maintenance of all moorings laid for the project; • Contact details and radio procedures for all marine vessels: • An assessment of the vessels to be used against Maritime Rule Part 90 (Pilotage) to establish if the Masters require Pilotage Exemption Certificates to operate. If Masters require Pilotage Exemption Certificates to operate, details of how this will be achieved shall be provided; • Confirmation of marine insurance (including wreck removal) for all vessels involved; • Confirmation of Maritime NZ certification, where appropriate, for all vessels involved; • Emergency and breakdown contingency plans. • Spill prevention and management procedures • A definition of what constitutes a 'minor change' to the MMP
32	The MOMP shall be implemented and maintained throughout the site establishment and construction phases of the project and following construction as necessary, and updated if required.
33	The Consent holder shall ensure that all moorings are constructed and maintained in accordance with the current Wellington Regional Council Mooring Construction Guidelines to ensure the safe mooring of the vessel at all times. Where the mooring is not constructed in accordance with these Guidelines, the construction shall be to the satisfaction of the Harbour Master, GWRC.
	Construction Traffic Management
34	In accordance with condition 18, the Consent Holder shall submit a **Construction Traffic Management Plan (CTMP)**. The objectives of the CTMP shall be to: 1. Meet the specific requirements for construction traffic management including, where required, to obtain approval from road controlling authorities for the activities required. Where any approval is required from a private land holder, or a person having an interest in private land; to obtain those approvals before undertaking any work; to be in accordance with the relevant By-Laws, Acts, Regulations and Wellington City conditions pertaining to traffic; 2. adopt NZTA's Code of Practice for Temporary Traffic Management including any activity that varies the normal operating conditions of any road; 3. ensure the application of best practice methodology to all traffic controls associated with construction; 4. ensure compliance with relevant legislative requirements; 5. effectively manage traffic generated during the construction phases of the project so that: - construction traffic volumes are safely accommodated within the existing road network; - so far as is reasonably practicable, congestion or traffic delays are avoided; - any traffic effects associated with construction are mitigated as far as reasonably practicable; - the needs of other road users and liaison with road controlling authorities, residents, businesses, sports facilities, major events organisers and emergency services are considered and where appropriate addressed; and

	- discharges of fugitive dust are minimised as far as possible The certified CTMP shall confirm the procedures, requirements and standards necessary for managing the traffic effects during construction of the Project so that safe, adequate and convenient facilities for local movements by all transport modes are maintained throughout the construction period. In particular, the CTMP shall describe, where appropriate: a) The method to be used to ensure the departure and arrival times of trucks carrying fill material is staggered so as to avoid trucks travelling in 'convoy'. b) Any temporary changes to the speed limit; c) a 10km/hour speed limit on unsealed construction site haul roads; d) Provision for the safe and efficient access to construction vehicles to and from the construction site; e) The identification of primary haulage routes, and alternative haulage routes to be used in a contingency where the primary haulage routes are not available; f) Design and maintenance of haulage vehicle routes including any limitations and any associated permit requirements; g) Temporary traffic management measures to manage intersection and road user safety, as well the methods to manage any temporary closures of any public roads; h) Pre and post construction pavement condition surveys; i) Changes required to the existing landside vehicle and pedestrian access to facilitate construction activity. Techniques employed to manage staff vehicle movements safely and efficiently to and from the construction site; j) Monitoring and reporting; k) Emergency response and incident management; and l) The identification of staff and contractors' responsibilities.
35	The CTMP shall be implemented and maintained throughout the construction phase of the Project and following construction as necessary, and updated if required. Where an alternative haulage route is proposed to be used for a period of more than 24 hours, an updated CTMP shall be provided for certification if the alternative arrangements are not already certified as part of the initial CTMP.
36	The Consent Holder shall use best endeavours to ensure that Moa Point Road remains fully operational for both vehicular and pedestrian use throughout the Construction Phase, and any necessary modification or upgrades are implemented prior to the completion of construction of the Project. The Plans specifying these modifications and/or upgrades shall be submitted as part of the CTMP. Where any temporary closures are required, the Consent Holder shall be required to notify the roading authority and the CLG and implement any measures specified in the CTMP for managing traffic and pedestrian access during any closures required.
37	a) Prior to the construction of the Project, the Consent Holder shall undertake a pre-construction condition survey of the carriageway/s along those roads affected by the Project and submit a copy to the relevant road controlling authority. The condition survey shall consist of a photographic or video record of the carriageway, and shall include roughness, rutting defects and surface condition. b) As soon as practicable following completion of construction of the Project, the Consent Holder shall, at its expense, conduct a post-construction condition survey of the road network affected by the Project. c) The results of the pre and post construction surveys will be compared and, where necessary, the Consent Holder shall, at its expense, arrange for repair of any damage to the carriageways and footpaths (and associated road components), where that damage has resulted from the impacts of construction of the Project.

<table>
<tr><td>38</td><td>
a) The Consent Holder shall carry out regular inspections of the road network affected by the Project during construction to ensure that all potholes and other damage resulting from the construction of the Project are identified as soon as practicable.
b) The Consent Holder shall contribute fair and reasonable costs towards repair and maintenance of potholes and other damage resulting from the construction of the Project.
c) Prior to construction commencing, the Consent Holder will agree with the relevant road controlling authority the nature, extent and frequency of the inspections.
</td></tr>
<tr><td>39</td><td>
a) Heavy vehicle movements for the transportation of construction material to and from the Site shall be restricted to the following transportation periods:
(i) Monday to Friday 9:30am to 2:30pm along the route shown in Figure 1-2 (Page 5 of the AEE dated 28 April 2016 submitted with the application); and,
(ii) Monday to Friday 10pm – 6am along the route shown in Figure 1-3 (Page 6 of the AEE dated 28 April 2016 submitted with the application).
b) The number of heavy vehicle movements along the routes shown in Figures 1-2 and 1-3 shall not exceed the following:
<table>
<tr><th>One hour period starting</th><th>Day Time Route (Figure 1-2)</th><th>Nigh Time Route (Figure 1-3)</th></tr>
<tr><td>9.30am</td><td>15</td><td></td></tr>
<tr><td>10am</td><td>30</td><td></td></tr>
<tr><td>11am</td><td>30</td><td></td></tr>
<tr><td>12 noon</td><td>30</td><td></td></tr>
<tr><td>1pm</td><td>30</td><td></td></tr>
<tr><td>2pm – 2.30pm</td><td>15</td><td></td></tr>
<tr><td>10pm</td><td></td><td>30</td></tr>
<tr><td>11pm</td><td></td><td>25</td></tr>
<tr><td>12am</td><td></td><td>25</td></tr>
<tr><td>1am</td><td></td><td>15</td></tr>
<tr><td>2am</td><td></td><td>5</td></tr>
<tr><td>3am</td><td></td><td>10</td></tr>
<tr><td>4am</td><td></td><td>20</td></tr>
<tr><td>5am</td><td></td><td>30</td></tr>
</table>
</td></tr>
<tr><td></td><td>Construction Air Quality Management</td></tr>
<tr><td>40</td><td>
Pre-construction monitoring
The consent holder shall carry out monitoring for at least one year prior to commencement of construction for the following parameters:
• Total suspended particulate (TSP)
• PM_{10}
• Meteorology (rainfall, temperature, wind speed and wind direction) and
• Nitrogen dioxide

Continuous meteorological and TSP monitoring shall be carried out at a location that is, as far as practicable, representative of background local weather conditions for future comparison with air quality at the construction site.
</td></tr>
</table>

	Continuous monitoring for PM_{10} and passive monitoring for nitrogen dioxide shall be carried out at Moa Point at a location that is, as far as practicable, representative of resident's exposure to background air quality prior to construction. A summary of the results of pre-construction monitoring shall be provided to the Manager, GWRC and the Compliance Monitoring Officer, WCC within one month of the monitoring being completed.
41	At the completion of pre-construction monitoring, the consent holder shall review the trigger levels in condition 45 in consultation with the Community Liaison Group and amend the trigger levels if necessary to ensure they are not under, or over, conservative for the existing environment. The consent holder shall provide the Manager, GWRC and Compliance Monitoring Officer WCC with a copy of the review document within 10 working days of the review being completed. *Advice Note: Should it be necessary to amend the trigger levels in condition 45, a change of conditions application under s127 of the Resource Management Act will be required.*
42	**Discharges beyond the site boundary** There shall be no discharges to air that, in the opinion of an enforcement officer of the GWRC are noxious, dangerous, objectionable or offensive discharges at or beyond the boundary of the property from which the consent holder operates. These discharges include dust and other particulate matter. *Advice Note: The property from which the consent holder operates has been identified as all construction zones as shown on Figure 1-6 in Volume 2A of the resource consent application being the reclamation works within the coastal marine area, all works within Part Lot 1 DP 78304 (construction and stockpile compound) and Section 1 SO 342914 (Moa Point Road), the Moa Point Beach Remediation Area and the Landscape/amenity Improvements Area.*
43	**Air quality monitoring during construction** The consent holder shall carry out monitoring during construction of: • Total suspended particulate (TSP) • PM_{10} • Meteorology (rainfall, temperature, wind speed and wind direction) • Nitrogen dioxide • Visible dust The consent holder shall undertake continuous TSP and meteorological monitoring for the duration of the Construction Phase at a location that is, as far as practicable, representative of local weather conditions across the construction site. Continuous monitoring for PM_{10} and passive sampling for nitrogen dioxide shall be carried out at Moa Point at a location that is, as far as practicable, representative of resident's potential exposure to discharges to air during the Construction Phase for the duration of the works. Passive sampling of nitrogen dioxide shall be carried out at the following three locations (in addition to Moa Point) along the proposed heavy traffic route for the duration of the construction phase: • Onepu Road; • Calabar Road; and • Lyall Parade

44

Exceedance of management trigger levels

In the event that monitoring in accordance with Condition 43 shows any particulate trigger level in Table 1 of condition 45 for visible dust, TSP or PM_{10} is exceeded at the monitoring locations set out in the approved Construction Air Quality Management Plan, the consent holder shall investigate the cause as a priority and, immediately initiate dust mitigation measures to reduce ambient levels of particulate.

45

Exceedance of compliance trigger levels

In the event that monitoring in accordance with condition 43 shows the one-hour PM_{10} or TSP trigger levels in Table 1 is exceeded for more than 1 hour (i.e. two consecutive hours or more above 150 µg/m^3 for PM_{10} or above 200 µg/m^3 for TSP), the consent holder shall:

- Immediately cease all activities that generate fugitive discharges of dust to air; and
- Notify the Manager, GWRC within 24 hours of the exceedance being recorded; and
- Investigate the cause of the exceedance and initiate mitigation measures to reduce ambient levels of particulate to prevent re-occurrence

Construction may recommence when the one-hour PM_{10} and TSP trigger levels in Table 1 are no longer exceeded at the monitoring sites.

Table 1: Trigger levels for TSP and PM_{10}

Parameter	Averaging period	Trigger Level
Visible dust	Instantaneous	Visible dust crossing the boundary
TSP	5 min 1 hour	250 µg/m^3 200 µg/m^3
PM_{10}	1 hour	150 µg/m^3
Wind warning	1 minute	10 m/s (during two consecutive 10-minute periods)
Rain warning	12 hours	There has been no rain in the previous 12 hours

46

Siting and methods for air quality monitoring equipment

All air quality monitoring shall be sited, as far as practicable, in accordance with AS 3580.1.1:2007 *Methods for sampling and analysis of ambient air – Guide to siting air monitoring equipment.*

All meteorological monitoring shall be sited, as far as practicable, in accordance with AS 3580.14.2014 *Methods for sampling and analysis of ambient air – Meteorological monitoring for ambient air quality monitoring applications.*

Passive monitoring of nitrogen dioxide shall be carried out in accordance with the methods described in section 3 of *Ambient air quality (nitrogen dioxide) monitoring network annual report 2007-14, New Zealand Transport Agency (2016).*

Continuous monitoring of PM10 shall be carried out in accordance with Schedule 2 of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004.

47

On-line provision of air quality monitoring data

The consent holder shall make continuous monitoring data collected in accordance with condition 43 available on the Project website in real-time in a format similar to

	Wellington Regional Councils public air quality monitoring.
	Minimising dust discharges from vehicles
48	The speed limit of all vehicles travelling on unsealed areas or access roads shall be limited to a maximum of 10km/hr.
49	The consent holder shall cover all vehicle loads that may generate fugitive dust discharges to air to minimise the generation of fugitive dust. This includes all material being transported to and from the construction site.
50	The consent holder shall ensure that water is available on the construction site for dust suppression for the duration of the Construction Phase. The consent holder shall employ dust suppression as required to minimise dust emissions from unsealed areas and other sources of fugitive discharges of dust to air.
51	The consent holder shall ensure that the deposition of earth, mud, dirt or other debris on any public road or footpath resulting from the transport of materials and construction related activities is avoided.
52	The consent holder shall install, maintain and use a wheel wash to prevent the transportation of material onto sealed surfaces where the material can become a source of dust emissions.
53	The consent holder shall ensure that construction is carried out, as far as practicable, in accordance with good practice mitigation of fugitive discharges of dust to air as outlined in the most up to date version of the Ministry for the Environment *Good Practice Guide for assessment and managing the environmental effects of dust emissions.* This shall include: • Locating stockpiles and sources of fugitive discharges of dust to air outside the operational flight envelope and so as to maximise separation distances to sensitive receptors, particularly the Moa Point residents. • Minimising the number, size and height and slope of stockpiles. • Limiting the drop height from conveyors, loaders and other equipment transferring material that may generate fugitive discharges of dust to air. • The use of wind breaks and/or bunding for stockpiles. • Re-vegetation of exposed surfaces, including inactive stockpiles. • Regular sweeping of sealed surfaces. • Swift clean-up of spillage around transfer points.
54	**Minimising vehicle emissions** The consent holder shall ensure that construction vehicles are serviced, maintained and operated to minimise discharges to air as follows: • Appropriate and regular engine maintenance to ensure there is no visible emissions to air for more than 10 seconds; • Ensuring that vehicles are not overloaded.
55	**Construction Air Quality Management Plan** In accordance with condition 18 the Consent Holder shall prepare a **Construction Air Quality Management Plan (CAQMP)**. The purpose of the CAQMP shall be to establish procedures and methods to ensure compliance with the conditions of this consent with respect to off-site discharges, monitoring and responding to any complaints and events.
56	The CAQMP shall, as a minimum, set out its objectives and intended outcome and address the following: a) A map clearing showing the boundary of the site for the purposes of assessment compliance with condition 42. b) The location of the Total Suspended Particulate (TSP) and PM_{10} monitoring site(s) between the beachfront area and the long term car park for assessing compliance with the management and compliance trigger levels and the specific methods for monitoring and recording monitoring data; c) Visual monitoring of dust emissions;

	d) Methods to be used to limit dust emissions, including: (i) Guidelines for the operation of construction vehicles, including speed restrictions of 10km/hr for vehicles on unsealed construction haul roads; (ii) Guidelines for the placement of fill material; (iii) Guidelines for the avoidance of dust tracking on adjacent roads; (iv) Guidelines for the establishment and/or use of stockpiles, including dust control; and (v) Guidelines for the control of dust on operational areas of the site. e) Criteria for implementation of dust control on the site, including wind speed triggers; f) Continuous monitoring of TSP concentrations, PM_{10} and meteorology; g) Passive monitoring of nitrogen dioxide; h) Monitoring and recording of construction vehicle maintenance; i) Process equipment inspection, maintenance, monitoring and recording; j) The identification of staff and contractors' responsibilities and training procedures. k) A definition of what constitutes a 'minor change' to the CAQMP
57	The CAQMP shall be implemented and maintained throughout the construction phase of the Project and following construction as necessary, and updated if required.
58	The visual dust monitoring required in accordance with the CAQMP shall comprise: a) A daily review of: (i) weather forecasts; and, (ii) weather conditions observed and data outputs from weather stations; for the purpose of planning an appropriate daily work schedule and associated dust management responses; b) A daily inspection of: (i) stockpiles to ensure they are not being subjected to wind erosion; (ii) land immediately adjacent to the construction site, construction exits and the adjoining roads for the presence of dust deposition; (iii) exposed construction surfaces for dampness to ensure exposed un-stabilised areas are minimised; and (iv) dust generating activities to ensure dust emissions are effectively controlled. c) Weekly inspections of: (i) Watering systems to ensure equipment is maintained and functioning effectively to dampen exposed areas.
	Construction Noise and Vibration Management
59	In accordance with condition 18, the Consent Holder shall prepare a **Construction Noise Vibration Management Plan (CNVMP)**. The purpose of the CNVMP shall be to provide a framework to manage construction noise/vibration appropriately by outlining the methods, procedures and standards for mitigating the effects of noise and vibration during construction of the Project.
60	The CNVMP shall, as a minimum, set out its objectives and intended outcome and address the following: a) Description of the work, anticipated equipment/processes and their scheduled durations; b) Hours of operation, including times and days when construction activities causing noise and/or vibration would occur including a noise schedule and haulage exclusion periods; c) The methodology to achieve construction noise (in accordance with condition 62) and vibration criteria in accordance with condition 64 requirements;

<table>
<tr><td></td><td>d) Identification of affected houses and other sensitive locations where noise and vibration criteria apply and where exceedances of the standards may occur;
e) Construction noise control measures;
f) Monitoring and reporting;
g) Emergency response and incident management; and
h) The identification of staff and contractors' responsibilities.</td></tr>
<tr><td>61</td><td>The CNVMP shall be implemented and maintained throughout the construction phase of the Project and following construction as necessary, and updated if required.</td></tr>
<tr><td>62</td><td>a) Construction noise shall comply, with the following criteria in accordance with NZS6803:1999:

Residential receivers
<table>
<tr><th>Time of week</th><th>Time period</th><th>dB LAeq(T)</th><th>dB LAmax</th></tr>
<tr><td rowspan="4">Weekdays</td><td>0630-0730</td><td>55</td><td>75</td></tr>
<tr><td>0730-1800</td><td>70</td><td>85</td></tr>
<tr><td>1800-2000</td><td>65</td><td>80</td></tr>
<tr><td>2000-0630</td><td>45</td><td>75</td></tr>
<tr><td rowspan="4">Saturdays</td><td>0630-0730</td><td>45</td><td>75</td></tr>
<tr><td>0730-1800</td><td>70</td><td>85</td></tr>
<tr><td>1800-2000</td><td>45</td><td>75</td></tr>
<tr><td>2000-0630</td><td>45</td><td>75</td></tr>
<tr><td rowspan="4">Sundays and public holidays</td><td>0630-0730</td><td>45</td><td>75</td></tr>
<tr><td>0730-1800</td><td>55</td><td>85</td></tr>
<tr><td>1800-2000</td><td>45</td><td>75</td></tr>
<tr><td>2000-0630</td><td>45</td><td>75</td></tr>
</table>
Industrial and commercial receivers other than on Wellington International Airport owned land
<table>
<tr><td>Time period</td><td>dB LAeq</td></tr>
<tr><td>0730-1800</td><td>70</td></tr>
<tr><td>1800-0730</td><td>75</td></tr>
</table>
b) Construction noise is assessed and managed in accordance with NZS6803:1999 Acoustics – Construction Noise.
c) Construction noise at Lyall Bay beach shall not exceed 70 dB L_{Aeq} and 85 dB L_{Amax} (0730 to 2000hrs).</td></tr>
<tr><td>63</td><td>a) Prior to the works/activity taking place, the Consent Holder shall prepare a separate Noise Schedule. The Noise Schedule shall describe site specific noise management and mitigation measures required to address the specific circumstances and environmental conditions of the affected area, which shall be in addition to the general mitigation measures noted in the CNVMP. The Noise Schedule shall contain the following information:
a) The activity and location of proposed works;
b) The timing and duration of the activity;
c) The equipment to be used;
d) Predicted noise levels;
e) Identified dwellings at which compliance cannot be achieved with</td></tr>
</table>

<table>
<tr><td></td><td>conventional mitigation measures;
f) How affected persons are to be consulted; and
g) Alternative management and mitigation measures proposed.
b) The Noise Schedule shall be submitted to the Compliance Monitoring Officer WCC and Manager GWRC for certification at least ten working days prior to the relevant construction activity commencing.
c) The Consent Holder shall implement the measures set out in the Schedule throughout the relevant construction period referred to in the Noise Schedule.</td></tr>
<tr><td>64</td><td>Construction vibration received by any building shall be measured and assessed in accordance with the German Standard DIN 4150-3:1999 “Structural vibration – Part 3: Effects of vibration on structures”, and shall comply with the criteria set out as follows:
<table>
<tr><th rowspan="3">Type of structure</th><th colspan="4">Short-term vibration</th><th>Long-term vibration</th></tr>
<tr><th colspan="3">PPV at the foundation at a frequency of</th><th rowspan="2">PPV at horizontal plane of highest floor (mm/s)</th><th rowspan="2">PPV at horizontal plane of highest floor (mm/s)</th></tr>
<tr><th>1 – 10Hz (mm/s)</th><th>1 – 50Hz (mm/s)</th><th>50 – 100Hz (mm/s)</th></tr>
<tr><td>Commercial/ Industrial</td><td>20</td><td>20 – 40</td><td>40 – 50</td><td>40</td><td>10</td></tr>
<tr><td>Residential/ School</td><td>5</td><td>5 – 15</td><td>15 – 20</td><td>15</td><td>5</td></tr>
<tr><td>Historic or sensitive structures</td><td>5</td><td>3 – 8</td><td>8 – 10</td><td>8</td><td>2.5</td></tr>
</table>

* Further work is required to determine the appropriateness of the limits in this condition; monitoring, recording and reporting requirements and whether vibration limits in the CMA are required.</td></tr>
<tr><td>65</td><td>The detailed design of any structural construction noise or vibration mitigation measures (e.g. temporary construction noise barriers) as identified in the certified CNVMP, shall be undertaken by a suitably qualified acoustics specialist, and shall be implemented prior to commencement of the Construction Phase(s) that necessitates that particular mitigation measure.</td></tr>
<tr><td>66</td><td>For residential dwellings located along Moa Point Road, Kekerenga Street and Ahuriri Street and not owned by the Consent Holder, identified on Figure X [to be developed], methods to be adopted within the CNVMP to manage construction noise and vibration shall be formulated by the Consent Holder, having first consulted with the owners and occupiers of these properties. The mitigation could include, but not be limited to:
• Temporary relocation during night time construction work
• Acoustic insulation and mechanical ventilation within the affected dwelling to meet an internal noise level of 30 dB $L_{Aeq(15\ Mins)}$ and 60 dB L_{Amax}.
Noise predictions shall be provided as part of the CNVMP that identifies the expected noise level at all dwellings where the noise limits in condition 45 above are to be exceeded. The actual construction noise levels shall not exceed the</td></tr>
</table>

	predicted levels. The mitigation shall be undertaken by the Consent Holder in agreement with the owner and/or occupiers of the dwelling prior to the commencement of construction of the reclamation.
67	The Consent Holder shall ensure that any pot-holes or pavement discontinuities along the carriageway of the haulage route, identified in Figure X [to be developed], near residences, are repaired prior to the use of the road by heavy construction traffic and maintained throughout the heavy traffic usage period. These shall be identified as part of the CTMP.
	Network Utilities
68	**Network Utilities Management Plan** In accordance with Condition 18 and condition 71, the Consent Holder shall prepare a **Network Utilities Management Plan (NUMP)**. The purpose of the NUMP shall be to ensure that enabling work, and design and construction of the Project adequately takes account of (and includes measures to address), the safety, integrity, protection (or, where necessary, relocation of) existing network utilities. The NUMP shall address the following network utilities: • Infrastructure in relation to the Moa Point Waste Water Treatment Plant (WWTP) including the main outfall pipeline, the sludge pipeline and the interceptor main; • Telecom duct; • 11,000-V cable; • 400-V cable; • Stormwater Line; • Dual 180mm concrete encased steel sewer line rising main; • 20mm water main; • Gas Line; and • Any other network utilities located within the area of the works or along any haulage routes where such infrastructure may be affected.
69	The NUMP shall be prepared in consultation with the relevant infrastructure providers who have existing network utilities that are directly affected by the Project. The NUMP shall as a minimum, set out its objectives and intended outcomes and address the following: a) Measures to be used to accurately identify the location of existing network utilities; b) Measures for the protection, relocation and/or reinstatement of existing network utilities; c) With respect to the Moa Point WWTP infrastructure: • Details of the options considered to avoid, remedy or mitigate adverse effects arising from the construction of the project • The detailed design of the agreed option for the protection of the infrastructure including details of the consultation undertaken with Wellington City Council, Wellington Water and VEOLIA; • A detailed construction methodology for the protection structure including timeframes; • Details of measures to ensure the risk of damage to the infrastructure during work are mitigated; • Details of contingency plans should any damage occur to the infrastructure. d) Measures to ensure the continued operation and supply of infrastructure services; e) Measures to provide for the safe operation of plant and equipment, and the

	safety of workers, in proximity to live existing network utilities; f) Measures to manage potential induction hazards to existing network utilities; g) Measures to communicate with the relevant utility service providers during the Construction Phase; h) Earthwork management (including depth and extent of earthwork), for earthwork in close proximity to existing network utilities; i) Vibration management for work in close proximity to existing network utilities; and j) Emergency management procedures in the event of any emergency involving existing network utilities. k) A definition of what constitutes a 'minor change' to the NUMP. *Note: Should the preferred option for the protection of the Moa Point WWTP infrastructure involve the relocation of the infrastructure, an application for separate resource consents will be required.*
70	The NUMP shall be implemented and maintained throughout the construction phase of the Project and following construction as necessary, and updated if required. The measures to appropriately avoid, remedy or mitigate adverse effects on the Moa Point WWTP infrastructure shall be implemented in consultation with Wellington City Council, Wellington Water and Veolia.
71	**Methodology for developing a NUMP in relation to Moa Point WWTP infrastructure** Prior to preparing a Network Utilities Management Plan (NUMP), the Consent Holder shall prepare a report in consultation with Wellington City Council which sets out the methodology for the development of the NUMP with respect to the Moa Point Wastewater Treatment Plant Infrastructure (the Main Outfall Pipeline, Sludge Pipeline and interceptor main). The report shall include, but not be limited to: a) The process for engaging and consulting the asset owner, its managers and operators; b) Criteria for an acceptable solution, including timing for implementing any mitigation agreed, operational efficiency, structural integrity, maintainability, access for repairs, guarantees and warranties for construction; c) The process for agreeing independent technical experts who evaluate and design mitigation options; and d) Mediation steps for resolving differences in technical evaluations. The report and a record of consultation with Wellington City Council on the report shall be provided to the Manager, GWRC within 10 working days of its completion.
	Coastal Management
72	The Consent Holder shall notify the Manager GWRC in writing within 10 working days of the completion of each stage of ground-treatment works, reclamation, structures and revetments within the CMA. *Advice note: Notifications must be sent to notifications@gw.govt.nz. Please include consent reference WGN160274.*
73	The Consent Holder shall supply to the Manager GWRC and the LINZ Hydrographic Services Office and LINZ Topographic Services Office (Chief Hydrographer, National Topo/Hydro Authority, Land Information New Zealand, Private Box PO Box 5501, Wellington 6145), a complete set of as built plans, final topographic and bathymetric data, and appropriate certification confirming that the new reclamation, associated structures, and revetment works have been built in accordance with sound engineering practice, within 60 working days of the

	completion of the works associated with the reclamation portion of the Project.
74	The Consent Holder shall maintain the construction site in good order and shall, as far as practicable, remedy all damage and disturbance caused by plant, vehicles and equipment to the foreshore and Open Space B land during construction, to the satisfaction of the Manager GWRC and Compliance Monitoring Officer WCC.
75	The Consent Holder shall ensure the removal of all equipment, erosion and sediment control measures, surplus soil, sediment and construction materials from the CMA within 30 working days following the completion of the construction works.
76	All imported fill material to be used in the reclamations, rock dykes, groynes and temporary fill/surcharge shall be in accordance with the Ministry for the Environment “cleanfill” definition, as detailed in Publication ME418 “A Guide to the Management of Cleanfills, 2002” or subsequent updates. Details of how the consent holder will meet this condition using previous contaminant testing, history of the source location and a testing regime are required to be set out in the Construction Management Plan.
77	The consent holder shall ensure that any material sourced from the Wellington Harbour Deepening Project to be used as fill for the reclamation is limited to material from the ‘Harbour Entrance Area’ as defined in the report titled *Draft marine ecological assessment for Wellington harbour shipping channel deepening*, Tonkin and Taylor (May 2016).
78	The Consent Holder shall maintain a log recording the source of fill material imported onto each reclamation or temporary and permanent occupation site. This log shall be made available to the Manager GWRC for inspection on request.
79	The Consent Holder shall undertake a survey of sea bed morphology in the whole of Lyall Bay two years following the completion of the SWFS in a manner that is comparable to surveys required by conditions 94 and 99. A hydrographic survey report shall be completed to compare the survey results with the Mackay & Mitchell, 2014 bathymetric survey referenced in Technical Report 17, any other relevant surveys and those required by conditions 94 and 99 to ascertain any anomalous changes in seabed heights or accretion/deposition patterns post construction of the proposed runway extension and SWFS. The report shall identify remedial action or mitigation that is required to address any adverse effects identified to comply with conditions 80(a) and 93(f). A copy of the survey report shall be supplied to the Manager GWRC within six months of the completion of the survey.
80	The structures authorised by this consent shall remain the responsibility of the consent holder and shall be maintained so that: a) Any erosion of the coastal marine area that is attributable to the structures and works carried out as part of this permit is repaired by the consent holder; b) The integrity of the structures is maintained and no materials are dumped or stored on the structures c) The structures do not pose a hazard to navigation or public safety The consent holder shall undertake maintenance to the satisfaction of the Manager GWRC where a breach of this condition is determined. *Note: Any maintenance works outside of the scope of the application, Maintenance Management Plan or permitted rules of the regional plans will require a separate resource consent.*
	Erosion and Sediment Control Plan and Monitoring
81	**Erosion and Sediment Control Plan** In accordance with condition 18, the Consent Holder shall prepare an **Erosion and Sediment Control Plan (ESCP)**. The purpose of the ESCP is to describe the methods and practices to be implemented to ensure the effects of sediment

	generated from construction practices associated with the Project on the Lyall Bay coastal environment (including Moa Point embayment) will be appropriately managed. The ESCP shall, as a minimum, be prepared in accordance with the *Erosion and Sediment Control Guidelines for the Wellington Region* (September 2002), set out its objectives and intended outcomes and address the following: a) The identification of appropriately qualified and experienced staff to manage environmental issues associated with sedimentation on-site; b) The identification of staff who have clearly defined roles and responsibilities to monitor compliance with the limits set by these conditions and the requirements of the ESCP and any relevant conditions; c) Provision to ensure effective erosion and sediment control measures are installed prior to and during all construction work, within and adjacent to the coastal marine area; d) The design criteria and dimensions of all erosion and sediment control measures for all works (above and below mean high water spring) to ensure that they meet the *Erosion and Sediment Control Guidelines for the Wellington Region* (September 2002). Erosion and sediment control measures within the reclamation area are to include floating silt curtains, a weir/decant system using floating decant T-bars which include shutoff valves so discharges can be stopped and floating booms constructed from non-perforated nova-coil strung across the impounded water. e) Details of how progressive stabilisation will be achieved and measures to reduce wind and wave action within the impounded water of the reclamation. f) Details of the management triggers for turbidity and visual clarity that will be used to provide early warning that the quality of the discharge to the coastal marine area from discharges is reducing and on-site investigations are required; g) Details of how the rate of sediment discharge to the coastal marine area of 2kg/s at any time will be achieved. h) Details of control and compliance monitoring in accordance with condition 83 including the number and location of monitoring sites, data collection, assessment and recording procedures for assessment compliance with the management triggers and compliance limits; i) Details of the monitoring methodology that will be employed to confirm sediment control devices meet the requirements of the ESCP and any relevant conditions j) Details of how turbidity, total suspended solids and clarity (as transmissivity) will be calibrated for fill from each fill source prior to use of fill from that source, how this will be implemented on site and the results provided to GWRC; k) Procedures for measuring the rate of discharge (as TSS concentration times flow rate) when the management trigger for TSS and/or visual clarity is exceeded. l) Details on site access locations and sediment and dust controls m) The responsibilities, procedures and response actions required to ensure that the discharge is ceased should the receiving-water turbidity limits set out in condition 85 (below) be exceeded; n) The actions that will be undertaken for sediment control during extreme weather and/or emergency situations; and o) Methods and procedures to be undertaken for decommissioning the erosion and sediment control measures. p) A definition of what would constitute a ‘minor change’ to the ESCP.

82	The ESCP shall be implemented and maintained throughout the construction phase of the Project and following construction as necessary, and updated if required.
83	**Monitoring at the reasonable mixing zone boundary** As part of the ESCP the Consent Holder shall confirm the location of the compliance and control turbidity and visual clarity monitoring sites. Monitoring sites shall be established such that turbidity and visual clarity monitoring is undertaken at a depth of 1.5 m.[1] At least three compliance monitoring sites shall be located at the outer edge of the near-field zone of reasonable mixing, which shall be 150m from each discharge point in the rock-dyke. At least five control sites shall be located within Lyall Bay[2] and be representative of existing ambient conditions and selected based on the following criteria: a) Water depth and wave heights are similar to the compliance sites. b) The sites shall be located away from existing storm water discharge outlets and other land based discharge points to minimise the near-field interference on ambient turbidity within Lyall Bay. The location of the compliance and ambient monitoring sites shall be shown on a map attached to the ESCP. Monitoring shall be undertaken at the compliance sites and the ambient sites. This monitoring shall include: 1. Continuous (telemetered) turbidity sensors and loggers shall be installed, operated and maintained. 2. Continuous (telemetered) visual clarity (as transmissivity) sensors and loggers shall be installed, operated and maintained, 3. The logged data shall be processed and assessed by the Consent Holder on a daily (24-hour) basis. 4. Data processing to extract a 48-hour rolling median, replacing the earliest 24-hour data record with the latest 24-hour data. Full records of data and data processing shall be kept by the consent holder and provided to GWRC in the six monthly monitoring reports or on request.
84	**Exceedance of management triggers** In the event that monitoring undertaken in accordance with condition 83, identifies that either the turbidity or visual clarity management triggers set out in the ESCP have been exceeded at the boundary of the 150m reasonable mixing zone, the consent holder shall undertake the following: a) Immediately undertake a full audit of all erosion and sediment control measures within the construction area, including discharge or seabed disturbance locations, discharge rates and discharge methods; b) Monitor the rate of discharge as TSS concentration times flow; c) Remedy any causes to these measures that may have contributed to the exceedance, as soon as practicable and record what remedial measures were undertaken; d) Assemble information and observations of wave, tide and weather (rainfall, wind) conditions over the previous 48-hours as a background to possible alternative or contributing causes of the exceedance. e) Record details of the exceedance circumstances required by a) – d) above and make this information available to any enforcement officer from the Wellington Regional Council on request.
85	**Compliance limits**

[1] near-surface, but minimising sensor interference with air-bubbles entrained by wave activity.

[2] north of a line between the narrow isthmus of Hue te Taka Peninsula and Waitaha Cove.

	In accordance with the ESCP, the following turbidity and visual clarity compliance limits shall be adhered to at the boundary of the 150 reasonable mixing zone by the Consent Holder at all times the Construction Phase: a) When the sensor-calibrated suspended sediment concentration at any of the control sites, using a 48-hour rolling median, is less than 15 mg/L then the following shall not be exceeded: • The suspended sediment concentration at any of the compliance monitoring sites shall not exceed 25 mg/L • A reduction in visual clarity by more than 50% of background clarity as measured at the control sites b) When sensor-calibrated suspended sediment concentration at any of the control sites is equal or above 15 mg/L using a 48-hour rolling median, then the following shall not be exceeded: • The suspended sediment concentration at any of the compliance sites shall not exceed the ambient concentrations by more than 10 mg/L (ambient plus 10 mg/L) • A reduction in visual clarity by more than 50% of background clarity as measured at the control site.
86	**Exceedance of the compliance limit** In the event that the monitoring undertaken in accordance with condition 83, identifies that any of the turbidity or visual clarity compliance limits in condition 85 have been exceeded, then the Consent Holder shall undertake the following: a) Cease works and all discharges from the site to the CMA immediately; b) Immediately carry out and record in writing a full audit of the condition of all erosion and sediment control measures within the construction area, including discharge or seabed disturbance locations, discharge rates and discharge method (e.g. pipe, weir); c) Remedy any causes to these measures that may have contributed to the exceedance, as soon as practicable and record what remedial measures were undertaken; d) Assemble information and observations of wave, tide and weather (rainfall, wind) conditions over the previous 48-hours as a background to possible alternative or contributing causes of the exceedance; e) Notify the Manager at GWRC within one working day of the exceedance, providing details of the exceedance circumstances, and record what measures were undertaken and what actions will be taken, including timeframes, to avoid future exceedances; Works on site and discharges to the coastal marine area cannot recommence until the full audit required by b) above is complete and monitoring in accordance with condition 83 shows that turbidity and visual clarity at all compliance monitoring sites are below the compliance limits in condition 85. *Advice note: Compliance with this condition does not preclude GWRC investigating non-compliance with condition 85 and/or taking enforcement action.*
87	**Chemical treatment Plan** In accordance with condition 18 the consent holder shall prepare a **Chemical Treatment Management Plan** (CTMP). The purpose of the CTMP shall be to establish procedures for the chemical treatment of sediment laden water prior to discharge. The CTP shall include as a minimum: a) Confirmation of the flocculant or other treatment to be used; b) Confirmation of the method of flocculation or other treatment to be used, including any alternatives if that method is found to be ineffective after use on site, including the timeframes for making the change between methods; c) Details of how the flocculation or other treatment dosage will be triggered;

	d) Details of optimum dosage rate calculated from the catchment; e) Details of all monitoring including, management trigger levels, compliance trigger levels and responses; f) Procedures for the storage of water treatment chemicals onsite; g) A spill contingency plan for water treatment chemicals; h) Methods and responsibilities for monitoring and maintenance of the system; i) Identification of a suitably qualified and experienced person and their specific responsibilities for ensuring that the chemical treatment is operating as outlined in the CTP; j) A plan for any decommissioning of treatment facilities; k) Confirmation of the time period for which the CTP will apply and circumstances in which the CTP will be updated; and l) A definition of what constitutes a 'minor change' to the CTP.
	Submerged Wave Focusing Structure
88	**Design of SWFS** In preparation of the SMAMP in accordance with condition 89, further modelling to confirm the final overall shape, size and position of the SWFS shall be undertaken by an appropriately qualified expert(s) to confirm that the location and design of the structure will meet objectives (a) – (i) of Condition 93. This modelling shall incorporate baseline information collected in accordance with condition 94 and include a review of a range of alternative design iterations and predicted swell events/scenarios that could arise as a result of each. The preferred design shall be selected in consultation with the Surf Steering Committee as set out in condition 92 and the reasons for its selection and predicted swell events/scenarios shall be described in the SMAMP.
	Surf Mitigation Adaptive Management Plan
89	At least 6 months prior to commencement of construction of the runway extension the consent holder shall prepare and submit to the Manager GWRC for certification a Surf Mitigation Adaptive Management Plan (SMAMP). The SMAMP shall be prepared by an appropriately qualified expert, following consultation with the Surf Steering Committee set out in condition 92. The purpose of the SMAMP shall be to provide: a) The design of the Submerged Wave Focusing Structure (SWFS) and a description of the key performance design criteria and objectives for the to offset the loss in surfing quality predicted in the middle and western sections of the beach; b) Confirmation of the location of the SWFS; c) Confirmation of the location of the exclusion zone around the SWFS during construction, the length of time the exclusion zone will be in place including measures to ensure restrictions on public access will be minimised (for example restricting construction to working days only), and how the exclusion zone will be policed (e.g. using a physical barrier, signs etc.); d) Details of the methodology and material to be used to construct the SWFS; and e) Monitoring, reporting and maintenance requirements following the construction of the SWFS.
90	The consent holder shall ensure that the SMAMP prepared in accordance with condition 89 includes a detailed description of the methodology and materials that will be used in the construction and maintenance of the SWFS. Information shall include, but is not limited to: a) Confirmation that the material selected to construct the SWFS has proven

	durability in the marine environment; b) Confirmation that the SWFS shall be designed to require minimal repair or maintenance for the life of the structure; c) Provision of a construction methodology that takes into account the local characteristics of the site including sourcing of material, construction plant and machinery operating entirely at sea, construction timeframes, potential risks (i.e. storm events), the need to minimise any adverse effects on public access and recreational users in and around the construction site; d) Detailed design and engineering plans of the SWFS including: (i) Location of the SWFS and exclusion zone backed by a geo referenced aerial photograph. The layout will include as a minimum; exact distance offshore, orientation in relation to shoreline, plan shape, major axis length and minor axis width, indication of batter slopes, location of nearby natural reef features; and typical sections through the SWFS along the major and minor axes sufficient to describe the main elements and significant form variations of the structure. Typical sections will include as a minimum existing seabed levels (relative to AHD), main tidal plane information, design crest heights (relative to AHD), and average properties of structural materials. e) The nature and scope of all inspection and maintenance work for the SWFS including; • The likely frequency of inspections and maintenance; • The likely methodologies for inspections and maintenance; • Measures that will be used to mitigate adverse effects on the environment; • Equipment to be used and how adverse effects on marine operations and navigational safety will be minimised; and • Procedures to notify the public, in particular recreational users, of maintenance activities, hazards and exclusion areas. f) A definition of what constitutes a 'minor change' to the SMAMP. *Advice note: the placement of rock for the SWFS is to be undertaken from machinery operating entirely at sea i.e. there shall be no shore-based activities on Lyall Bay beach associated with the construction.*
91	Once the SMAMP prepared in accordance with condition 89 has been certified by the consent authority, the consent holder shall prepare and submit to the consent authority relevant construction details including but not limited to: • The date works shall commence to construct the SWFS • The current stage of works as per the programme required in accordance with condition 14 • A contact person on site
	Surf steering committee
92	Prior to the preparation of the SMAMP, the consent holder shall establish a Surf Steering Committee that incorporates representation from stakeholder groups including but not limited to Wellington Board Riders Club, and local Surf Lifesaving Clubs. The Committee shall continue to exist for the duration of the consent for the ongoing maintenance of the SWFS. The Committee shall: a) Have input into the detailed design phase of the structure in accordance with condition 88; b) Review baseline monitoring results including those prepared for the SWFS and

	provide feedback; c) Review the draft SMAMP and to provide feedback; d) Review the operational monitoring results and provide feedback; e) Act as a liaison group for WIAL whenever any maintenance work is being carried out by the consent holder that may impact on the surf at Lyall Bay, including 'the Corner' ; f) Act as a liaison group for WIAL as to any emergent swimmer safety issues that arise as a result of the SWFS. The consent holder shall engage and fund the costs of an independent and appropriately qualified and experienced expert to assist the Committee with undertaking its functions as required. Other costs incurred by the Committee in undertaking its functions shall be met by the consent holder. *Advice note: for avoidance of doubt that the Surf Steering Committee is a liaison group between the consent holder and the community and does not have a decision making role.*
	Key performance design criteria and objectives
93	The consent holder shall ensure that the design of the SWFS as described in the SMAMP prepared in accordance with condition 89 achieves the following key performance criteria and objectives: a) That the SWFS shall be designed to meet the following parameters, in a wide representative range of surfable wave conditions (ranging from average to very good quality conditions) when assessed against the baseline information obtained to meet the requirements of conditions 94 and 96: (i) the generation of localised wave focusing across its footprint thereby forming pronounced wave peaks; and (ii) after generation, each wave peak shall propagate into shallower water to form peeling waves suitable for surfing (as opposed to waves tending to close-out), and as far as is practicable, the structure shall be designed to result in surfable rides of at least 50 – 100 metres in length; and (iii) the overall number and distribution of quality surfable rides post the completion of the runway extension shall be either equal to or better than for existing surfing conditions; b) That the SWFS shall not cause an increase in safety risk to swimmers during mild wave and weather conditions; c) That the crest height of the structure shall be low enough to prevent waves breaking on the structure except during rare periods of exceptionally large wave heights; d) That the SWFS is located and designed in such a way so as to have negligible adverse effects on surfability at the surf break known as the Corner; e) That the SWFS shall not pose a safety risk to board riders, or other recreational users within Lyall Bay (other than risks normally associated with surfing and other recreational activities); f) That the SWFS shall not increase coastal erosion or accretion when assessed against the baseline information obtained to meet the requirements of Conditions 94 and 95. g) That the SWFS shall be built in such a way that its structural integrity is not compromised by excessive seabed mobility or localised scour; and h) That the material selection and construction method shall not cause any adverse impacts on significant marine habitat or species. i) The SWFS is constructed to withstand 100 year return period offshore waves (10.5m).

	Baseline monitoring of existing surf conditions
94	Before preparation of the SMAMP in accordance with condition 89, the consent holder shall commission monitoring by an appropriately qualified expert(s) in order to provide additional baseline information which shall include: a) An assessment of detailed wave measurements (length, height, period) at the Lyall Bay entrance, 'The Corner', Middle and Western Beach and the anticipated location of the SWFS. Detailed measurements shall be obtained for a period of not less than six months and where practicable include at least three occurrences of each of the swell and weather scenarios outlined in section 5.3 of the draft SMAMP (i.e. Scenario 1-3 in Technical Report 11); b) Survey sea bed morphology of the whole of Lyall Bay area including at the anticipated location of the SWFS; and c) Five coastal profiles along Lyall Bay to be surveyed every 1-2 months for a full year. d) Bed sediment grab samples are collected between +2m and -5m depths at one metre intervals depth contours for three transects along the beach. e) Undertake surfing amenity modelling as described in Technical Report 11 using the wave, bathymetric data, sediment size and coastal profile information collected in accordance with condition 94 (a) – (d). f) A pre-construction surfing amenity survey.
95	The monitoring of the sea bed morphology required by condition 94(b) shall be undertaken on a quarterly basis for a period of one year in a manner that is comparable to surveys required by conditions 79 and 99. The purpose of this monitoring shall be to assess and quantify seasonal variations in sediment movements within Lyall Bay.
96	The surfing amenity survey required by condition 94(f) shall entail the use of suitable tracking devices fitted to surf boards to assess the distribution and length of surfable wave rides at The Corner, Middle and Western Beaches in Lyall Bay in a range of surf conditions. The study shall involve at least 10 surfers surfing concurrently at agreed locations in Lyall Bay during each event. The survey shall take place over a period of at least three months. *Advice note: the purpose of this survey is ascertain baseline surfing amenity i.e. the number and distribution of quality surfable rides at The Corner, Middle and Western Beaches.*
	Construction of the SWFS
97	The consent holder shall ensure that the SWFS is constructed in accordance with the construction details required by condition 89. Construction shall commence at the same time as or immediately following the placement of rock armouring around the runway extension reclamation (Stage B of the construction). Once commenced, work to complete the construction of the SWFS shall be carried out in a continuous manner as far as practicable so that the SWFS is completed in the shortest timeframe possible but no longer than twelve months from the date of commencement.
98	The consent holder shall notify the Manager, GWRC of the construction completion date of the SWFS within 5 working days of completion. *Advice Note: Notifications must be sent to notifications@gw.govt.nz. Please include consent reference WGN1160274.*
	Post construction performance SWFS monitoring
99	Once the SWFS has been established, the consent holder shall be required to monitor the effects and performance of the SWFS. This monitoring shall commence six months after the construction completion date of the SWFS, The monitoring shall include:

	a) An assessment of detailed wave measurements at the Lyall Bay entrance, 'the Corner' and the location of the SWFS; b) A survey of sea bed morphology of the whole of Lyall Bay area, including at the location of the SWFS in accordance with condition 94(b) and 95; c) Undertake surfing amenity modelling as described in Technical Report 11 using the wave, bathymetric data, sediment size and coastal profile information collected in accordance with condition 94 (a) – (d). d) A surfing amenity survey undertaken in accordance with conditions 94 (f) and 96. The purpose of this monitoring shall be to provide a comparative analysis of the effects of the SWFS on wave quality in order to confirm its success and fulfilment of the key performance criteria and objectives of the SWFS. This monitoring shall also confirm the effects of the structure with respect to sea bed morphology or adverse erosion/accretion, and swimmer and/or recreation safety within the Lyall Bay area.
100	A post construction monitoring report shall be prepared by a suitably qualified and experienced person or persons and be submitted to the Manager GWRC for approval within three months of the completion of survey required by condition 99 (b) (or on an alternative date as otherwise agreed to by the Manager, GWRC). The report shall: • summarise the results of the post construction performance monitoring undertaken in accordance with condition 99; • compared post construction monitoring against baseline information collected in accordance with condition 94 and key performance criteria specified and objectives specified in condition 93; • identify any remedial action or alternative mitigation in the event the SWFS is not meeting the key performance criteria and objectives; • summarise consultation with the Surf Steering Committee (required in accordance with condition 92) on remedial action or alternative mitigation required (if applicable). Any approved remedial action or alternative mitigation shall be completed within six months of the post construction monitoring report (or on an alternative date as otherwise agreed to by the Manager, GWRC). Advice Note: *remedial action or alternative mitigation options may require a separate resource consent.*
101	In the event remedial action or alternative mitigation is required under condition 100 the SMAMP shall be updated to reflect any changes to maintenance and monitoring requirements.
102	In the event remedial action or alternative mitigation is required under condition 100, the Consent Holder shall repeat post-construction monitoring outlined in condition 99 six months after the remedial action or alternative mitigation option is completed and submit a post construction monitoring report in accordance with condition 100. The purpose of this monitoring and report shall be to provide a comparative analysis of the effects of the remedial action or alternative mitigation option on wave quality in order to confirm its success and fulfilment of the key performance criteria and objectives. This monitoring shall also confirm the effects of the structure with respect to sea bed morphology or adverse erosion/accretion, and swimmer and/or recreation safety within the Lyall Bay area. *Advice Note: the intent of this condition is ongoing adaptive management to mitigate any adverse effects on surfing amenity and shoreline morphology.*
103	If analysis of the monitoring undertaken in accordance with condition 99 determines that the SWFS is successful in achieving the objectives of the SMAMP, the consent holder shall be required to repeat the monitoring set out in condition 99 in the following circumstances: • every five years for the duration of the consent; or in circumstances where

	there is clear evidence that the SWFS has been damaged to the extent that it is unlikely to be meeting the parameters set out in condition 93; or • If requested by the Manager, GWRC *Advice note: GWRC will only request additional post construction monitoring in the event there is an observable change in shoreline morphology or surfing amenity that may have resulted from the operation of the SWFS. This matter will be discussed with consent holder.*
104	The Consent Holder shall inspect and assess the structural integrity of the SWFS after any wave event reaching the 10-y return period wave height at Baring Head and take remedial action if necessary. The Consent holder shall provide an inspection report to the Manager, GWRC within 10 days of the inspection. The report shall include but not be limited to: • The extent the rocks comprising the SWFS have been moved by the large waves • Actual or potential effects the damage to SWFS may have on both surfing amenity and erosion at Lyall Bay beach • remedial action and when this work will be undertaken.
	Certification of SWFS maintenance methodology
105	The consent holder shall prepare and submit a maintenance methodology to the Manager, Greater Wellington Regional Council at **least 20 working days** prior to any maintenance works commencing on the SWFS, for authorisation that it is in accordance with the SMAMP and all conditions of this consent. The works shall not commence until the maintenance methodology has been certified by the Manger, GWRC. The maintenance methodology shall include, but not be limited to, the following details: a) Details of the proposed maintenance work including a detailed methodology b) Roles and responsibility of key site personnel b) Identification of experienced person(s) to manage the environmental issues on site c) Details of any public access restrictions, protocols for ensuring the public is aware of any restrictions and what measures will be in place to minimise disruption of public access and use of the coastal marine area d) Proposed hours of maintenance works e) Details of processes/measures to be put in place to prevent the discharge of contaminants (e.g. oil, fuel) to the coastal marine area; and f) Procedures to be undertaken in the event of a discharge/spillage of contaminants (e.g. oil, fuel) to the coastal marine area The works authorised under this consent shall be carried out in accordance with the authorised maintenance methodology. Any amendments to the maintenance methodology shall be to the satisfaction of the Manager, GWRC.
	Ecological Mitigation and Monitoring
106	**Ecological mitigation and monitoring plan** In accordance with condition 18, the Consent Holder shall submit an Ecological Mitigation and Monitoring Plan (EMMP). The purpose of the EMMP shall be to: a) Detail the ecological management programme that will be implemented to appropriately manage impacts on the environment, specifically the coastal marine area and habitats, during and after the construction phase of the Project; b) Document the permanent mitigation measures, including the management and maintenance of ecological mitigation; c) Ensure that mitigation has been successful by establishing post construction

	monitoring and response procedures; and d) The EMMP shall be finalised in consultation with Iwi mana whenua.
107	The objectives of the EMMP shall be to: a) achieve a similar level of habitat and species diversity along the rock dyke post construction of the Project comparative to communities on other reefs in Lyall Bay. b) Improve habitat for penguins, variable oyster catches and reef heron at sites along the Wellington south coast comparative to pre-construction of the project. c) Minimise the risks to wildlife of boat-strike, entanglement and noise from pile-driving. The EMMP shall include, but not be limited to, information required in other conditions of this consent and details of the following: a) The monitoring to be undertaken during construction and post construction as required below; b) A definition of what constitutes a 'minor change' to the EMMP; c) Information on how the following outcomes will be achieved: (i) Habitat creation or enhancement along the rock dyke for selected marine algae and invertebrates, including anemones, chitons, snails, lobsters, adult kina and paua; (ii) A reef-like pathway to encourage recolonisation of the new rock dyke and increased amenity values for fishers and divers by creating artificial reefs in the middle of Moa Point Bay; (iii) Monitoring of cultural health indicators as agreed with Iwi, in order to ensure that any potential adverse effects on cultural values such as mauri, are appropriately measured and managed; (iv) Mitigate the effects of the destruction of rocky reefs and their resident populations within the construction zone, and speed up the repopulation of the rock dyke by: • Field collection of mobile macro-invertebrates from reefs prior to the commencement of construction, and either transferring these species to Hue te Taka Peninsula prior to construction or tagging and transferring to new reef surfaces once construction is completed. Larger macro-invertebrates shall be translocated to Hue te Taka peninsula prior to commencement of construction. • The translocation to the new rock dyke of juvenile paua and kina to provide founder populations to accelerate recolonisation. Details of the source of the transplanted paua and kina and issues of genetic compatibility relating to this are to be provided. • Monitoring of tagged species to determine the effectiveness of field collection and transferring species as described in (iv) above. This monitoring is to be undertaken within three years of the completion of the Construction Phase (in accordance with condition 111). (v) Nesting habitat creation for penguins through a variety of boulder sizes in the rock dyke in order to allow penguins to find caves under rocks and locate ledges with smaller rocks, pebbles and gravel to construct nests; (vi) Methods to determine how shags and other coastal birds will be deterred from roosting on the rock dyke to minimise the need for the consent holder to cull birds; (vii) Methods developed in consultation with Wellington City Council to improve outcomes for penguins, variable oystercatchers and reef herons through: • the provision of nesting boxes at locations near the runway extension; and • undertaking predator control at locations near the runway extension.

	(viii) Methods to determine whether remedial or mitigation measures have been successfully achieved; and (ix) Methods to manage construction activities to minimise the risks to wildlife of boat-strike, entanglement, contaminants and noise from pile-driving, including: • How the release of hydrocarbons into the coastal marine area will be minimised and contingency plans should a spill occur; • How the type and frequency of any marine mammal sighted before, during or after transiting to or from the reclamation site will be recorded; • How the risk of vessel collisions with any marine mammal will be minimised with the aim of zero mortality by: – Adopting best boating guidelines for marine mammals, including speed limits, to further reduce any changes of mortality from vessel strikes – Consider establishing a designated observer on a vessel and maintain a watch for marine mammals during any vessel-based reclamation activities during daylight hours; – Liaison with the Department of Conservation over the project period to help anticipate and mitigate potential seasonal interactions with any whale species sighted. • Minimise the avoidance (attraction) to, or potential for injury of marine mammals from pile-driving activities by: – Adoption of soft-start procedures and consider other noise dampening techniques. – Have trained marine mammal observers on the vessel to maintain a watch prior, during and post any pile driving activities during daylight hours – Consider seasonal restrictions on activities during whale migration periods, when practical and/or between stages of the project • Minimise entanglement and aim for zero mortality by: – Avoid loose rope and/or nets – Minimise potential for loss of rubbish and debris from vessels and activities with proper waste management plans in place – Ensuring the floating silt curtains are correctly installed and regularly maintained so that they are not a hazard to marine mammals
108	The certified EMMP shall be implemented and maintained throughout the Construction Phase of the Project and following construction as necessary, and updated if required.
109	**Design of the rock dyke** The Consent Holder shall ensure that in designing the rock dyke, the following measures are incorporated: a) The addition of roughened/pitted surfaces on 50% of each accropode to increase the range of microhabitats available for colonising marine algae and invertebrates, b) The inclusion of five shallow indented prisms along the arm of each accropode to increase the possibility of at least one forming a rock pool. c) The insertion of one $1m^3$ concrete block, with a truncated conical shaped hole in the top layer of the secondary armour, every 10m around the perimeter of the rock dyke somewhere between mean low spring and mean high spring tide levels.

	d) Accropodes are to incorporate holes of three sizes: small, medium and large. Each 1m^3 of accropode surface shall have a minimum of one hole of each size (i.e. three holes in total).
110	**Pre-construction field collection** Prior to the commencement of construction, the Consent Holder shall undertake field collection and, where practicable, tagging of mobile macro-invertebrates including, but not limited to, paua, kina, large gastropods and starfish from reefs within the coastal marine area within the reclamation area. These macro-invertebrates shall either be translocated to Hue te Taka peninsula or held during the construction period in suitable sea water facilities on land, and transferred back to new reef surfaces once construction is completed. The consent holder shall also remove any rocks from the area that will be disturbed by the proposed works where the unidentified red foliose alga[3] is growing and relocate these to an undisturbed area nearby before works begin.
111	**Reef and benthic environment survey** Within three years following the Construction Phase of the Project, the Consent Holder shall be required to undertake a survey of the reef and benthic environment, including meiofauna, along the rock dyke of the reclamation and other reefs within Lyall Bay. The purpose of this survey shall be to ascertain the level of recolonisation of benthic communities and undertake a comparative analysis of the success, compared to existing reefs in Lyall Bay. The results of this survey shall be submitted to the Manager GWRC within 30 days of the survey being completed.
112	**Biosecurity Management Plan** In accordance with condition 18, the consent holder shall prepare and submit a **Biosecurity Management Plan** (BMP) to prevent the introduction of species that are not native to the Wellington Region. The BMP shall, as a minimum, address the following: a) Compliance of vessels from overseas with the Ministry for Primary Industries' border standards, i.e. the mandatory Import Health Standard for ballast water and the Craft Risk Management Strategy for vessel biofouling; b) A biosecurity risk assessment for all vessels, construction equipment and materials that will come into direct or indirect (e.g. via surface runoff) contact with the marine environment; c) Mitigation measures to address any risks identified.
113	The certified BMP shall be implemented and maintained throughout the Construction Phase of the Project and following construction as necessary, and updated if required.
	Coastal bird flight paths and culling
114	**Coastal Birds Monitoring Plan** In accordance with condition 18, the consent holder shall prepare and submit a **Coastal Birds Monitoring Plan (CBMP).** The objective of the CBMP is to monitor flight paths and the number of coastal birds killed by birdstrike and culled by the consent holder for aircraft safety purposes. The CBMP shall include, but not be limited to: a) Details of pre-construction monitoring, for a period of 1 year, of: • The diversity and abundance of bird species that fly across the runway extension area; and • The number and species type of birds killed through birdstrike. This shall include records of numbers and species kept by pilots and records of numbers and species found dead on the runway; and • The number and species type of birds culled by the consent holder for the

[3] Identified during the baseline survey and reported in Technical Report 18.

	purposes of aircraft safety b) Details of post-construction monitoring, for a minimum period of 3 years, of: • The diversity and abundance of bird species that fly across the runway extension area; and • The number and species type of birds killed through birdstrike. This shall include records of numbers and species kept by pilots and records of numbers and species found dead on the runway; and • The number and species type of birds culled by the consent holder for the purposes of aircraft safety c) Details of what would constitute a significant effect of increased birdstrike and culling on the regional bird population for the species that will be monitored and why. d) Details of annual reporting of a) and b) to Wellington Regional Council.
115	The certified CBMP shall be implemented and maintained during the period specified in the plan and updated if required.
116	**Coastal Birds Monitoring Report** The consent holder shall, following the completion of the monitoring undertaken in accordance with the approved CBMP, engage a suitably qualified and experienced practitioner to prepare a report on the findings of the monitoring. The report shall be submitted to the Manager GWRC for approval within 6 months of completion of the monitoring in accordance with the approved CBMP. The report shall include, but not be limited to: a) An assessment of the diversity and abundance of bird species that fly across the runway extension area pre and post construction; b) An assessment of the number and species of birds killed through bird strike over the monitoring period; c) An assessment of the number and species of birds culled by the consent holder pre and post construction; d) An assessment of the impact of the runway extension of regional bird populations for those species monitored including an assessment of whether any adverse effects are considered to be significant using the criteria set out in the CBMP. e) If the assessment demonstrates that the adverse effects are significant, recommended actions to offset the adverse effects include timeframes for implementation. The applicant shall consider the principles in Schedule G of the Proposed Natural Resources Plan when recommending biodiversity offsets. The consent holder shall implement any offset mitigation in the approved monitoring report by the timeframes set out in the report to the satisfaction of the Manager GWRC.
	Landscape and Urban Design
117	In accordance with condition 18, the Consent Holder shall prepare a Landscape and Urban Design Management Plan (LUDMP).The purpose of the LUDMP is to outline the methods and measures that will be implemented by the Consent Holder to mitigate adverse effects on landscape, visual amenity and natural character that result from the runway extension, at Moa Point Road, Moa Point Beach, Airport Road and Moa Point Road intersection, Lyall Bay promenade and the roadway under the runway extension. The LUDMP shall be prepared by a suitably qualified and experienced urban designer and landscape architect, with input from other experts (e.g. terrestrial/aquatic ecologist) and stakeholders (e.g. the CLG, Wellington City Council, GWRC and Iwi) as appropriate. The LUDMP shall be based on the mitigation principles as outlined in the assessments prepared by Boffa Miskell Ltd and submitted as part of the application, entitled Urban Design, Assessment of Effects on the Environment, dated 11 March 2016, Wellington International Airport Ltd: Airport Runway Extension, Assessment of Landscape and Visual Effects, dated

	22 April 2016, and additional mitigation measures proposed by the applicant in the Moa Point Natural Character Mitigation and Restoration Plan (to be provided at or prior to the hearing). The LUDMP shall include details of design modifications for all new accropodes to be installed as part of this consent to render them more aesthetically fitting so as to create a more natural final landscape. The LUDMP shall include details of the beach re-creation at the junction between the runway extension and Moa Point embayment, measures to avoid, remedy and mitigate adverse effects on the environment when reinstating the beach and undertaking any beach nourishment works, and any ongoing maintenance requirements (e.g. beach nourishment, planting/weeding). The LUDMP shall include the ongoing maintenance requirements associated with the urban design features and how this will be managed in the long term, in agreement with WCC. Works associated with the LUDMP shall be completed by the Consent Holder prior to the completion of Stage K on the construction programme provided in accordance with condition 14. *Advice notes: 1. Any design modification to the accropodes and rock wall need to consider the ecological habitat objectives (refer to conditions 109)* *2. For works occurring on any land not owned by Wellington International Airport Ltd, landowner approval will be required prior to the commencement of Construction. The WCC Parks Sport & Recreation Unit and Transport Asset team should be included as stakeholders to the above condition.*
	Archaeology and Cultural
118	**Archaeological survey** Prior to commencement of Construction, the Consent Holder shall engage a suitably qualified maritime archaeologist to undertake an archaeological survey of the seabed within the reclamation area. The survey shall undertake an investigation, including reference to any relevant maritime documentation or previous seabed investigation works carried out within the area, and undertake additional sea bed investigation as may be necessary. If any archaeology is discovered it is to be appropriately recorded. Prior to undertaking the archaeological seabed survey, the methodology must be provided to and approved by the WCC Compliance Monitoring Officer. *Advice note: Any archaeological process followed will need to abide by any other legal requirements which may also apply, e.g. the Heritage New Zealand Pouhere Taonga Act 2014.*
119	**Accidental discovery protocol** The Consent Holder shall, in consultation with Iwi, and Heritage New Zealand, prepare an Accidental Discovery Protocol to be implemented in the event of accidental discovery of archaeological sites during the construction of the Project. This protocol shall be adhered to at all times during the construction of the Project. The protocol shall include, but not be limited to: a) Training procedures for all contractors regarding the possible presence of cultural or archaeological sites or material, what these sites or material may look like, and the relevant provisions of the Historic Places Act 1993, if any sites or materials are discovered; b) Parties to be notified in the event of an accidental discovery shall include, but need not be limited to Iwi, the Heritage New Zealand, GWRC, WCC, and if koiwi are discovered, the New Zealand Police; c) Procedures to be undertaken in the event of an accidental discovery (these shall include immediate ceasing of all physical work within 50m of the discovery); Procedures to be undertaken before any construction work can recommence within 50m of the discovery. These shall include allowance for appropriate tikanga

	(protocols), recording of sites or materials, recovery of any artefacts, and consulting with Iwi, and the Heritage New Zealand prior to recommencing work.
120	If taonga (Maori artefacts such as carvings, stone adzes, and greenstone objects) are discovered, the procedure set out for the discovery of archaeological sites (above) must be followed, and the following procedure will apply to the taonga themselves: a) The area of the site containing the taonga will be secured in a way that protects the taonga as far as possible from further damage. b) The Consent Holder will then inform Heritage New Zealand and the nominated tangata whenua representative so that the appropriate actions (from cultural and archaeological perspectives) can be determined. c) Work may resume when advised by Heritage New Zealand or the archaeologist. d) The archaeologist will notify the Ministry for Culture and Heritage of the find within 28 days as required under the Protected Objects Act 1975. This can be done through the Auckland War Memorial Museum. e) The Ministry for Culture and Heritage will consult with interested parties to establish claims for ownership. Ownership is ultimately determined by the Māori Land Court. If the taonga requires conservation treatment, the Ministry for Culture and Heritage should be contacted immediately and their staff will make the necessary arrangements.
121	The Consent Holder shall, at least once every three months during the construction of the Project, and annually for a period of five years post construction, offer to meet with Iwi manawhenua and/or its representatives. The purpose of these meetings shall be to keep Iwi up to date on the progress of the Project, identify any issues during construction and to follow up on the results of the ecological mitigation set out in conditions 107 - 110.
	Ongoing maintenance of permanent structures
122	**Maintenance Management Plan** In accordance with condition 18, the Consent Holder shall prepare a Maintenance Management Plan (MMP). The purpose of the MMP shall be to confirm: a) The nature and scope of all inspection and maintenance work for the: • Toe of reclamation; and • The protection structure over the Moa Point Wastewater Treatment Plant Main Outfall Pipeline b) The likely frequency of inspections and maintenance; c) The likely methodologies for inspections and maintenance; d) Measures that will be used to mitigate adverse effects on the environment; and e) Procedures to notify the public, in particular recreational users, of maintenance activities, hazards and exclusion areas. Maintenance activities cannot commence until the Maintenance Management Plan has been certified by the Manager, GWRC. Any changes to the MMP shall be certified by the Manager, GWRC. *Note: Activities not included within the scope of those outlined in the Maintenance Management Plan and not complying with the permitted activity rules of the regional plans will require a separate resource consent.*
123	**Certification of maintenance methodology** The consent holder shall prepare and submit a maintenance methodology to the Manager, Greater Wellington Regional Council at **least 20 working days** prior to any maintenance works commencing, for authorisation that it is in accordance with the Maintenance Management Plan and all conditions of this consent. The works shall not commence until the maintenance methodology has been certified by the Manger, GWRC.

	The maintenance methodology shall include, but not be limited to, the following details: a) Details of the proposed maintenance work including a detailed methodology b) Roles and responsibility of key site personnel b) Identification of experienced person(s) to manage the environmental issues on site c) Details of any public access restrictions, protocols for ensuring the public is aware of any restrictions and what measures will be in place to minimise disruption of public access and use of the coastal marine area d) Proposed hours of maintenance works e) Details of processes/measures to be put in place to prevent the discharge/spillage of contaminants (e.g. oil, hydrocarbons or hydraulic fluid) to the coastal marine area; and f) Procedures to be undertaken in the event of a discharge/spillage of contaminants (e.g. oil, hydrocarbons or hydraulic fluid) to the coastal marine area The works authorised under this consent shall be carried out in accordance with the authorised maintenance methodology. Any amendments to the maintenance methodology shall be to the satisfaction of the Manager, GWRC.
124	**During maintenance work** All works affecting the coastal marine area including tidy up on completion of the works shall be completed to the satisfaction of the Manager, Greater Wellington Regional Council.
125	The consent holder shall take all practicable steps to minimise sediment loading and increased turbidity in the coastal marine area due to the works. These steps shall include, but are not limited to, the following: a) Completing all works in the minimum time practicable b) Ensuring any materials/structures placed in the coastal marine area are clean and free of contaminants prior to placement; and c) Disturbing the minimum area of seabed necessary
126	The consent holder shall take all practicable steps to ensure that no contaminants (including but not limited to oil, petrol, diesel and hydraulic fluid) are be released into water, including: a) No machinery/equipment shall be cleaned, stored or refuelled in the coastal marine area b) Ensuring any materials/structures placed in the coastal marine area are clean and free of contaminants prior to placement; and c) All machinery/equipment shall be well maintained at all times to prevent leakage or spillage of fuels, hydraulic fluids and lubricants into the coastal marine area
127	Upon completion of the works, all materials surplus to the works shall be removed from the coastal marine area and disposed of in an appropriate manner.
	Stormwater Monitoring Plan
128	The consent holder shall engage a suitable qualified and experienced practitioner to prepare a Stormwater Monitoring Plan. The intent of the Stormwater Monitoring Plan is to outline how existing operational stormwater discharges from the Wellington Airport into Lyall Bay will be monitored to inform an assessment of the effects of operational stormwater discharges from the runway extension, the design of stormwater treatment and discharge devices and the development of a stormwater management plan for this area. The Stormwater Monitoring Plan shall be submitted for approval to the Manager, Environmental Regulation, Wellington Regional Council within **1 year of the granted date of this consent**. The Stormwater Monitoring Plan shall include, but not be limited to:

	a) A map showing sampling locations; b) The frequency that monitoring will be undertaken at the sample locations and when samples will be taken; c) Details of the number of samples to be collected to understand the expected concentration range of contaminants in operational stormwater discharges and the potential risks to the receiving environment. Monitoring is to be undertaken for a minimum period of 12 months; d) Who will undertake the sampling and details of best practice monitoring procedures to be employed by the monitoring officer (for example, timing and number of samples, equipment required, sample collection depth, storage of samples prior to analysis) e) Details of where samples will be taken to for analysis and what contaminants the samples will be analysed for; f) A monitoring record template. The approved monitoring plan is to be provided to the monitoring officer who is responsible for undertaking monitoring under this consent.
129	The consent holder shall undertake operational stormwater monitoring in accordance with the monitoring plan approved under condition 128.
130	All sampling techniques employed in respect of the conditions of this consent shall be carried out to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council and undertaken by suitably trained and experienced persons. All analysis undertaken in connection with this consent shall be performed by an International Accreditation New Zealand (IANZ) registered laboratory or otherwise as specifically approved by the Manager, Environmental Regulation, Wellington Regional Council.
	Stormwater monitoring and design solution report
131	The consent holder shall engage a suitably qualified and experienced practitioner to prepare a report on the likely volumes and contaminants levels in the operational stormwater discharges from the runway extension area, risks to the receiving environment and details of the selected stormwater design and treatment devices. The monitoring report shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval within **6 months** of completing the monitoring required by the Stormwater Monitoring Plan approved under condition 128. The monitoring report shall include, but not be limited to: a) Details of the expected volume of discharge from the runway extension area; b) An assessment of the quality of the discharge from the runway extension based on the monitoring results (including total suspended solids, clarity, volatile organic compounds, semi-volatile organic compounds, total petroleum hydrocarbons and metals); c) A description of the expected concentration range of the contaminants (e.g. as a 95% confidence range and median values); d) The detailed design of stormwater solution chosen by the consent holder (i.e. either a new stormwater outlet, an upgrade to existing stormwater outlet(s) or a soakage pit) e) A timeline for the implementation of the stormwater solution prior to the completion of the Airport Runway extension f) Where a soakage pit is to be used, details of the following is to be provided: • Hydrodynamic flow to the treatment basin – the expected design capacity it will be able to accommodate in a high intensity rainfall event. • What screening treatments (if any) will be used • What the surface area footprint the soakage pit will cover • An assessment of infiltration rates • Specification of filtration media and planting.

	• Long term site maintenance requirements (including any plants, rubbish accumulation, clogging) and performance/review schedule. g) Where the solution selected involves a discharge to the coastal marine area via a coastal outfall(s) the following is to be provided: • a description of the potential risks to the receiving environment and an assessment of whether the contaminant levels are acceptable for the receiving environment is to be provided; • Based on the assessment above, details of treatment requirements prior to discharge that are necessary to ensure contaminant levels are acceptable for the receiving environment and timeframes for the implementation of these; • Proposed contaminant trigger levels for ongoing discharges. h) A proposed reasonable mixing zone including justification for the reasonable mixing zone from the stormwater outlet(s) based on the monitoring information collected. The consent holder shall not install the selected stormwater solution until the stormwater monitoring and design solution report has been approved by the Manager, Environmental Regulation, Wellington Regional Council.
132	The consent holder shall implement any stormwater management and treatment solution approved under condition 131 within the timeframes specified in the approved report and to the satisfaction of the Manager, Environmental Regulation, Wellington Regional Council.
133	**As built certification of soakage pit** If a soakage pit is selected by the consent holder as the stormwater management and treatment solution for the runway extension area, prior to the commissioning of the soakage pit the consent holder shall provide to the Manager, Environmental Regulation, Wellington Regional Council a certificate signed by an appropriately qualified and experienced engineer to certify that the stormwater treatment system has been constructed in accordance with the design submitted and approved by GWRC under condition 131 (the stormwater monitoring and design solution report). Certification shall include, but not be limited to, the following: a) Confirmation of contributing catchments, dimensions and storage volumes the soakage area and associated infrastructure as applicable b) As-built plans of the soakage area c) Details of planting and filtration media c) Any other details that will facilitate assessment of compliance with the authorised design Certification that the appropriate design has been constructed shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council within 5 working days of completing the survey on site.
	Stormwater Management Plan
134	The consent holder shall engage a suitably qualified and experienced practitioner to prepare a Stormwater Management Plan for operational stormwater discharges from the runway extension area. The Stormwater Management Plan shall be submitted to the Manager, Environmental Regulation, Wellington Regional Council for approval within **6 months** of completing the monitoring required by the Stormwater Monitoring and Design Solution report approved under condition 131 The Stormwater Management Plan shall include, but not be limited to: a) The purpose of the plan; b) Review dates for the plan; c) Site management practices that will be undertaken to prevent contaminants entering the network and how frequently they are undertaken; d) Any triggers for additional management outside of the routine site management

	practices (e.g. predicted rainfall) e) How the management practices are undertaken, checked and recorded; f) Example forms or checklists used to record daily activities; g) What training is given to staff to ensure consistency; h) Contingency plan for any spills on site; i) For discharges to the coastal marine area via a coastal outfall only: • A stormwater monitoring programme (), including: • Sampling location and frequency and methods of collection; • What contaminants samples will be analysed for; • Trigger levels for contaminants; • Recoding of monitoring and monitoring results; • Actions required if any monitoring trigger levels are exceeded including reporting exceedances to Wellington Regional Council; • Maintenance requirements for all treatment devices j) The reasonable mixing zone which condition 136 applies including a plan showing the stormwater outlet(s) and extend of the reasonable mixing zone. k) For discharges via a soakage pit only: • Details of the long term maintenance and performance/review schedule for the soakage pit including any plants, rubbish accumulation, and clogging. l) Contact details of the person responsible to implementing and updating the plan. Any updates to the Stormwater Management Plan shall be confirmed in writing by the Manager, Environmental Regulation, Wellington Regional Council prior to the implementation of any amendments proposed.
135	The consent holder shall manage operational stormwater discharges from the runway extension area in accordance with the approved Stormwater Management Plan under condition 134.
136	**Reasonable Mixing Zone** Notwithstanding the requirements of any other conditions of this consent the discharge shall not give rise to any of the following effects in the coastal marine area (CMA) after reasonable mixing zone in the CMA: a) The production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials; or b) Any conspicuous change in the colour or visual clarity; or c) Any emission of objectionable odour; or d) Any significant adverse effects on aquatic life Advice notes 1. The reasonable mixing zone is to be established set out in the Stormwater Management Plan. 2. Where the above effects are experienced beyond the reasonable mixing zone then enforcement action may be taken.

Appendix 12: Summary of submissions

Summary of submissions received by Greater Wellington Regional Council and Wellington City Council for WGN160137 & SR357837

General Position of Submission	Total
Oppose	527
Support	227
Conditional	4
Submissions that are Neutral	18
Total Submissions received	**776**

Sub ID	Name of submitter / Organisation	Support / Neutral / Oppose application	Wish To Be Heard?	Summary of submission
1	Thompson, Joshua	Support	No	Believes runway extension may be necessary to maintain existing levels of service if aviation requirements become more stringent. Believes there are sufficient travellers to make the project viable. Supports the runway extension because it would have economic benefits such as more international students, more diplomatic visits, more film work, and more IT jobs.
2	Kleist, David	Oppose	Not Specified	Opposes the extension due to the economic cost as WCC ratepayers may have to fund $250m of the project compared to Infratil's $50m. Notes that no airlines have so far stated an interest in long haul flights to Wellington. Also concerned that the design of the extension will pose a danger to Cobham Drive traffic and damage electricity and gas utilities in the event of a plane crash.
3	Roberts, Dennis	Support	Yes	Supports the extension because of the economic benefits. Sees an opportunity for produce exports to Asia with the future four lane motorway connecting the Horowhenua with Wellington.
4	Urquhart-Hay, Simon James	Support	No	Supports the extension as believes it will be economically beneficial to the Wellington region.
5	Campion, Roy	Support	No	Supports the extension as believes Wellington needs to swiftly install necessary infrastructure to progress economically and socially. Concerned about progressive ideas being stymied by ill-informed special interest groups.
6	Campion, Laurie	Support	No	Supports the extension but believes if it goes ahead all the roads leading to the airport need to be upgraded for increased traffic.
7	Sandford, Matthew	Support	No	Supports the extension and believes consent should be granted with the long-term good of NZ in mind. Expresses concern over anti-establishment groups who readily oppose such projects.
8	Aldridge, Philip	Support	No	Supports the extension and highlights economic benefits including time-savings for long distant flights, making it easier for organisations to do business, more employment in Wellington during and post the construction process, and improved Wellington GDP.
9	Green, Ralph Julian	Support	No	Supports the extension and sees only economic and multigenerational benefits. Works as an internationally focussed luxury lodge tourism operator, and thinks the extension will make a huge difference to Wellington's appeal to overseas guests. Believes more businesses would locate to Wellington if it had better air transport connections.
10	Kent, Mary Elizabeth	Support	No	Supports the extension as a regular international traveller and believes it would offer shorter travel times to long-haul destinations and more competitive fares.
11	Steel, Stephen John	Support	No	Supports the extension and believes it would provide economic benefits such as increased tourism numbers and business visitors. It complements Transmission Gully and shared ownership of a big Wellington project would divert attention away from Auckland and Christchurch.
12	Wellington Regional Stadium Trust	Support	No	Supports the extension as the Stadium will benefit economically through increased visits for major events. The longer runway will remove one of the impediments for major artists visiting Wellington, as staging and equipment has often had to be transported via road from Auckland.
13	Rydges Wellington	Support	No	Supports the extension because it will encourage economic growth in Wellington. Rydges Wellington is a member of the hotel community and places considerable weight on having an international airport in close proximity to the CBD.
14	Ruscoe, Elizabeth Ann	Support	No	Supports the extension as believes the long haul flights into Wellington will have economic benefits, increasing trade and tourism and possibly making flights cheaper.
15	Mallard, Andy	Support	No	Supports the extension because it will provide much needed infrastructure to attract more direct visitors.
16	Dinsdale, Andrew John	Oppose	No	Opposes the application because there is no economic justification for it; it is not supported by any major airlines; it does not stand up to environmental scrutiny; we should not be extending into Cook Strait; Infratil is not paying its fair share of the costs; and it will be a huge drain on ratepayers both local and regional.
17	Novak, Simon Kenning	Support	No	Supports the extension as believes it is an essential piece of infrastructure for Wellington's economic growth.
18	Talbot, Sally Elizabeth	Support	No	Supports the extension as believes it will benefit Wellington, the NZ economy, the roading system, travellers, and Parliament.
19	Morgan, Patrick	Oppose	Yes	Opposes the applications. Believes economic business case is weak and demand forecasts lack rigour. Concerned about opportunity cost to WCC and unknown cost to ratepayers; negative traffic impacts especially construction traffic; and lack of support from airlines. Believes pilots' concerns about runway safety have not been satisfied. Believes alternative sites have not been adequately investigated nor have climate-change impacts.
20	Harkness, John Renwick	Support	No	Supports the extension based on the economic benefits for increased tourism and more direct trade and business links. Believes any adverse effect on the marine environment can be managed.
21	Caffardo, Nicolas (Willis Wellington Hotel)	Support	No	Supports the extension as believes it is crucial for Wellington economic growth and to remain competitive with other areas of NZ and Asia Pacific.
22	Greig, Simon	Support	No	Supports the extension to help secure Wellington's future.
23	Gilligan, Patrick	Support	No	Supports the extension as believes it will promote economic growth through increased tourism, job opportunities, and enabling more companies to base themselves in Wellington.
24	Howarth, John Lindsay	Support	No	Supports extension and believes it is the single most important infrastructure project necessary to support Wellington's future connectivity and economic growth. Is a frequent trans-tasman traveller and is often inconvenienced by having to fly via Auckland due to capacity constraints.
25	Russell, Frances Helen	Support	No	Supports the extension and believes that the reclamation will create new 'real estate' for sea life as has happened after disturbances to Lyall Bay in prior years.
26	Scots College	Support	No	Supports the extension because it is necessary for Wellington to reach its economic potential. Believes the extension could increase international student numbers as international families often do not wish their children to have to take connecting flights.
27	Jumpjet Airlines Limited	Oppose	Yes	Opposes the application. The extension is not required for Jumpjet's passenger services. Concerned construction will disrupt Jumpjet's operations because of traffic delays and airport services being unavailable. Concerned about cost of the project to ratepayers since costs may blow-out to double original estimates, particularly the cost of earthquake proofing. Believes public benefit to the NZ economy from the project would be negligible and includes economic impact figures for foreign carriers in its submission. Concerned that an increase in foreign airlines will increase the number of over stayers. Concerned about conflict of interest with WCC owning a share in the company applying for resource consent.
28	Maranui Surf Life Saving Club Inc	Oppose	No	Opposes the extension because of the unknown surf impacts on Lyall Bay including on the beach, possible safety implications of new rips forming, and unknown threat to the clubhouse of Maranui Surf Life Saving Club on the foreshore.
29	Roxy Cinema	Support	Yes	Supports the extension to enable long haul flights, which will encourage economic development in Wellington. Considers it likely to benefit the tourism sector and Wellington's education sector through increased overseas student numbers.

30	Aldridge, Phillipa	Support	Not Specified	Supports the extension as believes it will provide business opportunities and increase tourism.
31	Longstaff, Owen	Oppose	No	Opposes the application. Lives close to the proposed construction site and is very concerned about noise impacts. Wants to see some sort of sound-proofing system to address this. Also concerned about negative impacts on the surf beach.
32	Spotswood, Dorothy Myrtle	Support	No	Supports the extension as Wellington requires an airport that can land planes from long-haul flights. Believes this is vital for tourism and will result in increased overseas companies coming to Wellington.
33	Dunajtshik, Mark	Support	Yes	Supports the extension and believes it will benefit the Wellington region. Believes that if it is built then people will use it.
34	Burns, Dennis	Support	Yes	Supports the application and believes the long-term benefits will be immense. Travels a lot and does not like having to hub through Auckland, Christchurch or Sydney.
35	McCallum, Annabel	Support	No	Supports the extension and believes it is crucial to Wellington's economic prosperity. Believes those opposed have other agendas.
36	Macdonald, Peter J	Support	No	Supports the application and believes it is critical to Wellington's development. Believes criticism of the application is for selfish or business reasons and it is inappropriate to consider it.
37	ANDIS, STANLEY	Oppose	Yes	Opposes the application. Concerned about construction noise impacts on residents, lack of consultation, and non-compliance with WCC District Plan noise standards and precedents set by past large projects in the area. Believes that key noise impacts have not been considered or satisfactory mitigation measure proposed, particularly noise from water-based transport, amphitheatre effects, effects on Kekerenga Street residents, and night-time noise impacts. Strongly objects to applicant's proposal to undertake work at night. Recommends changes to the proposed Construction Community Liaison Group. Also concerned that the extension has not been fully costed.
38	Cycling Action Network	Oppose	Yes	Opposes the application because of traffic effects from construction causing congestion, pollution, noise, amenity loss and road safety issues and post-construction effects on local roads from additional passengers and freight. Believes project costs will be passed on to airport customers and increase travel costs. Wishes to know how carbon pricing resulting from climate-change agreements will affect demand for long-haul flights.
39	Ibis Wellington	Support	No	Supports the extension as a hotel operator in Wellington CBD. Believes it will increase tourism and business travellers and will complement the proposed conference facility.
40	Mountier, Frances	Oppose	Yes	Oppose the application primarily for climate-change reasons but also because of economic costs, construction noise and congestion effects, and damage to the Lyall Bay surf break and impacts on the nearby marine reserve. Believes we should be decreasing reliance on air travel and that sea level rise and storm surges will threaten the extension.
41	Destination Wairarapa	Support	Yes	Supports the extension as it will help grow tourism numbers to both Wellington and the Wairarapa, which will positively influence tourism investment. Tourism NZ is particularly encouraging Chinese visitors to visit this region and this project will support that.
42	Varga, Gloria Lauraine	Oppose	No	Opposes the application. Does not think flying to Wellington via another airport is an issue for tourists. Concerned about congestion on already overloaded traffic routes during construction. Believes there is no certainty new airlines would use the extended runway. Does not think the people of Wellington share WCC's objective to turn Wellington into a new Sydney or Copenhagen.
43	Heffernan, Marie Helen	Oppose	No	Opposes the application because of adverse effects on noise, traffic, surf, and carbon emissions. Notes damage to the environment, specifically effects of contaminated infill on marine life and recreational activities. Believes climate-change impacts such as sea level rise and storm surges have not been properly considered. Considers the applicant's Cost Benefit Analysis unsound and questions economic viability of the project. Concerned that a longer runway end safety area is required.
44	Moore, Stephen	Support	No	Supports the extension as it will improve safety. Concerned that public opposition by airlines is motivated by an anti-competitive strategy. Not concerned about environmental impacts on the coast because it has already been subject to a lot of change. Wants the fill to be barged to the site rather than delivered by road. Will be potentially impacted by road noise on Ruahine St.
45	Shand, Adam	Oppose	No	Opposes the application. Concerned about costs, environmental effects, recreational effects on Lyall Bay, and effect that landing larger planes will have on the residents of the eastern suburbs. Concerned that airline representatives are not in favour and that pilots are challenging the extension. Would rather see the money spent on alternative projects such as public transport.
46	Young, Elliott	Oppose	No	Opposes the application primarily because of concerns about the impact of reclamation on marine ecology and concerns about climate-change implications. Earthworks during construction will release large amounts of CO2 as will increasing aircraft miles. Concerned about impact of sea level rise on the extension. Secondarily concerned about economics. Objects to rates being used for this venture and believes the cost benefit analysis does not stack up.
47	McConnell, Kylie	Oppose	No	Opposes the application as does not want to encourage more migrants and tourists and exacerbate existing housing shortages and heavy traffic issues. Concerned about impact on surf beach. Does not wish to encourage more use of fossil fuels. Concerned about the cost to ratepayers.
48	Lefale, Penehuro	Oppose	No	Opposes the application. Unhappy with consultation to date and previous interactions with the airport regarding residents' noise concerns and the closed access through the airport road adversely affecting Bridge Street. [Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
49	Cresswell, Kyla	Oppose	No	Opposes the application because of costs and adverse effects on marine ecology, surf effects, and traffic and noise impacts. Does not trust the airport to carry out proposal as stated. Believes increased visitors will make existing Cobham drive and Mt Victoria tunnel traffic worse. Concerned about effects on Taputeranga Marine Reserve and little blue penguin and reef heron habitat, particularly from contaminated fill from CentrePort dredging. Believes applicant has not taken into account climate-change effects of sea level rise. Concerned about the length of the runway end safety area and is not convinced of the project's economic viability.
50	Apperley, Ian	Oppose	No	Opposes the application. [Guardians of the Bays text]. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology; and lack of consideration of climate-change impacts including sea level rise and storm surge. Considers alternative sites have not been adequately investigated.
51	Slater, George Brent	Support	Yes	Supports the extension as someone with a long history of working with commercial property and considers it crucial for Wellington's future prosperity together with a second tunnel through Mt Victoria and improved road links.
52	Slater Ryan, Shirley Anne	Support	No	Supports the extension as it is a positive step towards making Wellington more than a little town outside of Auckland.
53	Maloney, Andrew	Oppose	No	Opposes the application due to adverse effects on the surf break, effects on marine ecology from sediment, and greenhouse gas emissions contributing to climate-change. Does not believe the economic cost/benefit ratio adds up and is concerned the cost will be passed on to ratepayers.
54	Enright, Patricia	Support	No	Supports the extension as it will be a major improvement to our airport. Inconvenience during construction happens with all projects and is not a reason not to proceed.

55	Seager, Tony	Support	No	Supports the extension as it is part of developing Wellington. NZ needs to expand infrastructure and diversify its population beyond Auckland, and the extension will help show incoming travellers that NZ consists of more than one main city.
56	Finny, Charles	Support	Yes	Supports the extension as longer haul flights will have economic benefits for Wellington such as more tourism and increased numbers of international students. Believes that flying passengers direct to Asia or the US will be more carbon efficient than via a hub. Lives in Seatoun and sees no adverse environmental impacts from this project even during construction.
57	Browne, Richard	Oppose	No	Opposes the extension because we should not be encouraging fossil fuel usage, which is contributing to climate-change. Believes we should be finding other, sustainable transport solutions for Wellington.
58	Bryne, Jane	Oppose	No	Opposes the application because it is an ill-conceived plan.
59	Dey, Christopher	Oppose	No	Opposes the application because of economic costs. Believes it will increase rates and wants to know why WCC is fully funding a project despite only being a one-third owner in the airport. Believes WCC funds could be better spent elsewhere such as on homeless people.
60	Dunlop, Dido	Oppose	Yes	Opposes the application because of concerns that more flights will increase carbon emissions and contribute to climate-change.
61	Audebert, Vincent	Oppose	No	Opposes the application because of effects on surfing and recreation. Concerned it will increase pollution run-off into the sea, particularly during storm surge and the construction phase. Worried it will restrict more airspace and prevent use of a paraglider around Wellington. Concerned about the possibility of more noise and air pollution from bigger planes. Believes a longer runway would mean more people and would lessen the naturalness of the city. Believes tourists come here for the naturalness of NZ and that it should not be ruined by building more artificial structures and polluting the environment.
62	Rose, Nathan	Support	No	Supports the extension as the lower North Island desperately needs this infrastructure.
63	Young, Jennifer	Oppose	No	Opposes the application because of the economic costs to ratepayers and the encroachment into the marine area. Does not believe NZ needs another international airport. Concerned about effects on plant and sea ecology, surf, and traffic. Believes climate-change and sea level rise need serious consideration as storm surge already causes problems close to the existing south tunnel.
64	Tully, Jack	Oppose	Yes	Opposes the application. Believes extra international travel is not needed for Wellington to prosper and that it makes sense for Auckland to be the entry point into NZ as tourists can then complete a figure 8 tour of the country. Concerned that increasing tourist numbers direct to Wellington will detract from our natural environment, increase traffic congestion, and put pressure on real estate. Believes there are better ways to spend rate payers' money. Concerned about effects on surfing and the surf culture of Lyall Bay. Concerned that investors will push people out of their homes in the Eastern suburbs. Concerned about ecological effects, particularly on the habitat of blue penguin.
65	Downes, Rebecca	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
66	Stuart, Jeanne	Oppose	No	Opposes the application because of costs concerns. Believes costs of travel will increase for all passengers as a result of the extension.
67	Pomare, Ema	Oppose	No	Opposes the application because the economic costs outweigh the benefits to Wellington taxpayers. Believes there is insufficient demand and that putting a roof on the stadium would get more people coming to Wellington than the runway extension.
68	Cami, Charlotte	Oppose	Not Specified	Opposes because Lyall Bay has a unique surf culture.
69	Pelabon, Florian-Emmanuel	Oppose	No	Opposes the application because of effects on surf at Lyall Bay. Believes if the proposal goes ahead they will need to create an artificial reef to compensate for the loss of the current beach environment.
70	Te Whaaro, Jenny	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
71	Gibson, Lucy	Oppose	No	Opposes the application and doesn't think Wellington will benefit much from an extended runway. Concerned about increased traffic congestion both during and post construction. Concerned about effect on surfing and recreation in Lyall Bay. Believes the money could be better spent elsewhere.
72	Pierini, Rocco	Oppose	Yes	Opposes the application and believes the economic cost should not fall on taxpayers. Concerned about negative impacts of increased tourism and that the tag "coolest little capital" would quickly be forgotten. Believes the money should be put towards an alternative airport site out of town if a bigger airport is needed. Concerned about noise during construction and from more planes landing making nearby suburbs unliveable.
73	Brown, Steven	Oppose	Yes	Opposes the application because of concerns about economic cost and viability. Recently Council built a 100m sea wall near their house that required only small scale works but cost $750,000, and so they do not believe $350 million will fully cover the cost of the extension. Concerned the cost will mean less money for councils to invest in local projects. Also has doubts about environmental impacts, economic benefits, and traffic disruption during construction.
74	Johnson, Keith	Oppose	Yes	Opposes the application on economic, financial, equity and environmental grounds. Has a background in economics and planning and has published a number of articles on the runway extension and would like these to be considered as part of their submission. Critical of economic business case and concerned that detailed costings have not been prepared. Concerned about project viability, particularly the runway end safety area. Considers it unacceptable for WCC to contribute $90 million to the project and wants a full assessment of the equity impacts of the project. Concerned about construction effects, particularly traffic and noise. Believes that the recreational report lacks robust assessment as only 13% of participants were residents of Lyall Bay or nearby suburbs. Concerned about use of contaminated fill. Considers WIAL have failed to consider climate-change impacts of sea level rise and storm surge. Also notes effects on regionally significant surf break and impacts of contaminated infill on marine ecology. Considers a comprehensive, integrated multi-criteria assessment is required.
75	Wilkinson, Richard Charles	Oppose	Yes	Opposes the application because of costs to ratepayers, increased noise, ecological effects, and because the deal does not make commercial sense long term.
76	Barber, James	Oppose	Yes	Opposes the application because it does not stack up economically, socially or environmentally. Has doubts that council will listen genuinely to opposing submissions. Wellington airport already increases traffic congestion around the Miramar Peninsula. Does not want rates to increase or for the runway extension to come at the cost of maintaining important infrastructure or improving services such as public transport, parks, and recreational facilities. Concerned about traffic and noise effects during construction, disruption to surfing and associated effect on local beachfront businesses, and ecological effects on reef heron at Moa Point. Considers it wrong that climate-change is not considered under the RMA.
77	Hobbs, Kelly	Oppose	No	Opposes the application because of adverse effects on surfing in Lyall Bay, traffic congestion caused by construction and increased airport usage, and lack of need for a longer runway. Lives close to

				airport and the noise of larger planes landing and taking off would impact their quality of life.
78	Winder, Blake	Oppose	No	Opposes the application because it will cause long-term stress to the local area without any real benefits.
79	Snelling, Geo	Oppose	No	Opposes because of increased noise from larger planes and cost to ratepayers. Believes the money is badly needed elsewhere in our communities.
80	Barraud, Ned	Oppose	No	[No submission details]
81	Thompson, Melanie	Oppose	No	[No submission details]
82	Bolger, Chris	Oppose	No	[No submission details]
83	O'Connor, Teresa	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
84	Meyer, Philip	Oppose	No	Opposes because they are concerned the extension will increase traffic congestion and rates and that larger planes will increase levels of noise pollution.
85	Reid, Ezmae	Oppose	No	Opposes as does not believe the extension will benefit the area and thinks the costs outweighs the need for it. Also worried about increased pollution.
86	Berson, Alex	Oppose	Yes	[No submission details]
87	Vanoost, William	Oppose	No	Opposes as a resident of Miramar Peninsula and someone who frequently uses Wellington airport. Will be affected by construction traffic, noise and pollution. Concerned the runway and its corresponding traffic will have adverse visual effects on the residents living on the hills around the site that will decrease property values. Doubts the extension will increase tourism and revenue as Air NZ claims it will not land larger jets here. Does not think Wellington has the capacity to handle a new surge of tourists.
88	Nowotny, Alexander	Oppose	Yes	Opposes the application. Fears costs will lead to increased rates and travel costs. Concerned about ecological and surf impacts on Lyall Bay. Thinks it is ridiculous to invest more money in an airport that sits in a potential earthquake and tsunami zone. Concerned that no airlines have confirmed they will actually offer long haul flights. Does not believe it will make Wellington more attractive to overseas students.
89	Wigmore, Timothy	Oppose	No	Opposes because of concerns about how it will affect the 'corner' surf break. Wants more information on proposed 'wave focuser' and assurances that the surf break will not be adversely affected.
90	Bailey, Emily	Oppose	Yes	Opposes on grounds that it will adversely affect the natural environment, wildlife, recreational users and nearby residents. Believes it is irresponsible to increase air traffic because of climate-change effects.
91	Thapa, Jo	Oppose	No	Opposes as a larger runway won't benefit Wellington as a whole. Believes the location is too small and that Paraparaumu would be a better site for an international airport with a fast train.
92	Smith, Chris	Oppose	No	Opposes because of concerns about traffic increases, particularly as there is already a major bottleneck at the basin reserve, and objects to ratepayers sponsoring a commercial entity.
93	Thomas, Murray	Oppose	No	Opposes the application. [Same text as submission #50 regarding economic cost to ratepayers and length of the runway end safety area].
94	Garside, Alexander	Oppose	No	Opposes since it does not seem a wise investment in an age of dwindling fossil fuel resources and ambitions to lower emissions. Believes it makes more financial and environmental sense to use Auckland as a hub.
95	Newson, John Harvey	Oppose	No	Opposes because construction noise 24 hours a day for 3-4 years will have a totally unacceptable effect on residents. Feels nothing has been done to alleviate this noise and that the airport has not consulted with the public on the issue.
96	O'Shaughnessy, Bernard	Conditional	Yes	Supports the notion to extend the airport but believes the present business case is lacking hard evidence. Wants more consultation and thinks the Government, private enterprise, Air NZ and other transport companies should fund the proposal rather than ratepayers. Concerned that the effects of climate-change are not addressed and that the pilots association are not in support of the proposal.
97	Williams, Alicia	Oppose	Yes	Opposes the application. Concerned that increased congestion will make the city unpleasant and decrease safety. Believes it is unsound to build an airport extension on reclaimed land, especially considering climate change effects. Does not think there is adequate roading infrastructure to support the traffic. Believes travel costs will increase and domestic flights will become less frequent. Works as a relocation manager and assists hundreds of families to settle in Wellington each year. Does not think larger flights are needed as travellers to NZ are not bothered by an extra domestic flight.
98	Torres, Jesus Ruiz	Oppose	No	Opposes the application. Concerned about effects on recreational diving and fishing activities at Moa Point and on marine ecology. Concerned that airline pilots have publically stated safety concerns about landing larger planes. Concerned that the cost is just under $1 million for every metre of extension.
99	Deshprabhu, Rahul	Oppose	No	Opposes because Wellington as a city is not ready for the airport.
100	Walbran, Neil David	Oppose	No	Opposes as believes economic benefits have been overstated. Critiques Section 2.3 the technical report for relying on high levels of growth in air travel that appear inconsistent with other independent reports on expected jet fuel usage growth in NZ. Refers to figure from Business NZ's NZ Energy Scenarios that suggests a growth rate of only 1% p.a. compared to the airport's estimate of 7% p.a.
101	Young, Eve	Oppose	No	Opposes as believes it will have a negative impact on Wellington socially, economically and environmentally. Does not think it is a good use of council money. Believes tourists will visit Wellington because they want to visit not because they can fly direct. [Same text as submission #50]. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology; and lack of consideration of climate change impacts including sea level rise and storm surge. Considers alternative sites have not been adequately investigated.
102	Ashe, Robert	Oppose	Yes	Opposes the extension because it puts Wellington's most important surf break at risk; the economics don't stack up and they do not support taking large financial risks with public money; and there is no quality public transport infrastructure to support the expansion.
103	Oliver, George	Oppose	No	Opposes because they do not want ratepayers to have to foot the bill. Concerned the extension will mean less money for councils to re-invest in local projects. Believes costs of travel will increase for all passengers as a result of the extension.
104	Darling, Byron	Oppose	No	Opposes the extension because of potential impacts on surf. Has surfed their whole life at Lyall Bay and greatly values this activity. Does not think the infrastructure and roads could cope with the years of disruption during construction. Concerned about overloading roads from Eastern suburbs if supplies need to be brought in after an earthquake. Considers that airport could be wiped out in a big enough earthquake/tsunami. Believes the extension should not be funded by local taxpayers as they

				will be disrupted by the work and noise of larger jets. Also wants pilots' safety concerns to be heard.
105	Hoare, Maree Joy	Oppose	No	Opposes the application and is appalled that council would consider a project that would cause long-term and in some cases permanent disadvantage to so many residents. [Same text as submission #50]. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology; and lack of consideration of climate change impacts including sea level rise and storm surge. Considers alternative sites have not been adequately investigated.
106	van Daatselaar, Susan	Oppose	Yes	Opposes the application. Concerned there is insufficient evidence the proposal will lead to the promised economic growth and that WCC has not undertaken an independent business case, given the potential cost to ratepayers. Not confident that costs will be $350 million as stated and considers it likely that airport users will be charged additional fees. Concerned also that international airlines do not support the runway extension and that they have raised safety concerns. Refers to the Ernst and Young report that notes the value to business customers is the productivity savings from reduced travel times, but considers this a weak argument given it is only an hour flight from Auckland and Christchurch to Wellington and given that airfreight will not increase. Believes alternatives to this proposal should be considered as the best option for supporting business growth and notes the airport's investigation of alternative sites is from 1992, before many roading developments. Opposes because of potential impacts on marine ecology from fill, particularly the nearby Taputeranga marine reserve. Considers the social impacts significant, particularly effects on the Lyall Bay surf break, increased noise pollution for residents and recreation users, and negative visual impact.
107	Gannaway, Noeline	Oppose	Yes	Opposes because it is not favoured by Air NZ; it will increase air traffic and greenhouse gas emissions, promoting climate-change; and road congestion is likely during its 4 years of construction.
108	Mallon, John	Support	No	Supports the extension because it is vital to Wellington's future economic growth and tourism, will provide a direct gateway to the rapidly developing Asian markets, and will benefit all New Zealanders.
109	Norris, Greg	Support	No	Supports the extension in the interests of economic development opportunities.
110	Darlow, Richard	Oppose	No	Opposes the extension because it will not be used by sufficient extra traffic to make it economically viable. Refers to 1970s Central Laboratories tests that showed no sustainable engineering works would stand up to sea action in this area. Notes this model correctly predicted failure of the current ackmon armouring. Concerned climate-change impacts of sea level rise will compound the difficulties. Believes cost estimates are inadequate and project costs will blow out.
111	Mills, Jessica	Oppose	No	Opposes the application. Concerned the extension will endanger recreation and amenity values of the Wellington coastline that bring people to the area. Does not think international airlines will restructure their routes to use Wellington and thinks the extension will be under-utilised, especially as it will still be deemed too short and dangerous for larger international planes. Concerned ratepayers will pay the economic costs and would rather have pristine marine ecosystems, surf spots, and beaches.
112	Wartenberg, Bastian	Oppose	No	Opposes the application because it will affect Wellington more negatively than positively. Concerned about increased environmental and noise pollution, the traffic situation, and effects on Lyall Bay's unique charm. Does not see why the extension is necessary.
113	Hawcroft, Francis	Oppose	No	Opposes the application because the extension will be vulnerable to the effects of climate-change, its construction is contrary to the goal of reducing New Zealand's emissions, and it is not part of a proper integrated transport development plan for Wellington. Questions whether the effects of different sea level rise projections and increased extreme weather events have been properly factored in to the cost/benefit analysis. Thinks this project sends a message to the world that NZ is not serious about climate-change or trying to build a greener economy and wants to see investment instead in e.g. teleconferencing facilities, faster international internet connections, and research into low-emission forms of transport. Believes there are much higher priority transport problems facing Wellington and that council investment in these other areas would provide a far better return.
114	Bowler, William James	Oppose	No	Opposes the application because the economic cost should not be paid by ratepayers since the airport is majority owned by Infratil and because the proposal is financially flawed. Thinks infrastructure to and around the airport is inadequate for current numbers and would be a disaster for assumed increased numbers of passengers and traffic in and out of Wellington.
115	Holben, Victoria	Oppose	No	Opposes the extension because of concerns about the environmental impact on Wellington's water quality and local wildlife. Also concerned about the potential for erosion and the dangerous weather conditions for landing planes.
116	King, James	Oppose	Yes	Opposes the extension because the economic business case requires ratepayers to take much of the initial risk of funding. Believes business case should be opened up to independent scrutiny that satisfies the Treasury Better Business Case criteria. Concerned that 'The Corner' surf break will be lost and that the DHI report does not take into account the significant loss of amenity value. Concerned that the negative response from air safety experts to the runway extension indicates a fundamental design flaw.
117	Chamberman, Mark	Oppose	No	Opposes the application because does not believe there is enough demand for long haul flights from Wellington. Flys regularly to Europe and has no issue flying via Australia or Auckland. Lives under flight path and does not want noise levels to increase. Does not want to pay for the extension and thinks the airport should pay the entire cost themselves.
118	Brook, Marianna	Oppose	No	Opposes the extension. Concerned that airlines and pilots organisations do not see benefits from it but the costs are many. Concerned about cost to Wellington citizens, impact on wildlife and coast, and disruption caused by construction.
119	Moffat, Winifred Annette	Oppose	Yes	Opposes the application. Believes the extension will damage our image as the 'coolest little capital' as where else can you see surfers close up as you take off and land? Concerned about marine ecology impacts on penguins. Thinks council should be putting money elsewhere such as housing. Thinks airline pilot's safety concerns are being treated lightly by extension proponents.

120	Peterson, Stephen	Oppose	Yes	Opposes the extension because of the economic impact on Wellington. Concerned about (1) BARNZ's submission asserts that the traffic forecasts are overstated by a factor of 5; (2) traffic projections don't take into account risks associated with uncertain fuel and carbon prices over the next 20 to 50 years; (3) WIAL does not bear the risk of project failure; (4) minimal business benefit. Wife frequently travels and would not use a direct flight out of Wellington if it was more expensive than one via Auckland; (5) adverse recreation impact on swimming, surf, and ability to safely cycle around the bays over the next 10 years.
121	Redican, Paul	Oppose	No	Opposes the application as does not believe ratepayers should be funding Infratil's extension. Believes the airport has wildly overstated the economic costs/benefits. Concerned about environmental impact and sustained noise and traffic issues during construction. Thinks WCC signing a memorandum of understanding with a Chinese construction company prior to any public consultation on this project is arrogant, anti-democratic and a waste of ratepayer's money.
122	Swann, Pauline & Athol	Oppose	Yes	Opposes the application until a valid business case with detail proving economic justification is provided. Wants assurance Wellington ratepayers' rate bills will not rise to pay for any shortfall, a firm commitment from airlines that they will fly a regular long-haul route to the city before the extension is built, and for WIAL to provide the 240m runway end safety area. Concerned about duration of noise from construction, particularly the night haulage times. Concerned the extension will adversely affect surf at Lyall Bay and marine ecology at Taputeranga Marine Reserve and Moa Point.
123	Airways Corporation of NZ Ltd	Neutral	No	Neutral towards the application and submits to ensure issues relevant to Airways operations are acknowledged. Extension will impact on the design of the future Instrument Landing System (ILS) localiser array and the southern ILS array will need to be moved. Identifies the potential impacts on functionality of the array: if it is moved closer to the water, it will require higher maintenance costs; if it is moved further back, it may require a wider array to lessen effects on the signal; and current distance between localiser antenna array and jet blast deflectors needs to be maintained and re-evaluated with larger jets.
124	Young, Vanessa	Oppose	Yes	Opposes the application on the following grounds: (1) Has lived in Breaker Bay for 36 years and cares deeply about the area; (2) Disruption to marine and land ecology through fill and damage to the seafloor from such a large reclamation. Particularly concerned about little blue penguins nesting on Moa Point and on Taputeranga Marine reserve; (3) Lives at the south end of Breaker Bay and construction traffic is likely to severely disrupt their bike to school journey. Bikes down the Leonie Gill cycleway, crossing Onepu Rd, which trucks are proposed to be crossing at a rate of up to 30 an hour, and is very concerned about the impact of trucks on children biking on this cycleway ;(4) Concerned that climate-change effects and sea level rise have not been taken into account; (5) Understands barges and other sea-based equipment will have to be moved into Wellington harbour every time there is a southerly gale and is concerned that the applicant has not taken into account the number of southerlies and the effect of this on the construction phase; (6) Concerned that the construction phase will take longer than the four years scheduled; (7) Uses Lyall Bay for recreation such as boogie boarding and swimming and is concerned about potential adverse effects if surf waves become larger; (8) Does not accept airlines will send sufficient numbers of larger aircraft to justify the disruption, damage, and costs; (9) Does not want WCC to spend ratepayer money on the extension and believes there are better alternatives to spend money on.
125	Mathews, Glen	Support	No	Supports the application because Wellington needs to pump money into the economy to boost its trade and developments.
126	Smith, Scott	Oppose	No	Opposes the application as a surfer who grew up surfing at The Corner in Lyall Bay. Believes the extension must enhance The Corner for the hundreds of surfers who use it, not diminish it.
127	Day, Stephen	Oppose	No	Opposes the extension because NZ does not need more long-haul international airports. Doubts it will result in extra flights coming to NZ and thinks it may only shift some flights from Christchurch or Auckland, of no net economic benefit to NZ. Does not want rates spent as a corporate subsidy. Concerned about environmental impacts on the south coast. Thinks that with the growing reality of climate-change and peak oil, Wellington should be trying to adapt to a carbon neutral future rather than investing in a very expensive long-haul runway when NZ already has some.
128	Adamek, Sonja	Oppose	No	Opposes the extension as Wellington does not have the infrastructure or accommodation for more people arriving.
129	Kotsapas, Mario	Oppose	Yes	Opposes the extension because there is no need for another full international airport. Larger countries than NZ only have one major airport and most people in Auckland take longer to travel to the airport than a Wellingtonian needs to go to Auckland for a connection flight.
130	Marshall, Robert David	Oppose	Yes	Opposes the application. Objects to ratepayers paying 80%, or any cost at all. Experiences regular traffic congestion getting on and off the peninsular already and believes the roads need to be upgraded as soon as possible. Concerned about marine ecological damage and particularly implications for fishing recreation. Refers to previous reclamation of Cobham Drive and notes this used to be a breeding ground for cockles, flounders and fish including snapper. Notes that although the airport promised to return the area as much as possible to its original state, today the seaside area of Cobham Drive is a rat-infested scrapyard of old bricks and concrete rubble with few snapper. Concerned that the reclamation will bury a large area of paua and crayfish breeding grounds on the south coast. Has been free diving in the area for 60 years.
131	McCormick, Richard	Oppose	No	Opposes the application. Thinks rates and taxes should not pay the principal part of the costs and that if Infratil is confident in the economic business case, Infratil should pay for it. Considers the case for the extension is founded on questionable assumptions such as that tourists will not prefer to simply arrive at one end of the country and travel to the other before leaving. Concerned that the extension is not viable.
132	Skeet, Neil	Support	No	Supports the extension because as the capital city, Wellington should have a connection to the world. Wonders how many tourist dollars are being injected into other region's economies that should be rightfully coming to Wellington and how many tourists wish to visit Wellington but cannot get a direct flight and the transfer costs are too high?
133	Hutt, Judy	Support	No	Supports the extension and believes it is essential for Wellington's economic future as overseas tourists would be encouraged to stay in Wellington and spend money here rather than in Auckland or Christchurch.
134	Victor Anderlini	Support	No	Supports the application. Has often wanted to fly directly to San Francisco to visit family and friends and believes the extension would provide both a valuable personal benefit and a boost to Wellington's economic future. Thinks it would allow more tourists to come to Wellington and stay longer. As a marine scientist, has read NIWA's technical reports 18 and 20 and believes the studies were conducted in a robust, impartial and professional manner. Would like to see a long-term environmental monitoring programme initiated prior to construction and included in the operational plans of the airport.
135	Pinson, Jim	Support	No	Supports the proposal as a businessman and as a surfer. Has witnessed a shift to Auckland by organisations and is convinced that the need to 'two hop' flights to Auckland and then beyond has

				been detrimental to Wellington. Has surfed The Corner in Lyall Bay regularly since 1994. Considers it a very crowded surf wave and thinks this crowding needs a solution in the form of additional structures in the bay. Makes observations on the nature of the current surf conditions in Lyall Bay. Considers the airport's commitment to build and maintain a wave focussing structure extremely positive and hopes that it will help Lyall Bay become a much more varied beach break.
136	Beconcini, Mereana	Oppose	No	Opposes the application as it will ruin the best beach in the city and is an expensive and unnecessary use of local government money. [In addition, same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
137	Sacks, Bryan	Oppose	No	Opposes the application. Concerned that WIAL has been told that the airlines will not fly here in larger planes if they build the extension; that RESA says the current design is unsafe; and that the International Airlines Association has already proclaimed the landing fees too high for the airport size. Concerned that Infratil owns 2/3 of WIAL but wants public money to pay for 80% of the cost and that WIAL will raise landing fees and flying costs for everyone to pay for it. Owns a home near the airport and is concerned about construction noise. Fears the surf break will be destroyed and the clean water of Lyall Bay will be ruined by dredging.
138	Wellington Chamber of Commerce	Support	Yes	Supports the application. An average of 77% of Chamber members surveyed have demonstrated strong support for this project over a two year period. Comments on the significant economic impacts for businesses include improved access to overseas markets, increased incoming tourism, reduced freight times, and overall economic growth. The Chamber comments on three key economic benefits of increased long-haul air connectivity: (1) increased freight capacity, where exporters can freight through Changi Airport. Wellington Airport's catchment stretches from Gisborne to New Plymouth and creates approximately 30% of NZ's GDP, but less than 1% of NZ's air freight imports or exports come through Wellington airport; (2) Increased tourism opportunities; (3) More attractive option for international students. Anecdotal feedback is that more than 2 flights is a barrier for families in school selection. Considers that any environmental concerns have been satisfactorily mitigated through WIAL's efforts. Surveys of the Chamber's members show they are overwhelmingly not concerned with any environmental impacts given WIAL's mitigation measures. An overview of these survey numbers is included.
139	Hill, Steve	Oppose	No	Opposes the application due to concerns around effects on surf at Lyall Bay. Has surfed for more than 40 years and considers that Lyall Bay provides a significant amount of Wellington's surfable days to both local residents and visitors. Does not believe there is sufficient analysis to fully appreciate the negative effects. Wants a credible study to explore if the extension can enhance the existing surf opportunities.
140	Porirua City Council	Support	Yes	Supports the application. PCC has looked at noise and traffic effects and neither will impact Porirua City in any substantial way. Recognises positive economic effects for the Wellington region but finds it unclear from the cost benefit analysis how many of these would pertain to Porirua or if these regional or national net positive effects may mask negative local economic effects on Porirua. Wants more detailed information about the economic costs and benefits of the project to be made available.
141	Kapica, Ilka	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
142	West Plaza Hotel	Support	No	Supports the application particularly because of the economic benefits of increased tourism opportunities for Wellington. West Plaza Hotel directly benefits from increased tourism and sees the runway extension as significantly contributing to the local economy. Considers WIAL has been proactive and diligent in mitigating environmental impacts, particularly those on the Moa Point residents, the surfers at Lyall Bay, and the potential disturbance of sea life.
143	Goodwin, Trevor	Support	No	Supports the extension as would much prefer to depart from Wellington for international travel. Is not a resident of Wellington but thinks that the economic impact of more people from the Central Districts choosing to depart from Wellington International Airport should not be underestimated. Particularly supports how the extension will increase tourism opportunities and make Wellington a more attractive option for international students. Thinks WIAL has been very diligent in the assessment of the environmental impact.
144	Intern NZ	Support	Yes	Supports the application. Intern NZ brings approximately 100 students per year from around the world who wish to undertake an internship in NZ as part of their academic course requirements. Particularly supports how the extension would: (1) increase tourism opportunities; (2) make Wellington a more attractive option for international students. Wellington is significantly behind the national trend of retaining international students, holding a 6% share; (3) increase Wellington Airport's freight capacity, which will increase the ability to export to key markets and shorten the time to access these markets. Satisfied that WIAL has mitigated any environmental impact concerns, particularly those on the Moa Point residents, the surfing community, and the potential disturbance of sea life.
145	Arona, Lynda	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
146	Hunter, Michelle	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
147	Griffin, Lorraine	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
148	Dovey, Sue	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
149	Fulton Hogan Limited	Support	Yes	Supports the application, particularly the economic benefits. Fulton Hogan has previously undertaken work for WIAL and the construction would potentially benefit them as well as many other construction businesses within Wellington. Considers the extension will stimulate economic growth through improvements in international connectivity and will provide a number of permanent employment opportunities for Wellington locals. Agrees with WIAL's technical assessments.
150	Solomon, Jason	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]

151	Spector, Daniel	Oppose	No	Opposes the extension because it is bad economic sense. Thinks there isn't evidence that it will return its costs and that it won't significantly improve life for the majority of residents. Refers to Sir Paul Callaghan's argument that increasing tourism is a net negative to our economy.
152	Kearns, Caitlin Neuwelt	Oppose	Yes	Opposes the application because it will be devastating to the natural environment and will hugely disrupt the lives of Wellingtonians. Does not think more air traffic justifies disrupting some of the cleanest waters around. Concerned that climate-change impacts may make the current runway unviable. Worked at the surf club in Lyall Bay and saw so many people enjoying that beach on a daily basis; considers any development that threatens recreation there unacceptable. Might reconsider if there were strong commitment from airlines that they would fly regular routes to the city.
153	Bellingham, Maia	Oppose	No	Opposes the extension because of environmental impacts and concerns from pilots. Considers the cost to ratepayers very high if airlines will not commit to flying to Wellington.
154	Brandreth-Wills, Graham	Oppose	No	Opposes the extension because it is founded on a number of assumptions with a questionable basis, such as that international tourists will prefer arriving in Wellington rather than arriving at one end of the country and travelling to the other before leaving. Remains unconvinced that the extension is the silver bullet.
155	FitzJohn, Trevor	Support	No	Supports the extension because it is a no-brainer investment in infrastructure and will open many investment opportunities in the region.
156	Pearce, Andrew	Oppose	No	Opposes the application due to concerns about the cost to ratepayers; project viability; economic growth; traffic effects during construction; health impacts from noise, dust, vibration, the sewerage pipe and marine pollution; safety; surfing effects; recreation; marine life; and climate-change.
157	Oliver, Mary	Oppose	No	Opposes the application because it makes no economic sense. Concerned that costs will be passed on to ratepayers and thinks Wellington should focus on improving existing infrastructure. Concerned about adverse effects on Lyall Bay including marine ecology and recreation and about traffic congestion during construction.
158	Coakley, Jonathan Davis	Oppose	Yes	Opposes the application. Has lived in Melrose for 14 years and is accustomed to the nearby airport. Finds it easy to travel internationally to and from Wellington via connections to Auckland and Christchurch. Does not agree with most of the $350 million cost being paid through public rates and thinks these funds could be used for purposes with more benefit to the Wellington community. Concerned about effects on recreation and water quality. Dives and fishes in the area of the proposed extension and does not want it destroyed. As a surfer, is disappointed that the models show fewer surfable days in Lyall Bay. Does not think the airport's contribution to greenhouse gases and climate-change can be ignored. Considers it unacceptable to subsidise a private company when much of the costs of climate-change will be borne by taxpayers and ratepayers. Sees insufficient evidence to support the claim of economic benefits such as increased tourism. Believes increasing the airport size will reduce Wellington's natural character and culture, which are the qualities people visit and live in Wellington for.
159	Bailey, Jo	Oppose	No	Opposes the extension because it is unnecessary and can only be a bad thing from a carbon emission, conservation and liveability perspective.
160	Olsen, Andrew	Support	No	Supports the application for economic reasons because (1) Wellington can leverage its reputation as the 'coolest little capital in the world'; (2) Acting now could avoid cost increases caused by delays, such as in construction of Transmission Gully; (3) There are more carriers coming to NZ and more aircraft suitable for the extended runway and long-haul routes; (4) Wellington survives on a few international events each year that put pressure on marquee attractions like Te Papa.
161	POWERCO LIMITED	Neutral	Yes	Powerco is neutral towards the application but seeks to ensure that it does not affect its gas utilities network. Powerco's pipe system traverses the airport in two locations but it is unclear to what extent construction works will affect the gas pipeline or whether there is a need to relocate/realign existing assets. Generally supports the intent of the airport's proposed conditions regarding management plans and network utilities but suggests amendments to Draft Conditions 17-20 and 50-52.
162	Kremer, Klaus	Oppose	Yes	Opposes the application and thinks there needs to be more independent research conducted for (a) economic benefit and (b) ecological impact. Points out that Berlin has 5 million citizens and thrived for 50 years with an airport the same size as Wellington's. Believes taxpayer money could be better spent on creating jobs and affordable housing.
163	Creative Capital Arts Trust	Support	Yes	Supports the application. CCAT delivers arts events, and to date has delivered the annual NZ Fringe Festival and CubaDupa festival. CCAT's events involve international artists and CCAT sees the Wellington culture scene increasingly being a reason for people to visit. Believes the extension will extend Wellington's connectivity and growth in the art and cultural sectors. States that studies show travellers are highly sensitive to convenience and cost; CCAT has found this in conversations with international artists who performed in the 2016 Fringe Festival.
164	Iseke, Geer	Oppose	Yes	Opposes the application. Surfs and considers Lyall Bay the only significant surf beach in Wellington. Considers that there are other options for the airport to create a longer runway that will not affect the open coast environment, swell corridor, and surf breaks. [Part of the same text as submission #50 concerning: surfing, recreation, marine ecology, use of contaminated fill, and consideration of alternatives.]
165	Guttke, Egon	Support	No	Supports the extension as it will make Wellington a more attractive tourist destination, benefit travellers from the lower North Island, and benefit local businesses as a result of being better connected to the rest of the world.
166	McAlister, Vivienne	Oppose	No	Opposes the application. Believes we have ample access to global destinations through Auckland and Christchurch and does not believe it will be viable for airlines to fly in and out of Wellington. Believes Wellington should be prioritising investment and this should start with infrastructure and in particular the road around the Basin Reserve. Concerned that if the extension goes ahead the increased traffic will make the commute from the airport to the city worse.
167	Tolich, Terry	Oppose	No	Opposes the application due to concerns about effects on surf and recreation. Notes historic and cultural significance of Lyall Bay, such as the visit by Duke Kahanamoku from Hawaii in 1915. Considers the application has failed to consider policies 3, 4, 5, 10, 13, 14, 15, 18, 22, and 23 of the NZCPS. Does not think the statutory context report acknowledges surf break policy P51 in the GWRC PNRP. Considers WIAL have provided little detail on proposed promenade construction and modified Moa Point Rd seawall. Does not consider adverse effects on surf can be mitigated by providing other amenity values as surfing is not interchangeable with cycling, walking, or visiting cafes. Believes effects on the surf break should be avoided or remedied, not mitigated. Notes that the peer review of the DHI Surf Break Assessment report highlights that the effects on surfing waves have not yet been investigated adequately. Concerned that WIAL are not prepared to protect The Corner and are seeking its deletion from the schedule of regionally significant surf breaks in GWRC's PNRP. Considers WIAL's consultation process a failure and the revised draft Surf Adaptive Mitigation Management Plan unacceptable. Questions how WIAL can submit a Preliminary Shoreline Impact Assessment for the Submerged

				Wave Focusing Structure (SWFS) when they have not yet provided a final SWFS design concept. Considers WIAL has not adequately caucused with the surfers' independent peer reviewer. Objects to the use of fill from CentrePort's proposed dredging as it will have disastrous consequences for surf breaks of Eastbourne and Wellington.
168	Middleton, Anna	Oppose	No	Opposes the application because: (1) There is no guarantee rates won't increase to cover the cost and WCC will have less money for other local projects; (2) Truck traffic effects, particularly noise and effects on residents and visitors; (3) The surf community will take a huge hit; (4) Adverse effects on marine ecology, particularly little blue penguins; (5) 20 airline representatives do not support it; and (6) the cost of maintenance in the face of storm surge will be crippling.
169	McCarthy, Tanya	Oppose	No	Opposes the application because it isn't in Wellington's best interest.
170	Brenton, Scott	Oppose	No	Opposes the extension because it will destroy the surf waves at The Corner that they have been surfing for 30 years, and notes that the costs exceed the benefits.
171	Upson, Yachal	Oppose	No	Opposes the application. Concerned about economic cost to ratepayers and that airline representatives do not support the extension as viable. Notes airline pilots' safety concerns. Considers Wellington should invest in existing infrastructure instead. Questions the applicant's assumptions about tourist behaviour. Also concerned about 10-year disruption from construction and use of potentially contaminated fill.
172	Moore, Ash	Oppose	Yes	Opposes the extension as it will reduce the number of days and size of waves they can surf. The submitter surfs every day at Lyall Bay and hopes to represent NZ at the Tokyo Olympics in surfing.
173	Betteridge, Stephen	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
174	Turrell, Robbie	Oppose	Yes	Opposes the extension because it will destroy the recreational water sport and surf culture of Lyall Bay. Also concerned about effects on conservation. Considers the construction disruption will destroy the local economy and inconvenience residents with little long-term benefit outweighed by increased congestion, pollution and aircraft noise.
175	Schott, Roy	Oppose	No	Opposes the application because of potential effects on surf. Submitter is a surfer and therefore highlights that a large number of people and businesses rely on the Lyall Bay surfing spot for recreation and for their livelihood. Considers that irreparable damage has already been caused by putting the airport in and that the extension would be the final nail in the coffin. Considers the extension would have cultural effects by defying the treaty and kaitiakitanga.
176	Samuel Marsden Collegiate School	Support	No	Support the application and commend WIAL and WCC for their community consultation. Particularly support that the extension will make Wellington a more attractive option for international students. Satisfied that WIAL has mitigated environmental impacts, particularly on Moa Point residents, Lyall Bay surfers, and potential disturbance of sea life.
177	Corleison, Grant	Support	No	Supports the extension because Wellington needs to build for the future now if it is to protect and grow its economy. Thinks "build it and they will come" is a truism.
178	Edwards, Elaine	Oppose	No	Opposes the application on the basis of noise, disruption, damage to the environment, and cost and does not agree there is sufficient demand for direct international flights from Wellington. Lives opposite the airport on View Road and currently planes taking off and landing cause significant sleep disruption that would be increased if the planes were larger. Additional construction noise would adversely impact submitter's ability to work from home and enjoy their garden, directly opposite the construction work. The extension would also have significant visual effects and detract from the value of their home. Argues that the value of the South Coast's nature is of more value to Wellington than direct international flights.
179	Beconcini, Stefan	Oppose	Not Specified	Opposes the application due to concerns about contamination of the marine environment. Submitter lives in Lyall Bay and thinks it will ruin the residential area and destroy one of the most amazing surf and recreational beaches in the Wellington area. [In addition, same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
180	Munro, Miranda	Oppose	No	Opposes the application because of the economic costs to ratepayers; construction effects on recreation in Lyall Bay; effects of potentially contaminated fill; and increased traffic congestion and pollution. Notes international airlines' lack of commitment to use the new runway and airline pilots' safety concerns. Doesn't think council should consider this proposal in a time where climate-change is already causing problems with Lyall Bay losing sand to sea level rise.
181	Thompson, Peter	Oppose	No	Opposes the extension on the basis of the NZIER analysis suggesting there were shortcomings to the impact analysis supporting the project. That analysis suggests economic benefits will not cover the cost of investment, leaving ratepayers liable for the shortfall.
182	Weight, Matt	Oppose	Yes	Opposes the extension. Concerned that fill around Moa Point may have a negative impact on little blue penguin and other marine ecology. Concerned about negative impact on Lyall Bay surf and the local economy. Considers the two artificial reefs tried before in NZ at Mount Maunganui and Opunake complete failures. Believes the economic business plan is flawed and questions why ratepayers should subsidise a private company. Concerned about effects on southern and eastern suburbs during construction and about increased noise and air pollution.
183	Fierlinger, Philip	Oppose	No	Opposes the application. Considers the benefits overstated and the costs underestimated. Considers environmental impact significant, particularly on surf. Does not think Wellington needs more noise, people, traffic, and pollution from bigger jets and is concerned it will increase the odds of a devastating crash. Thinks having a stopover in Auckland is no big deal.
184	Barrett, Mark	Oppose	No	Opposes the application because of adverse impacts to the south coast environment and Lyall Bay surf. Thinks there is no proven economic business case that supports the opportunity cost and opposes ratepayers' money contributing to the development.
185	Craft, Ellie	Oppose	Yes	[Part of the same text as submission #50 concerning economic cost-benefit analysis and climate-change impacts.]
186	Hughes, Trevor	Oppose	Yes	Opposes the extension because the economic case does not add up. Does not think it makes sense in terms of climate-change effects such as sea level rise and concerned it will be vulnerable to earthquakes. Concerned about impacts on marine life, recreational users, and disruption caused by construction traffic.
187	Duggan, John Hugh	Support	No	Supports the application. Has used this area as a surfer, diver and Lyall Bay resident since the 1950s and believes the proposed changes will not adversely affect the area and will enhance its usability and positive development.
188	Lowe, Michael	Oppose	No	Opposes the application because: (1) Business case is not independent and robust; (2) No strategy to address how increased airport activity, which will have induced demand strain on existing transport network, will be resolved in an environmentally sustainable way; (3) Recreation report lacks robust assessment; (4) Investigation into alternative sites is now 24 years old; and (5) Extension does not guarantee an equal or better surf outcome for Lyall Bay.
189	Wilkinson, Ralph	Support	No	Supports the application because it will increase international access and the submitter does not support Air NZ's case to maintain their duopoly at Wellington airport. Submits that effects on the surf

				break are not proven and are addressed by the applicant.
190	Watson, Russell	Support	No	Supports the application because they believe Wellington will economically benefit from greater access to cities and markets. Has travelled to Auckland and Christchurch for years to access business markets and finds the extra travel and cost completely unjustifiable. Believes the expenditure is more warranted than on the cycleway project.
191	Guthrie, Robert	Oppose	No	Opposes the application. As a resident with views over the airport, the increase in noise and other aspects of the development will impact on their standard of living.
192	Mormede, Sophie	Oppose	Yes	Opposes the extension. Concerned about under-stated environmental costs versus overstated economic benefits and particularly costs to Moa Point and lack of mitigation measures proposed. Recommends the airport buy all the Moa Point houses and transforms them into Airport precinct. Considers applicant's reports biased and incomplete. Does not think climate-change impacts or resilience of the city and infrastructure has been taken into account. Concerned that no mitigation plan is available in the event of damage to the wastewater outflow utilities structure. Submitter lists flaws in the ecological models used to consider impacts on the Moa Point cove and thinks effects are understated. Also considers economic report flawed and that project will probably be well over budget. Considers build effects understated with biased noise calculations. Concerned about safety of the runway length and that extension is at the lowest standards and costs.
193	Boyle, James	Support	No	Supports the application. Considers that wider community benefits should outweigh negative impacts on a small group of surfers or residents at Moa Point who purchased land there in full knowledge that there have been plans to extend the runway. Considers there are benefits to the university and business community including opening up the city to more students from Asian cities. Thinks Air NZ's stance against the proposal is self-interested to protect their domestic business transporting people to Auckland to fly internationally and that once it is built they will change their tune quickly.
194	Cleghorn, Sarah	Oppose	Yes	Opposes the application. Lives in Lyall Bay and uses the beach for recreational purposes such as swimming, boogie boarding, and walking. Concerned about that effects on the beach are uncertain, the wave focussing device is untested and fill will affect water quality. The noise will affect the submitter badly and they fear if construction takes place at night the airport will take this as an indicator that planes can also. Traffic during construction will affect submitter's access to Lyall Bay. Concerned also that vibration will be substantial and light pollution around the South Coast will increase. Does not think the extension will be much use in the event of a tidal wave or severe earthquake and is concerned about the cost to ratepayers.
195	Wavish, Paul	Support	No	Supports the application because they believe it is important not only for Wellington but for NZ. Thinks that the government should encourage population growth to spread to parts of the country other than Auckland and that the airport extension is vital to encouraging growth in the lower part of the North Island.
196	Wilson, John	Support	Yes	Supports the application as the Wellington Region will benefit from direct international flights. Has worked in the container shipping industry and made similar decisions about 'ports of call'. Considers Air NZ and other airline's opposition to the proposal anti-competitive and that they should be excluded from the process on that basis. Believes big infrastructure decisions are sometimes about vision and leadership rather than economic business cases alone.
197	Richardson, Paul Keith	Support	Yes	Supports the application as it will be of huge benefit to Wellington and will have no detrimental effect on the environment. Considers that the lack of direct flights is the main reason stopping international students from choosing Wellington schools.
198	Smiler, Jane	Oppose	Yes	Opposes the extension because it will ruin the visual look of Lyall Bay and the surf; will disrupt residents during construction and afterwards with noise and traffic; and it is unnecessary given the fact that no airlines have shown support.
199	Ryan, Dennis	Support	Not Specified	Supports the extension because it is very necessary.
200	Ryan, Teresita	Support	Not Specified	Supports the application.
201	Plimmer, William Neil	Neutral	Not Specified	[Incomplete submission]
202	Barton, Sarah	Oppose	Yes	Opposes the application. Lives in Lyall Bay in a house overlooking the beach and enjoys recreation in the area including surfing, kite-surfing, walking, and snorkelling. Concerned about pollution, increased sediment affecting marine ecology, traffic effects on air quality, and destruction of the surf break. Believes destructive effects on recreation will have a knock-on effect of making Wellington a less desirable as a place to live and will negatively impact economic growth. Worried about the potential costs and the personal financial impact of increased rates. Biggest concern is the opportunity cost and would prefer WCC to invest in improving public transport and other local infrastructure. Notes international airlines' lack of commitment to use the new runway and airline pilots' safety concerns. Concerned about truck noise and sleep disturbance. Considers sleep critical to their ability to not make mistakes in their role as a doctor. Daytime traffic will reduce recreation enjoyment and increase congestion.
203	Brown, Andrew	Oppose	No	Opposes the application because they do not support ratepayers funding the project; as a homeowner in Lyall Bay it will adversely affect their quality of life by reducing the number of surfable days; WIAL's submission opposing protection of The Corner in the proposed Natural Resources Plan shows they won't commit to the minimum of maintaining current surf conditions; and because commercial airlines don't support for the project.
204	Griffin, Victoria	Oppose	No	Opposes the application and believes the impacts from disruption during construction and long-term on recreation and marine ecology far outweigh the benefits of increased flights. Opposed to dumping of rubble into the marine environment and thinks there are more beneficial projects WCC could spend the money on.
205	Jamieson, Peter	Oppose	No	Opposes the application as it will not bring any more visitors to Wellington, will damage the local surf culture and beach, will be a disruption while being built, and will increase rates.
206	Pender, Bryce	Support	No	Supports the application as a longer runway allows a greater margin of error, will add Wellington as an emergency alternate airport for larger planes, and in an emergency should see a usable length remain available for short take-off and landing aircraft meaning quicker response. Considers it will add competition for airlines, improve freight capacity, and offers potential growth for the region.
207	Donaldson, David	Oppose	No	Opposes the application for economic reasons, particularly cost to rate payers and airport users, and environmental reasons, particularly surf impacts and lack of forward thinking regarding climate-change and sea level rise. As a surfer, considers The Corner has already suffered from work done on the carpark. Notes ongoing erosion problems at the carpark at The Corner.
208	Abbott, Caroline	Oppose	Yes	Opposes the extension. Already woken each morning by plane noise and is concerned increasing the number and size of planes will worsen the issue. Wants council to pay for double glazing on all houses within e.g. a 10km radius if it goes ahead. Enjoys Lyall Bay and is concerned about effects on the beach and marine ecology. Believes the extension is a waste of taxpayers' money and suggests it should be built on the outskirts of Wellington if more planes are needed.

209	Eaton, Lindsay	Oppose	No	Opposes the application. Lives in Lyall Bay and is concerned about visual impact on views. Also raises concerns about the impact on marine ecology such as little blue penguins and reef heron; flawed recreation assessment including a survey they were unaware of; surf break effects highlighted by the Surfbreak Protection Society; construction effects including traffic and noise; climate-change impacts; economic viability; and costs.
210	Brickhill, Zandra	Oppose	No	Opposes the application. Lives locally and enjoys watching surfers and taking beach walks. Concerned about negative environmental impacts and considers the money could be used for other projects that would benefit the city more. Believes an alternative site for a new airport would be more beneficial. [In addition, same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
211	Shanks, Mark	Oppose	Yes	Opposes the application because of effects on the natural character of Lyall Bay, particularly adverse surf effects, and because there are better ways to grow Wellington's economy.
212	Williscroft, Hemi Webster	Oppose	Yes	Opposes the application. Thinks the natural beauty of Moa Point and the south coast should be protected and is concerned about the impact on marine ecology such as blue penguins and reef heron. Considers it does not provide for future generations both because of its effects on recreation and because of the economic costs that will affect WCC's ability to undertake other projects in Wellington.
213	Hunt, Marie	Oppose	Yes	Opposes the application because of concerns about traffic, noise, effects on the marine environment, cost to Wellington ratepayers, and concerns about project viability.
214	Mormede, Rosemary	Oppose	Yes	Opposes the application on the grounds of additional and unaccounted for costs for repairing road damage done by heavy truck use for a minimum of 3 to 4 years, prolonged disruption to ecology of South Coast, maintenance concerns about Moa Point wastewater pipeline utilities, and proximity of stockpile areas to Moa Point residents.
215	Moorsom, Richard	Oppose	No	Opposes the application. Doesn't think the economic rationale stacks up or that WCC should subsidise it and considers it will cripple WCC's ability to promote local economic and environmental objectives for decades to come.
216	Nahkies, Anne Natasha	Oppose	No	Opposes the application primarily because of concerns around traffic flows as already the timing of trips to and from the airport are unpredictable. Unconvinced the economic benefits will balance the costs and thinks international passengers are well-used to hubbing.
217	Albert, Frederic	Oppose	No	Opposes the application. Unconvinced by economic business case and concerned about disruption and noise during construction. Lives on the flight path and does not welcome more planes.
218	Gentejohann, Robert	Support	No	Supports the extension as travels overseas frequently and it would considerably reduce travel times to international destinations in Asia or Western Australia by 2-3 hours. Considers a longer runway will also provide an extra safety margin for local flights. Surfs in Lyall Bay and does not think the extension will have an impact.
219	Nicolson, Andrew	Support	Yes	Supports the application. Comments on economic business case and considers there is sufficient demand for international services from Wellington. Calculates potential fuel consumption / carbon emission reductions from direct flights. Notes that noise levels are predicted to comply with the Air Noise Boundary. Considers recreation effects minor or less and that the loss of surf amenity will affect only a very small group of expert surfers and highlights that WIAL has committed to mitigating surf impacts. Comments on marine ecology, traffic effects and economic benefits.
220	Rovers, Antonius Bernard	Neutral	Yes	Neutral towards the application. Lives on Ahuriri Street and is concerned about increased noise, particularly at night. Critical of noise report including background noise monitoring and receiver and measurement locations. Wants to see expected noise contours for different construction phases for residential areas near the airport and more information as to mitigation proposed at residences further from the construction site. Has found operational airport noise for the last 10 years OK mainly due to the night curfew, with some negative noise disturbance due to early 6am flights. Concerned about substantial noise increases during the curfew period. Requests conditions relating to noise if consent is granted.
221	Vollweiler, Shirley Flora	Oppose	No	Opposes the application. Concerned about the rationale in the economic cost/benefit analysis and believes the benefits are over-optimistic, particularly because of the per hour values used and the assumption that 80% of international air travel passengers would fly direct from Wellington. Thinks NZ does not need another international hub and is concerned that the suggestion that ratepayers fund it means it's really a dubious investment.
222	Sidwell, Kenny-Jean	Oppose	Yes	Opposes the extension due to concerns about costs and project viability, traffic, and environmental damage. Does not trust WCC or Infratil and considers WIAL has never shown they are willing to be 'good neighbours'.
223	Buchanan, Lynette	Oppose	No	Opposes the application due to concerns about the costs and economic benefits; environmental damage to Moa Point due to fill and negative impact to Lyall Bay surf; disruption from truck traffic during construction; and lack of support from airlines and pilots' safety concerns.
224	Winquist, Erik	Oppose	No	Opposes the application. The extension will have a visual impact on the submitter's view from their house across Lyall Bay. Concerned about: economic business case; airline pilots' statements that the length is insufficient to land safely; construction effects including traffic and noise; and effects on surf, kaimoana and recreation.
225	Guo, Xiaolin	Support	Yes	Supports the application. Believes it will bring benefits to Wellington, more business opportunities, and more job positions.
226	Napier City Council	Support	No	Supports the application for the flow-on economic benefits that will come to the regions. Particularly supports how the extension would: (1) increase tourism opportunities; (2) increase Wellington Airport's freight capacity, which will increase the ability to export to key markets and shorten the time to access these markets. Satisfied that WIAL has mitigated any environmental impact concerns, particularly those on the Moa Point residents, the surfing community, and the potential disturbance of sea life.
227	Milkop, Andre Heldur	Oppose	No	Opposes the application. Concerned about the economic business case and that Infratil are prepared to fund only about 10% of the cost. Would support if the extension was needed for safety reasons for shorter-haul international services. Thinks that the traffic situation at the Basin Reserve should be fixed first.
228	Bruggemans, Valerie Joan	Oppose	Yes	Opposes the application. Lives at Moa Point close to the airport and is concerned about impact on their house value and on rates. Concerned about: noise and dust during construction; effect on marine life; enjoyment of recreation; and safety concerns for large planes landing in unpredictable weather.
229	Thomson, Donald Graham	Support	No	Supports the application. Thinks Wellington as the capital should have easy access to international air hubs and that the extension will increase safety for existing links. Welcomes the proposal as a frequent flyer.
230	Frank & Julia Quirke	Neutral	No	Considers that the extension should not proceed unless Infratil pay 67% of the estimated construction costs. Concerned that the level of sand on the beach will be subject to erosion as previous airport work has left large tracts of gravel and wants assurance that if this happens, sand will be brought in to repair the damage.

231	Douglas, William John	Support	No	Supports the extension and feels Wellington needs every commercial advantage it can get. Owns beachfront property in Lyall Bay. Thinks the airport surf reef will protect the beach dunes by defusing larger waves before they hit the shore. Thinks direct Asian flights may increase foreign student numbers. Considers that another 350 metres of airport will not change the look and feel of the place.
232	Bateson, Jennifer	Support	Yes	Supports the extension. Owns properties in Lyall Bay and believes the extension will increase property values through economic prosperity. Would personally value direct flights to long haul destinations. Positive about improved surf waves and visual effects from coastline landscaping.
233	Shelton, Martin	Support	Not Specified	Supports the extension as believes investment in the runway is important to the continued sustained development of Wellington and NZ.
234	Carr-Gomm, Matthew Philip	Oppose	Yes	Opposes the application. Concerned about the economic business case, particularly: (1) no agreements in place by any airline to fly additional routes; (2) air traffic movements have been steadily declining at Wellington airport since 1997; (3) the investment in the Rock terminal in 2010 did not increase daily international flights; (4) even with the extension, Wellington can't compete with Auckland and Christchurch airports. Concerned about environmental effects including: increased noise pollution; removal of the no-fly night curfew; safety concerns due to frequent high wind conditions; poor roading infrastructure and traffic congestion; and damage to marine ecology.
235	Smith, Amy	Oppose	No	Opposes the extension. Concerned it does not have financial backing from airlines and will cost ratepayers significantly. Considers Wellington's traffic infrastructure insufficient to support an increase in passengers arriving and the environmental/societal impact on local residents significant and unfair.
236	Hawke's Bay Tourism	Support	No	Supports the application. Thinks Wellington is a logical international gateway for the region and it would be a huge advantage for inbound visitors to come to Hawke's Bay via Wellington. Worked jointly with Air NZ in 2012/13 on a campaign using Wellington as a gateway for inbound Australian flights, which sold over 260 flights SYD/WLG/HB.
237	Layburn, Thomas Wilfrid	Support	No	Supports the extension as it is long overdue and the benefits outweigh the disadvantages.
238	Connor, Katherine	Oppose	No	Opposes the application. Doubts the desired outcomes presented in the economic business case. Finds it damming evidence that Infratil is not prepared to invest significantly and considers it a case of corporate welfare at the expense of ratepayers. Believes WCC should step up to the role of guardianship for the marine reserve.
239	Child, Michelle	Oppose	No	Opposes the application due to the effects on recreation and diving opportunities, as well as local marine ecology such as the little blue penguins and reef heron at Moa Point.
240	Wellington Phoenix FC	Support	Yes	Supports the application. The Wellington Phoenix is an international business with half of all games played in Australia and a strategic focus on developing international connections, including international students in the Wellington Phoenix Football Academy. Greater choice in connections will have economic benefits for them. The Phoenix is expanding its links into Asia and improved international links between Wellington and international cities will help them remain competitive.
241	Ellis, Jenny	Oppose	No	Opposes the application because the costs do not warrant it for such a small city. Concerned the Mt Vic Tunnel is inadequate for truck traffic without severe congestion, noise, and safety issues.
242	Currie, Kushla	Oppose	No	Opposes the extension as the cost seems too risky and the impact on the marine area is unacceptable.
243	Tuohy, Sabine	Oppose	No	Opposes the extension. Owns Pilates Synergy on Lyall Bay Parade 68-74 Kingsford Smith St and is concerned about traffic congestion and noise impacts on their business. Concerned also about night haulage noise impacts on residents. Considers the millions of dollars could be spent in better ways. [In addition, part of the same text as submission #50 concerning: economic cost-benefit analysis; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
244	Bond, Jason	Oppose	No	Opposes the application due to the environmental impact as well as traffic congestion and overall noise and disruption in the area.
245	Marlborough Chamber of Commerce	Support	No	Supports the application because of economic benefits to the region including areas serviced by short haul regional flights from Wellington airport such as Marlborough. Recent removal of Air NZ's direct flight links from Christchurch to Marlborough leaves only Auckland and Wellington airports as international feeders for tourism to Marlborough.
246	Meulendijks, Helga	Oppose	No	Opposes the application. Lives in Miramar and frequently visits the south coast for recreation and is concerned about potential adverse effects on it. Notes international airlines' lack of commitment to use the new runway and questions economic business case.
247	Angell, Malcolm	Oppose	No	Opposes the extension as there is no viable economic business case and the construction will be massively disruptive and destroy local surf breaks.
248	Jarratt, Mason	Oppose	No	Opposes the application because it requires a massive economic public subsidy that will not be reflected in a commensurate ownership interest in the airport.
249	Millar, Stephanie	Oppose	No	Opposes to the extension due to concerns about: increased rates, more expensive flights, increased traffic, changes to Lyall Bay and its surf, toxic sediment fill, and noise and disruption on the peninsula.
250	Catley, Edward	Oppose	No	Opposes to the extension due to concerns about: increased rates, more expensive flights, increased traffic, changes to Lyall Bay and its surf, toxic sediment fill, and noise and disruption on the peninsula.
251	Morolli, Dora	Oppose	Yes	Opposes the extension due to concerns it will ruin the coastline, increase house prices, and cause disruption for at least 10 years. Lives near to the airport and is concerned about more air, noise and light pollution.
252	Leng Goh, Mui	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
253	Niklaus, Lukas	Oppose	No	Opposes the application as it does not make economic or ecological sense. [Part of the same text as submission #50 concerning: economic cost-benefit analysis; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
254	Urbanova, Michaela	Oppose	Yes	Opposes the application. Concerned about environmental effects and disruption and does not consider the project beneficial. [Part of the same text as submission #50 concerning: economic cost-benefit analysis; environmental effects including surfing, marine ecology and use of contaminated fill; and climate-change impacts.]
255	Mansueto, Jade	Support	No	Supports the application and thinks it's a good idea to plan for the future. Flys internationally each year and would appreciate a runway that can handle bigger jets.
256	De Roose, Frank	Oppose	Yes	Opposes the application. Concerned about economic cost to ratepayers and airport passengers; truck noise and the hazard they will pose when crossing local roads to get beach access or walk their dog; traffic congestion during construction and afterwards with increased air traffic.
257	Mackenzie, Tiana	Oppose	No	Opposes to the extension due to concerns about: increased rates, more expensive flights, increased traffic, changes to Lyall Bay and its surf, toxic sediment fill, and noise and disruption on the peninsula.

258	Douglas, Erica	Oppose	No	Opposes to the extension due to concerns about: increased rates, more expensive flights, increased traffic, changes to Lyall Bay and its surf, toxic sediment fill, and noise and disruption on the peninsula. Notes international airlines' lack of commitment to use the new runway.
259	Parsonage, Dianne	Oppose	Yes	Opposes the application. Concerned about ratepayers funding the project and ongoing costs, international airlines' lack of commitment to use the new runway and airline pilots' safety concerns. Considers the project a bad economic investment. Dismayed at 10 year construction period and associated effects on local community, public safety and road infrastructure from traffic. Walks dog daily to Lyall Bay beach and considers the project construction will diminish their enjoyment and other recreation users'. Concerned that effects of climate-change have not been fully considered and does not want to take chances with the marine ecology of Lyall Bay. Concerned about the visual impact of the extension on views from their house.
260	Das, Barin	Support	No	Supports the application because it will: (1) increase tourism opportunities; (2) make Wellington a more attractive option for international students; (3) increase Wellington Airport's freight capacity. Satisfied that WIAL has mitigated any environmental impact concerns, particularly those on the Moa Point residents, the surfing community, and the potential disturbance of sea life.
261	Eilers, Denise	Oppose	No	Opposes the application due to concerns about costs, pollution and noise and health and safety risks to the local community. Believes the region can be promoted more creatively via smaller link planes, boats and rail.
262	Julien, Kimberly	Oppose	No	Opposes the application. Lives on the peninsula and is concerned about noise and toxic sediment in the water they swim and surf in. Think WCC needs to solve existing traffic congestion issues before expanding the airport.
263	Holmes, Mark	Oppose	No	[Part of same text as submission #50 concerning: economic cost-benefit analysis; construction effects including traffic; and environmental effects including surfing, recreation, marine ecology and use of contaminated fill.] Considers there has to be a better more appropriate site.
264	Antipas, Michael	Oppose	No	Opposes the application. Lives in Strathmore, runs a business in Lyall Bay and fishes and dives on the south coast. Concerned about effect on marine ecology from contaminated fill; insufficient planning for increased traffic volumes; and cost to ratepayers.
265	Mikkelsen, Elisabeth	Oppose	No	Opposes the application. Concerned about climate-change impacts and thinks WCC should discourage flying. Does not want continual noise from planes taking off and trucks during construction when visiting Lyall Bay.
266	Dawe, Claire	Oppose	Yes	Opposes the application. Concerned about: (1) overstated economic cost-benefit predictions; (2) noise and traffic congestion from trucks transporting fill; (3) project viability and lack of commitment from international airlines; and (4) economics of airlines having several bases in NZ.
267	Molloy, Harvey	Oppose	Yes	Opposes the application. Concerned about: (1) climate-change and greenhouse gas emissions; (2) proximity to the Taputeranga Marine Reserve and effects on marine ecology and recreation; (3) surf impacts; (4) overstated economic benefits; (5) alternative projects WCC money could be spent on.
268	Terry, Jon	Oppose	Yes	Opposes the application due to concerns regarding: (1) traffic noise and congestion; (2) cost to ratepayers; (3) lack of support from airlines; (4) length of the runway safety area; (5) effects on marine life; (6) projected future fuel costs; (7) personally has no problem flying via other airports; (8) potential sea level rise.
269	Stevenson, Veronica	Oppose	No	Opposes the extension. Notes international airlines' lack of commitment to use the new runway and airline pilots' safety concerns. Believes 10 years of construction traffic using already congested roading infrastructure would damage Wellington's liveability.
270	Barrett, Bill	Support	No	Supports the application. Considers the economic benefits obvious and that there is a negative vocal minority.
271	Matthews, Sarah	Oppose	No	Opposes the extension due to concerns about it being funded by increased rates; traffic disruption; noise of night haulage; and risks to the surf break. Requests that more information of the details of proposed construction be provided to local suburbs in a mail drop and that the economic return be carefully considered in light of cost to residents and the environment.
272	Harford, Greg	Support	No	Supports the application and considers environmental impacts will be appropriately mitigated. Believes there are strong economic reasons to extend the runway.
273	McKirdy, Daniel	Oppose	No	Opposes the extension due to concerns about the economic viability and effects on marine ecology and recreation. Does not think alternative sites have been considered.
274	Wellington Underwater Club	Oppose	Yes	Opposes the application. Primary concern is impacts on the diving recreation community and that the underwater environment is not damaged and remains safe for diving. General observation is that the economic business case is overly optimistic. Lists a number of concerns with environmental impacts and impact on recreation use including questioning what the effect of the final wastewater utilities outflow will be and what plans are in place to mitigate increased wave action adding to beach erosion. Concerned the Moa Point cove models need refinement and that it may become a dead space with stormwater flows going in. Concerned that there is a lack of information on the ecological impacts of temporary structures.
275	Simpson, Claudia	Oppose	No	Opposes the application. Concerned about the visual, noise and recreation impacts on their grandparents' house on Moa Point, especially night noise. Works as a lifeguard on Lyall Beach and considers it would be detrimental to the squad's training. Thinks the extension does not comply with section 12 of the RMA.
276	Maxwell, Alexander	Oppose	No	Opposes the application. Travels regularly and would personally benefit from easier long-distance flights but is unpersuaded by the economic business model. Considers it should be funded by private investors not WCC.
277	Boyes, Jonathan	Oppose	Yes	Opposes the application as a step too far. Considers the financial, social and ecological costs unjustifiable, particularly impacts on Lyall Bay users, increased traffic congestion and increased fossil fuels contributing to climate-change.
278	Leighton, Marion	Oppose	Yes	Opposes the application. Raises concerns with economic business case, increased cost to ratepayers and airport passengers, and extension not being long enough to land larger planes safely, disruption during construction, and effects on the south coast. Also concerned that we have a responsibility to aim for zero emissions to address climate-change and that a new runway is far from doing our best.
279	Barber, Paul	Oppose	Yes	Opposes the application as the costs are too high, airline pilots have challenge the extension's safety, Wellington should be reducing climate-change emissions, and rising sea levels don't appear to be adequately taken into account.
280	Logan, Kathleen	Oppose	No	Opposes the application as the economic case does not stack up. Thinks investment should be in more lucrative city infrastructure.
281	Wellington Boardriders Club	Conditional	Yes	WBC's position is that if the extension is to proceed, any adverse effects on surf must be ameliorated. Includes background information on the significance of Lyall Bay to the surf community. Has worked with WIAL on proposed mitigation measures including the submerged wave focussing structure (SWFS). Considers the SWFS, if a success, would be a real asset to surfing in Lyall Bay but is concerned due to its experimental nature. Includes revised consent conditions and SMAMP agreed with WIAL and requests these amendments are adopted. If sufficient certainty is not provided that mitigation measures will be effective and enduring, then WBC would oppose the proposal.

282	Gibson, Liz	Oppose	No	Opposes the extension.[Part of the same text as submission #50 concerning environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.] In addition: concerned about the carbon footprint of the airport and would prefer to see ratepayers' funds spent on more sustainable community ventures.
283	Fraser, James	Oppose	Yes	Opposes the application. Believes it was a mistake to locate the airport in Lyall Bay in the first place. Concerned about effects on surf, recreation, marine ecology, and traffic congestion. Thinks the economic case is unproven. Feels the region should look for alternative sites to build a new airport if there is a long-term case to be made for a longer runway.
284	Tweedie, Richard	Oppose	Yes	Opposes the application because (1) unsatisfactory economic case; (2) Wellington doesn't need an international airport; (3)construction impact with traffic and noise; (4) negative impact on marine life; (5) recreational activities jeopardised; (6) climate-change impacts not adequately taken into account; (7) funding by ratepayers is disproportionate considering Infratil own 66% of the airport.
285	Hewitt, Justin	Oppose	No	Opposes the application. Lives near the airport. Opposed because of 1. Cost; 2. Public subsidy via rates; 3. Airline usage; 4. Construction effects, particularly traffic; 5. Alternative options - wants to see research done into alternative airport locations.
286	Nelson, Antony John	Oppose	No	Opposes the extension due to concerns about flawed economic business case. Comments on other NZ runway extensions and considers only Queenstown's has been successful, where it was completed at the request of airline operations to service the tourism industry. Notes that operational safety requirements imposed for the Qantas B747SP operations in the eighties will still apply, with consequent delays.
287	Fletcher Building Limited	Support	Yes	Supports the application. Fletcher Building employees use Wellington airport regularly for business purposes and it supports the extension to enable long haul flights, which will sustain and encourage economic development. Submits that economic development is linked with infrastructure investment and that improved connectivity is likely to raise productivity and/or demand in other sectors.
288	Moir, Patricia Mary	Support	No	Supports the extension as believes it will increase visitor numbers and have economic tourism benefits. Would personally love to leave from Wellington airport to overseas long haul destinations.
289	Densem, Paul	Oppose	No	Opposes the application because of concerns about effects on Lyall Bay.
290	Keller, Richard	Oppose	Yes	Opposes the application. Believes there needs to be less tourism in a carbon-constrained world and that air travel is a symbol of the desperation our culture experiences approaching the nature and extent of required fundamental change. Concerned the airport's analysis is shabby and should be examined in terms of the economic business case, traffic effects, health and safety, surfing, recreation, marine life, and climate-change.
291	McMillan, Amanda	Oppose	Yes	Opposes the application because we do not need it.
292	Day, Sarah	Oppose	Yes	Opposes the application primarily because of effects on the marine environment, the recreation value of the bay and the quality of living for residents. Regularly surfs and cycles. [Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
293	Holborow, Don	Oppose	No	Opposes the application. Thinks night haulage noise from truck movements will render houses on Ellice Street uninhabitable. Basin Reserve has an amphitheatre effect, which was particularly apparent during the Mount Victoria Tunnel upgrade, where they had many nights of disturbed sleep. Concerned about day-time traffic noise and dust effects on Wellington College and Wellington East Girls College, especially if there is a roading project ongoing at the Basin at the same time and wants alternative transport methods such as barging should be looked at. Also considers there is scant economic justification for the project.
294	Dodge, Nadine	Oppose	No	Opposes the extension and thinks if there were a sound business case for it, it wouldn't need such a large amount of WCC funding. Considers that the availability of long haul flights disproportionately benefits the wealthy and creates equity issues since the population as a whole is expected to support something that the majority do not benefit rom. Flies overseas multiple times a year and is happy with the status quo.
295	Johnston, George	Oppose	No	Opposes the application as the money could be put to better use addressing climate-change issues.
296	Duncan, Alyx	Oppose	No	Opposes the extension and believes it is not viable. Concerned about economic costs; visual impacts; effects of marine ecology and recreation at Moa Point; lack of support from airlines; and questionable assumptions about tourist behaviour.
297	Short, Evan	Support	No	Supports the application direct access to more countries will have economic benefits and add to local culture. Sympathise with those concerned about extra noise and traffic but believes we need to be realistic about the need for smart growth.
298	Poley, Gareth	Support	No	Supports the application because progress is good for NZ.
299	Rowlands, David	Oppose	No	Opposes the application. Opposed to a private company receiving public funding; concerned about noise impacts from larger planes, effects on the Lyall Bay surf break, the visual impact, and pollution from fill. Notes that modelling date suggests oil costs will increase. Considers long-term economic viability dubious.
300	Cook, Vernessa	Oppose	Yes	Opposes the application. Concerned about: the impact of fill and toxic chemicals from machinery; visual impact; the impact of trucks on traffic congestion, road condition and noise; cost to ratepayers; upkeep costs from storm damage; lack of airline support; and pilots expressing concerns over the safety implications.
301	Wyeth, Fraser	Oppose	No	Opposes the application as does not believe the benefits will outweigh the economic and environmental costs.
302	Hexagon Safety & Infrastructure Limited	Support	Not Specified	Supports the application and will benefit from more competitive airfare pricing and less time consuming international travel. Particularly supports how the extension would: (1) increase tourism opportunities; (2) make Wellington a more attractive option for international students; (3) increase Wellington Airport's freight capacity. Satisfied that WIAL has mitigated any environmental impact concerns.
303	Laurenson, Richard and Susan	Oppose	Yes	Oppose the application. Submit that it does not meet the purpose of the RMA. Own property at 49 Moa Point Rd and will be directly affected by construction and use of the extension. Consider no conditions of consent will adequately avoid, remedy or mitigate effects on their property and neighbourhood. Consider economic grounds flawed.
304	Bonjers, Luke	Oppose	No	Opposes the application because in their view the drawbacks far exceed the future benefits.
305	MacKay, Donald James	Oppose	Yes	Opposes the application because of concerns about: (1) economic justification is flawed and public material issued by the airport is misleading at best; (2) significant disruptions to both nearby residents and throughout Wellington; (3) adverse effects on local ecology; (4) effects on recreation activities; (5) use of potentially contaminated fill; (6) sea level rise and surge impacts have not been properly taken into account; and (7) the applicant has not properly considered other alternatives.

306	O'Connell, Paul	Oppose	No	Opposes the application. Considers the economic case spurious and a reckless use of ratepayer money given the uncertain benefits and high costs.
307	Rose, Nathan	Support	No	Supports the application because it is a vital improvement and the NIMBYs of the bay must not be allowed to stop progress.
308	Momentum Consulting Group	Support	Not Specified	Supports the application because of economic benefits and increased business connectivity. Considers greater international connectivity will allow business to enjoy better access to customers, suppliers, face to face meetings, international labour markets and foreign investors. Believes it will also benefit the tourism and education sectors.
309	Aubry, Matthieu	Oppose	No	Opposes the application. Concerned about costs; that traffic is already terrible; and that noise and dust pollution for residents of Maupuia and Miramar will increase greatly.
310	Falkner, Uli	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
311	Stone, Prudence	Oppose	Yes	Opposes the application. Concerned about the economic business case and short-term gains in tourism growth that could be detrimental long-term to the environment and the city's capacity to handle growing demand. Wants to see robust due diligence from WCC before it invests and considers council should prioritise other expenditure. Notes international airlines' lack of commitment to use the new runway and airline pilots' safety concerns.
312	Basher, Michael and Eileen	Support	No	Supports the application because of economic benefits including: access to global markets; increased tourism; and more competitive airfares. Considers a viable case exists and believes the extension will attract new international airlines and open new routes. Values having an international airport in close proximity to the CBD.
313	Choveaux, Georgia	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
314	Dixon, Stefanie	Neutral	No	Wants consent to be declined. Considers the increase in noise and traffic would make homes close to the airport unliveable. Opposed to effects on surf. Does not consider there is a need for it.
315	Young, Vanessa	Oppose	Yes	Opposes the application and is concerned that although the decibel level of noise will not increase, the number and size of planes increasing will increase the proportion of the time that planes are heard. Wants to know if there will be a change in runway configuration and an increase in loudness from individual aircraft events.
316	Scott, Geraint	Oppose	Yes	Opposes the application. Considers economic benefits are massively overstated. Does not think offsetting measures for impacts on the south coast cut it. Thinks that given climate-change, the proposal is a double whammy of stupidity, increasing emissions and giving the runway itself less chance of survival with sea level rise. Believes the hub system for airports is more efficient and Wellington airport should be kept at its current size.
317	McLaren, Rachel	Oppose	Yes	Opposes the application. Thinks the applicant has failed to properly consider climate-change impacts of sea level rise and storm surges on the extension and the effect of the extension on the possible extent of sea level rise.
318	Bay Plaza Hotel	Support	No	Supports the application on economic grounds and as a business would benefit directly from increased tourism. Satisfied that WIAL has mitigated any environmental impact concerns.
319	Bonjers, Samantha	Oppose	Yes	Opposes the application. Would rather the runway be built properly taking into account pilots' safety concerns. Thinks routes planned for construction traffic are inappropriate.
320	MACALISTER, JOHN	Support	No	Supports the application for economic reasons. Disinclined to travel overseas via Auckland or Christchurch. Thinks Wellington not being an international gateway is a disincentive for international students.
321	Gale, Josephine	Support	No	Supports the application as Wellington needs to cater for international flights and the upheavals experienced during construction will soon be forgotten when we start to reap the benefits of increased access to the rest of the world.
322	Kaos, Sylvie	Oppose	No	Opposes the application due to concerns with the economic business case and environmental impacts. Concerned the real cost could be up to $500 million and that ratepayers will pay most of this, leaving WCC less money to reinvest in other projects and services. Concerned there is no evidence that the surf mitigation artificial reef will work and that the 300m exclusion zone around the construction site will impact on recreation access.
323	Gale, Sadie	Oppose	Yes	Opposes the extension. Concerned about: (1) traffic; (2) economic cost and risk to ratepayers; (3) safety of bigger international flights in Wellington conditions; (4) reduction in number of surf days; (5) effects on marine ecology at Taputeranga Marine Reserve; and (6) increased boulders and damage to roads from larger storms with the effects of climate-change.
324	Nahm, Holger	Oppose	No	Opposes the application due to a lack of comprehensive economic business case and danger to native bird ecology, particularly reef herons and little penguins at Moa Point. Notes that these bird populations are vulnerable to even benign, controlled human disturbance.
325	Woodford, Ronald Bruce	Support	No	Supports the extension and thinks it will be an asset to Wellington.
326	Bongers, Herwin	Oppose	Yes	Opposes the application for reasons including traffic effects, cost to ratepayers, and minimal safety standards applied to the runway design.
327	Lipski, Karla	Oppose	Yes	Opposes the application. Considers WCC should not be a consenting authority for the application as an economic shareholder in WIAL and because they have a responsibility to keep rates to a minimum. Does not think WIAL has learnt from the experiences of Rotorua and Invercargill airports. Considers that the expected rise in long-haul passengers could be catered for by fast rail between the main centres. Concerned about effect on marine ecology and habitat loss and is unclear on what the blue/green shaded area in the Site A plan represents. Concerned about the extended hours for construction activities, particularly the constant movement and idling of heavy vehicles. Considers that WCC need to place sensitive noise and ground vibration receivers on the Houghton Bay ridge, as this has an amphitheatre effect. Suggests noise mitigation measures: no heavy vehicle operations between midnight and 6am, double-glazing of residents' windows, and alternative transport methods. Notes that the Evans Bay fault line is considered to cause subsidence if it moves.
328	Underwood, Rachel	Oppose	No	Opposes the application. Concerned about the economic business case and does not think ratepayers should bear a major part of the costs when there are other more pressing needs in the city. Notes international airlines' lack of commitment to use the new runway and airline pilots' safety concerns. Concerned about long-term effects from climate-change and rising sea levels. Other environmental concerns include effects on marine ecology, use of potentially contaminated fill, and construction traffic presenting a danger.
329	Driver, Barry and Mata	Oppose	No	Opposes the application. Critical of economic case, particularly that Air NZ and Qantas Airlines do not support the proposal, that the demography of Wellington does not provide a sufficiently large population to assure success, that the current noise curfew regime may make it uneconomic, and that the region has insufficient commercial and industrial activity to generate the necessary support.

				Considers the extension not in the interests of nearby residents or the proposed residential area at Stanley Bay. Supports airline pilots' safety objections.
330	Graham, Peter John	Support	No	Supports the application as it will help Wellington to continue to develop.
331	Ryder, Brinsley Donald	Support	No	Supports the extension because they believe it will contribute to economic progress and enhance business and tourism opportunities.
332	Mila, Karlo	Oppose	No	Opposes the extension because it is ugly, awful, damaging and intrusive to the environment.
333	May, Lloyd	Support	Not Specified	Supports the extension.
334	Searle, Brenton	Oppose	No	Opposes the application. Enjoys water sports and is concerned the extension will damage the surf conditions and the marine reserve as well as increase noise. Believes we should stop reclaiming land as sea levels are also increasing.
335	Prockter, Vanessa	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
336	Black, Aaron	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
337	Webb-Pullman, Julie	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
338	Grocott, Robert Gerald	Oppose	No	Opposed to any public funding for the extension.
339	Harrison, Piers	Oppose	Yes	Opposes the application because of negative impacts on surf and recreation and noise from construction and bigger planes. Does not think the economic benefits outweigh the costs.
340	Miramar Business Improvement District	Support	No	Supports the application. Miramar Business Improvement District (The Bid) members are local businesses within Miramar. Survey of members shows clear support for the extension because of economic benefits including quicker transport options, reduced travel times for overseas labour, positive impact on local service businesses near the airport, increased foreign student numbers, and increased tourism.
341	Shock Limited	Support	No	Supports the application. Provides premises for leasing in the Miramar area close to the airport. Believes the extension will have economic benefits including cheaper and more convenient links to Asia and North America, increasing tourism, more international students, and more job opportunities.
342	James, Emma	Oppose	No	Opposes the application because there will be too much environmental impact.
343	Howard, Christina	Oppose	No	Opposes the application. Concerned about the economic cost benefit analysis, lack of airline support, pilots' safety concerns, and the environmental impact.
344	Morrison, Matthew	Support	No	Supports the application.
345	Rusden, Damon	Oppose	No	[Same text as submission #322 with concerns regarding economic business case and surf and recreation effects.]
346	Friends of Taputeranga Marine Reserve Trust Charitable Trust	Oppose	No	Opposes the application. FoTMR highlights technical uncertainties around the project including lack of comprehensive surveys; unknown fill method and composition of sediment and site protection before the concrete accropodes are installed; surf effects and impact of the proposed Surf Wave Focussing Structure; and specific differences within and between technical reports, particularly in turbidity predictions. Considers the impact analysis superficial and biased in favour of the extension and has concerns about: - construction effects on marine habitat and ecology, especially benthic sessile species - turbidity plumes and potential dispersal of suspended sediments beyond the reclamation construction zone - re-suspension of potentially toxic sediments during construction - effects of fine-sediment blankets and effect on re-colonisation of the Lyall Bay shoreline - underwater noise - increased spread of exotics - potential effects of sedimentation on kaimoana - source of cleanfill that avoids any contamination Considers that a comprehensive monitoring and adaptive management programme must be developed before approval of any construction. Support the proposal to design and construct the rockwall to enhance biodiversity. Would like to see more cultural involvement of tangata whenua.
347	Wharakura, Daniel	Neutral	Not Specified	Blank pdf submitted
348	Ebanks, Lester Melvin	Oppose	No	Opposes the application because of concerns about: cost to ratepayers; viability; economic growth; construction traffic; health impacts from dust and marine pollution; safety of the 90m RESA; surf effects; recreation; marine ecology; and lack of consideration of climate-change impacts.
349	Ebanks, Leonora Mary	Oppose	Yes	Opposes the application. Lives in Lyall Bay with views of the airport. Concerned about short-term effects: noise, dust and vibration from truck traffic and restrictions on recreation areas on Lyall Bay Beach. Also concerned about long-term effects on the surf break and ecological damage.
350	Steel, Jared	Oppose	No	Opposes the application and thinks the economic benefits have not been adequately demonstrated. Has not seen an assessment accounting for how aircraft and landing technology changes may render the extension work redundant in the medium or long term. Concerned about costs to ratepayers and airport users. Considers the project will undermine the recreation and surf lifestyle Lyall Bay offers to residents and visitors.
351	Randerson, Richard	Oppose	Yes	Opposes the extension because of (1) damage to marine ecology; (2) impact on surf, social and recreation; (3) lack of economic business case; (4) impact of construction; (5) lack of support from airlines; and (6) opportunity cost of spending public money.
352	McGuinness, Mark	Support	Not Specified	Supports the application. Believes improving long-haul connections is crucial to attract and retain the talented people and smart companies necessary for Wellington's economic growth. Thinks the extension will decrease airfares through increased competition and other benefits include: regional economic growth through increased freight capacity, promoting Wellington as a tourist destination, and attracting more international students.
353	Ernst & Young Limited	Support	Yes	Supports the application for its economic benefits. Ease of mobility for staff members is important for Ernst & Young Limited and they consider a greater number of direct flights will drive productivity gains for them. [Includes part of the same text as submission #308 concerning potential economic benefits].
354	Adams, Sarah	Oppose	No	Opposes the application and considers it a waste of money that would be better spent preparing ourselves for the impact of climate-change rather than building a runway into the sea.

355	Bevan McCabe	Oppose	Yes	Opposes the application as it risks being a white elephant and major airlines have said they cannot justify long-haul trips to Wellington. Considers more flights contrary to Wellington's goal of reducing carbon emissions.
356	McVeagh, Joanna	Oppose	No	Opposes the application because it conflicts with WCC policy to reduce climate-change emissions; does not trust economic business case; the fact that the area is part of a site of significance for indigenous bird ecology has not been adequately recognised; and an extension will interfere with birds' flight paths and put air travellers at greater risk due to bird strike.
357	McLean, Madeleine	Oppose	Yes	Opposes the application because of the visual impact on the beautiful scenery and disturbance of delicate ecology such as little blue penguins. Believes the extension is unnecessary and the money could be spent on more worthwhile things. Also concerned about the safety of the 90m RESA. Considers four years construction disruption excessive and concerned that noise pollution will increase once it is completed.
358	McGlynn, Mike	Oppose	Yes	Opposes the application. Particularly concerned about effects on the Lyall Bay surf conditions and considers The Corner warrants the utmost protection for future generations, as there is nowhere else for Wellington's surf community to go.
359	Norton, Patricia	Oppose	Yes	Opposes the application for reasons: (1) if it is as economically viable as claimed, then the applicant should pay the full cost; (2) lack of support from airlines; (3) construction traffic effects; (4) noise, dust, and vibration effects on traffic routes; (5) effects on sewage utilities and implications on adjacent marine reserve are unclear; (6) unknown ecological effects on marine and shore life; (7) pilots' safety concerns; (8) increase in carbon emissions; and (9) the impact of climate-change factors does not seem to have been properly considered.
360	Wellington Water Limited	Neutral	Yes	Neutral towards the application but seeks protection of its utilities infrastructure. Submits on two specific parts of the application: (1) reclamation within the CMA where it encroaches on the Moa Point Wastewater Treatment Plan outfall pipeline and (2) construction activities that could affect the sludge pipeline along Moa Point Road and wastewater interceptor under the southern end of the existing runway. Considers the application lacks detail, including the significant consequences of damage to the Moa Point outfall pipeline and how it will be protected. Unconvinced that 'burying' the pipeline under the runway reclamation is acceptable, given the potential impacts if the pipeline is damaged and cannot be acceptably repaired or maintained. Notes there is no reference in the AEE to the inceptor main and sludge pipeline and the potential risks to these from construction. Seeks a more detailed and clearly laid-out methodology be described in the conditions for the NUMP.
361	North, Kym	Support	No	Supports the application and believes it will be a very positive outcome for the Wellington Region.
362	Gill, Swarma	Support	No	Supports the application and believes it will be a very positive outcome for the Wellington Region.
363	Gill, Rasbeer Singh	Support	No	Supports the application and believes it will be a very positive outcome for the Wellington Region.
364	Shergill Trust	Support	No	Supports the application and believes it will be a very positive outcome for the Wellington Region.
365	McGuinness, David	Support	No	Supports the application because of economic benefits, particularly increased business and tourism opportunities. Believes the airport is a key infrastructure asset for the entire region.
366	Davies, Nick	Oppose	No	Opposes the application as it detrimentally impacts on coastal habitat and Moa Point marine ecology. Thinks this habitat also has important heritage value for the Wellington community.
367	HAMPTON, SHIRLEY	Oppose	Yes	Opposes the extension. Walks around Lyall Bay frequently and is concerned it will disrupt surf and recreation; that the fill will adversely affect marine ecology such as little blue penguins. Considers the south coast a fragile area. Does not want their rates to go towards it and and not convinced that there is adequate economic research showing demand for direct long haul flights. Also concerned about the safety of long-haul flights landing in Wellington weather conditions.
368	McIntosh, Ian	Support	No	Supports the application. Involved in the Lyall Bay Surf Life Saving Club and other recreation such as dog walking on the beach and believes the beach environment and community has always changed and will continue to change with or without the extension. Considers WIAL plays a critical part in the local and regional economy and the extension will increase their economic contribution. Believes direct flights will bring further diversity and opportunity for Wellington.
369	Nelson, Russell	Support	Yes	Supports the extension because achieving better international links will have flow-on economic benefits. Travels regularly and twice had to stay overnight in a hotel in Auckland to catch an early morning flight. Have had flights from Wellington>Auckland delayed, resulting in missing international connections with costs including: missed an important meeting and cost the company a significant commission, and another time had to completely rebook flights. Also thinks the extension would improve safety for planes.
370	Smith, Mandy	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
371	Gill, John	Oppose	No	Opposes the application and does not want WCC to pay for it. Concerned that (1) the airport turned down the business opportunity as not economic but said they would do it if it's free money; (2) that there may be a safety issue for bigger aircraft taking off into a prevailing northerly wind; (3) noise will be an issue; (4) the extension will be exposed to erosion and crosswind; and (5) traffic during construction. Notes lack of support from Air NZ and Qantas.
372	Privett, Stephen	Oppose	Yes	Opposes the proposal. Concerned with economic cost of the project; marine pollution due to runway fill; and the construction exclusion zone affecting the submitters ability to do recreation diving.
373	Brown, Robyn	Oppose	No	Opposes the runway extension due to the economic cost of the project and lack of valid business case. Concerned about the viability of the structure long-term due to climate-change and sea level rise. Concerned with ecology and recreation impacts to Lyall Bay.
374	Marra, Paddy	Support	No	Supports the proposal due to the economic benefits, saving the public and businesses in the region time and money. Submitter proposes that fill from the second Mt Vic tunnel should be used for runway extension fill, or harbour dredging fill, to save money on the project. Traffic congestion on SH1/airport corridor needs to be alleviated.
375	Zwaan, Rick	Oppose	Yes	Opposes the extension. Economic costs are uncertain and will be a huge waste of ratepayers money, meaning council services will be reduced in other areas. The proposal has large potential to do irreversible damage to the environment including ecology effects on marine life and recreation effects to divers, surfers, beach goers and fishing.
376	Bailey, Gillian	Oppose	No	Opposes the proposal as it is an unnecessary and expensive economic cost.
377	Protin, Arthur	Oppose	No	Opposes the proposal as it is not based on a sound economic analysis. Disputes the economic benefits put forward by the applicant.
378	Griffiths, Gore	Oppose	No	Opposes the extension. Adverse effects from fill on the ecology of the marine environment. Adverse effects on Lyall Bay beach and recreation users - surfers will be affected and the artificial reef may cause unknown effects that may endanger water users. Concerned with increased operational airport noise on local residents. Concerned with increased congestion and construction traffic, may cause significant disruption to evacuation of southern suburbs during a natural disaster. WCC cannot act independently on this proposal as a shareholder.

379	Philipsen, Rob	Oppose	Yes	Opposes the runway extension, as rate payers should not pay for an asset in private ownership. The submitter states that there are no independent studies that prove any significant economic benefits. Traffic congestion in the airport corridor is already severe and needs to be addressed before thinking about increasing airport passenger numbers. There is a need to fully assess the impact on the local community, particularly impacts to recreation and ecology. Concerned about dust, noise impacts and traffic impacts on local residents during construction.
380	Howe, Barbara	Oppose	No	Opposes the extension as the projected economic benefits seem wildly overstated, and do not want their taxes wasted on the project. Traffic impacts - congestion and local infrastructure cannot cope with the increase in passengers. Climate-change and rising sea levels place a lot of risk in project viability. Visual impacts will be significant on Evans and Lyall bays. Noise effects of construction and construction traffic will have negative impacts on local residents.
381	Stantiall, Ben	Oppose	No	Opposes the extension. Economic costs are uncertain and will be a huge waste of ratepayers money, meaning council services will be reduced in other areas. The proposal has large potential to do irreversible damage to the environment including ecology effects on marine life and recreation effects to divers, surfers, beach goers and fishing.
382	Foon, Laurie	Oppose	Yes	Opposes the runway extension as the public is yet to see an independent, rigorous and robust business case to assess the economic benefits. Opposes ratepayers carrying the burden of cost for the proposal, and the reduction of council services that will occur. Ecology impacts - Moa Point has giant kelp forests, little blue penguins and nationally endangered reef heron, as well as other important marine life. Recreation, surfing and diving activities will be impacted. Concerned effects of climate-change and sea level rise have not been taken into account. Very concerned about the increase in heavy traffic through Wellington suburbs.
383	Stephen-Smith, Naomi	Oppose	No	Opposes the runway extension. Believes that traffic effects from transport to and from the airport are not addressed in the application, and further congestion of the SH1 corridor will result. The submitter also states that Wellington International Airport does not support residential traffic using Stewart Duff Drive, so should consider some traffic mitigation strategies as part of the proposal. The submitter states there does not appear to be a cost benefit analysis of the proposal, and the economic benefits are not clear.
384	Fleming, John	Oppose	No	Strongly opposes the runway extension. The southern coastline is the jewel in the Wellington environmental crown and an integral part of what makes Wellington what it is, with Lyall Bay in the centre of this area. Recreation will be impacted by the extension by affecting surf and the beach. Visual effects will be significant in breaking the natural coastline, dominating coastal views and changing the feel of the area. Submitter states that an independent process is needed to assess the environmental impact. Submitter believes that the proposal should not go ahead without a sound business case, and the economic cost-benefit does not stack up.
385	Annesley, Barbara	Neutral	No	Opposes the extension as it does not make economic sense and does not appear to be financially viable. The submitter opposes the proposal on recreation and ecology grounds - detrimentally affecting surfing, diving and fishing on the south coast, as well as marine life, kelp forests and little blue penguins. The submitter believes further investigation and analysis is needed to establish a compelling case for the runway extension.
386	Leloir, Philippe	Support	No	Support the extension as it will enhance the Wellington regional economy, increase employment opportunities, future proof the airport, and enhance tourism, particularly in the Wairarapa. The submitter supports the stated benefits and environmental effects in the application.
387	Wellington Recreational Marine Fishers Association	Oppose	Yes	Oppose the extension. Wellington Recreational Marine Fishers Association (WRMFA) view it as unacceptable that they were not consulted regarding denying access for recreation for fishers and divers to a very large marine area due to the runway extension. These areas were set aside by the government as an offset to the previous establishment of marine reserves. They believe the closed area around the construction site is far too big, and closing the entire area for at least four years is illogical and confrontational. The submitter disputes the findings of the TRC Tourism Technical Report 6 - Assessment of Effects on Recreation, as no recreational fishers were interviewed between 13 March and 1 April, when they believe there would have been hundreds fishing and collecting seafood etc. The submitter presents the WRMFA survey from 1998 as evidence of how important the south coast of Wellington is as a regional asset for recreational fishing and marine activities. The submitter states that there is an unacceptable double standard between the health and safety provisions of very large marine exclusion area for construction, and the actions of WCC in other areas. They cite several grievances with WCC actions and management relating to recreational fishing assets and access. Ecology - the submitter believes the NIWA report on marine life is seriously flawed and shows a lack of understanding on the local marine environment and recreational fish species. The submitter states that the loss of bladder kelp forests will have a massive impact on marine species in Lyall Bay. The fill for the extension will see sediment smothering marine life, and the Sediment Management Plan is not fit for purpose and will not adequately manage sediment. The submitter states that the runway breakwater will fail due to the severity of Cook Strait swells not being taken into account. They believe that the current knowledge held by govt agencies and NIWA is completely inadequate and will cause the project to fail. Climate-change is increasing the speed of currents and severity of swells in storms, which was cause greater gravel deposition and cause the biggest threat to the runway extension structure. The submitter believes that the need for the wave structure is unproven, and is likely to cause erosion on Lyall Bay and cause impacts such as wiping out support structures for the surf lifesaving club. Utilities - the submitter states that the runway extension will cause the collapse of the wastewater pipe.
388	Ong, Sing Gay	Support	No	Supports the application and thinks the economic gain could be huge.
389	Newton-Howes, Marcus	Oppose	Yes	Opposes the application for reasons: (1) NZ has a duty to take steps to curb climate-change and making air travel easier is contrary to this goal. (2) Economic costs are too great and the $300-$350 million of public money should be spent on more important projects. (3) Traffic will add to congestion and the noise will disrupt people who live on the route's sleep. (4) NZ does not need another international airport. (5) It will not be long enough for safety concerns. (6) It will negatively impact surf. (7) It will impact marine ecology. (8) The economic benefits are uncertain.
390	Wellington Trails Trust	Support	Yes	Supports the application. Wellington Trails Trust (WTT)'s 10-year vision is for Wellington to be recognised as the world's best mountain bike city and achieving this vision requires better links between Wellington and the rest of the world. Believe the economic benefits of the extension will include: more visitors and making it easier for the entrepreneurs and business people they want to attract to connect with the rest of the world.
391	Helfen Limited	Support	No	Supports the proposal as it will bring direct and indirect economic benefits to the region. Direct links to Asia will reduce business costs for his company. Tourism growth and growth in international students in Wellington due to direct long haul flights.
392	Oil Free Wellington	Oppose	Yes	Oppose the proposal. Believe that the airport already possesses unfair and undue control over the Miramar peninsula. The runway extension will further increase airport noise and disrupt local residents. Extending the runway will further increase traffic and congestion in the area. Construction traffic of 5-30 trucks per night time hour will create a large disruption for residents. They are concerned that the project will cause significant cultural impacts on whenua and the takutai moana, and doubt local iwi will be able to exercise their rights in the decision process. Impacts to ecology - particularly the critically endangered reef heron at Moa Point. Any impact on protected species should be enough reason to prevent the project going ahead. Climate-change effects - at a time of climate crisis, expanding an airport and growing air travel is the opposite of what should be done.

393	Watson, Owen	Oppose	Yes	Opposes the extension, as the public economic benefits are very overstated, and may even be negative if we go into a recession.
394	Elzenaar, Alexander	Support	No	Supports the extension. No submission text to support their position.
395	Caldwell, Elizabeth	Support	No	Supports the extension to encourage greater ease of international travel. Particularly interested in supporting the ability to land wide-bodied cargo planes, to facilitate the delivery of artworks from overseas. Landing wide-bodied planes at Wellington will reduce transit costs for exhibitions at the gallery, and increase the number of exhibits that can be shown in Wellington.
396	Jawing, Felix	Support	No	Supports the extension as it would be great to have more direct international flights in Wellington.
397	Sherman, Mitchell	Support	No	Supports the extension because it will happen one day, so should be done as soon as possible. The runway extension will be great for Wellington in many ways.
398	Weir, Alex	Support	No	Supports the extension as it will facilitate economic growth and development in the region for 20+ years. Direct flights to the United States and Asia will provide a huge boost for tourism, and help to capitalise on Wellington's international reputation as the "Coolest Little Capital". The extension will also be positive for surf and ecology, allowing for the creation of new habitats on artificial reefs. The extension will be great for recreation in that it will make the Lyall Bay Surf Club more popular and offer a better training environment for surf lifesavers. Wellington needs more economic development and to not stay stagnant.
399	Wong, Aaron	Oppose	No	Opposes the extension as the estimate of economic benefits outweigh the envrionmental compromises. Particularly concerned about the effects on marine life ecology, and loss of recreation amenity at Lyall Bay. The proposal fails to properly consider the effects of climate change and the effects this will have during construction (in case of extreme weather event) or in operation.
400	Puddick, Vernon	Oppose	Yes	Opposes the extension. Concerned that traffic routes are already congested, and the increase in passengers will exacerbate congestion. Believes that there is existing capacity for international passengers within current services to Wellington and Auckland that will allow for significant growth without the need for the runway extension. Due to the economic impacts of climate-change on Wellington in the next 100 years, and the increased burning of fossil fuels from increasing flights, the predicted increase in revenue from the extension will not offset the cost due to sea level rise.
401	Henderson, Kevin	Oppose	Yes	Opposes the extension due to operational safety issues and life-threatening hazards that are not addressed in the runway design; the economic cost-benefit analysis does not support the proposal as the benefits are overstated.
402	Murray, Robert	Oppose	Yes	Opposes the application, as the proposal: has no economic viability and therefore no justification for the removal of the proposed marine area from the public domain; construction will be too disruptive to the City and the submitter personally; and safety is insufficiently addressed.
403	Petherick, Laurence	Support	No	Supports the application. Submitter does not believe the proposed extension will have any marked effect on current recreation surf conditions around Lyall Bay Beach. Concerned that an artificial reef may adversely affect "the corner" surf break and the remainder of the beach, and believes it necessary to put in place a rigorous monitoring scheme to determine if the artificial reef is working.
404	Upper Hutt City Council	Support	No	Strongly supports the proposal due to the economic benefits that can be gained, particularly from direct flights from Asia. Runway extension is one aspect of a broader regional growth package that will increase visitor numbers and boost the economy and have a positive impact for the community.
405	Carnegie, Kieran	Support	No	Supports the application to facilitate economic growth in Wellington
406	Watt, Diana	Oppose	Yes	Opposes the application. Concerned with: effects on marine life ecology and ecosystem; loss of personal recreation opportunities; sediment from fill affecting the kelp forest; impacts to reef herons and blue penguins; effects of climate-change, sea level rise and storm surges; overstated economic cost-benefit predictions; increased costs to airline passengers and ratepayers; traffic and noise effects from construction. Alternate site should be investigated.
407	Schneider, Renate	Oppose	No	Opposes the proposal as the environmental impacts are too great and economic costs are too high. Concerned over impacts to residents due to construction noise and traffic. Roads around the airport do not have enough capacity to support the development proposed.
408	Marlborough Tour Company	Support	Yes	Supports the proposal wholeheartedly as it will drive economic benefits for Wellington and the top of the South Island. The submitter will benefit greatly in their business - Marlborough Tour Company - from increased tourist numbers to the region, particularly in Asian market. Believes economic benefits will be gained for the whole of New Zealand by increasing direct long-haul capacity. Submitter identifies a near-monopoly on international flights into Auckland, and believes greater competition is needed.
409	Barnes, Richard	Support	No	Supports the proposal in full. Submitter sees no issues with environmental impacts: additional construction traffic will not add to noise or congestion on the busy highway corridors. The submitter believes that the application mitigates the effects on recreation surfing at Lyall Bay. Would like to see funding split between the interested parties based on increase in income for the airport.
410	Chen, Even	Oppose	No	Opposes because the benefits do not greatly outweigh the cost.
411	Chen, Etan	Oppose	No	Opposes because there are more high priority problems in New Zealand than the runway.
412	Whittington, Lydia	Support	No	Supports the application due to the economic benefits that will be gained in the Wellington region. Resiliency - Wellington Airport can provide another place for long-haul aircraft to land if Auckland and Christchurch airports are closed.
413	Wylie, Carolyn	Support	No	Supports the proposal for the growth and economic benefits that will be gained for the Wellington region. Submitter considers that the economic benefits far outweigh the environmental effects. Submitter requests that consent is granted with the 15 year lapse period requested.
414	Whittington, Stephen	Support	No	Supports the proposal as an important piece of regional infrastructure and for the economic benefits that will be gained by improving international air links.
415	Stephens, Katherine	Oppose	Yes	Opposes the application. Concerns regarding the economic viability/justification for the proposal; lack of a traffic plan from airport to city to cover the huge increase in passengers; seeks independent consultants to address recreation impacts to Lyall Bay beach, noise impacts to local residents and local traffic impacts.
416	Marshall, David	Support	No	Supports the proposal due to the economic benefits that will be gained. Submitter is willing to pay modest increase in rates to pay for the extension; believes a vocal minority should not be able to stifle progress in the region, as has happened with other transport initiatives in Wellington.
417	Gard, Samantha	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
418	DEPARTMENT OF CONSERVATION - HAMILTON	Neutral	Yes	Submitter is neutral towards granting of the resource consents. Submission is in regards: sediment discharge from fill; ecology of rare red algae and loss of reef habitat and displacement of macro fauna. Submitter seeks amendment to the wording of proposed condition 64(a), and proposes 3 new conditions regarding sediment discharge from fill. The submitter supports the retaining and wording of the conditions relating to mitigation addressing the loss of reef habitat and relocation of mobile reef macro fauna.

419	James, Charlie	Oppose	Not Specified	Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
420	Earl, Christina	Oppose	No	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
421	McGovern, DR Bronwyn	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts. Strongly oppose the proposal as the environment should be left for future generations to enjoy and appreciate. Proposal will cause adverse effects to the visual beauty and landscape of Lyall Bay and Moa Point.
422	Pemerika, Gafua	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
423	Slade, Jennifer	Oppose	No	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
424	Hawkes, Joanne	Oppose	No	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
425	Whakamoe, Kezia	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
426	Coronno, Mark	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
427	Pitcher, Nick	Oppose	No	Opposes runway extension. Recreation - proposal will negatively affect Wellington's prized surf break, and concerned artificial reef will not mitigate this effect.
428	Dear, Pauline	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts. Council should look after basic infrastructure before extending the airport. Ratepayers should not have to pay for a private asset.
429	Coronno, Rachel	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
430	Reed, Richard	Oppose	Yes	Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts
431	Cotidis, Tania	Oppose	Yes	Opposes the application. Enjoys the beach and wants it to remain the same. [In addition, same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
432	Kershaw, Tessa	Oppose	Not Specified	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
433	Roland, Timothy	Oppose	No	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
434	Ishaan Kochhar	Support	No	Supports the application as an international student. Considers it will have economic benefits for Wellington and the university.
435	Gallagher, Kathleen	Support	No	Supports as it would create growth for the Wellington region.
436	Munro, Robert	Oppose	No	Opposes the extension as there is no persuasive economic business case.
437	John Cordner	Support	No	Supports the application. Thinks it represents an overall economic benefit to Wellington. Considers the environmental effects such as traffic and noise are outweighed by significant benefits and supports the wave focussing structure proposed to address surf effects.
438	Munro, Alison	Oppose	No	Opposes the application. Has seen no buy-in from key airlines and wants to know who will cover the cost of increased border security/customs. Doesn't think increased pollution and environmental damage is acceptable. Concerned about surf effects. Thinks the visual landscaping improvements should occur without building the runway. Thinks the damage done by construction traffic, as well as noise, is underplayed. Does not think the economic benefits will eventuate.
439	Mitchell, Gary	Support	No	Supports as it is a great opportunity for the Wellington region.
440	Munro, Mary	Oppose	No	Opposes the application. Concerned that it is not supported by a strong economic business case and that airlines do not back it. Considers that traffic congestion to the airport is already bad enough. Thinks ideally the airport should be located elsewhere to the north, not extended to create more congestion and noise pollution. Wants to know where the fill will come from. Also concerned with environmental impact on the south coast.
441	Brown, Brian	Oppose	Yes	Opposes WCC being involved in granting resource consent for the extension when they have also indicated their intention to provide funding for it. Opposed to the granting of a ten year consent for construction. Considers the council is in breach of principles in the LGA clauses 14(a),(i) and (f).Considers it involves unacceptably high degree of commercial risk and uncertain economic viability and that costs are likely to overrun. Considers Council is failing to meet transparency principles in clause 14(i) and that a 10-year consent for construction indicates clear uncertainty as a properly thought-out commercial project could be expected to be completed in 3-5 years.
442	Day, Greg	Oppose	Yes	Opposes the application. Critical of economic cost-benefit analysis, particularly that there are no clear costings, only indirect benefits are included, external costs are not costed, and the hub-and-spoke model is the most utilised model in world aviation. Considers the business case laughable and questions what it will cost, what will the benefits be, what percentage of Wellington's population will indirectly and directly benefit, what percentage of the population will be negatively impacted, and if the costs of using the airport will increase.
443	Nimmo, Richard	Oppose	Yes	Opposes the application. Concerned about the economic cost to ratepayers and who shares in profits/over budget costs. Wants to know about compensation to the council for road damage due to heavy trucks and to residents for night time noise. Wants to know if an independent feasibility report has been completed and if alternative areas for the airport have been considered. Thinks locating a longer runway on existing land outside of town would cost less and address traffic congestion problems.
444	Findlay, Rachael	Oppose	No	Opposes the application as ratepayer money should not be wasted on corporate hand-outs. Asks why if it's such a great economic proposal, the owners of the airport don't invest their own money.

445	Blaylock, Roger (Corporate Consumables Limited)	Support	No	Supports the application and has been managing director of a company located in Rongotai for more than 20 years. Particularly supports economic benefits, including how the extension would: (1) mean freight could be flown directly into Wellington, making a more efficient supply chain; (2) increase tourism opportunities; (3) make Wellington a more attractive option for international students; (4) increase Wellington Airport's freight capacity. Satisfied that WIAL has mitigated any environmental impact concerns.
446	Quirk, Carol	Oppose	Yes	Opposes the application. Has used Lyall Bay for recreation for about 50 years. Submits that several technical reports have insufficient data on which to base their conclusions. Critical of the following parts of the AEE reports: (a) Cultural - Technical report 5 doesn't recognise the heritage significance of Lyall Bay as one the places Duke Kahanamoku introduced surfing and where the first surf lifesaving patrol in NZ was undertaken in 1910. (b) Recreation - Critical of online survey, that personal observations were done only on 16 days in late autumn in unknown conditions, that Figure 1 understates areas used by recreational users, that Maranui does not patrol Lyall Bay, and the report doesn't identify potential effects of the Moa Point Rd mitigation on The Corner surf break or of the Mount reef. (c) Safety - notes difficulties with maintaining navigational buoys on the Mount Reef, potential for rip creation, distance from shore of the artificial reef that may result in people being swept out to sea. (d) Coastal process and surf quality, erosion - critical of length of time/extent of data samples and that effects of climate-change and sea level rise are not addressed. Notes that the Pickrill reports are nearly 40 years old and there have been changes in the beach profile since. (e) Ecology; (f) Considers economic benefits exaggerated. (g) Could not find assessment on effects of construction noise and traffic on property values. (h) Concerned at length of the construction time period and exclusion zones of 300m, meaning massive restrictions on recreation. and (i) Noise Finds it worrying that the effects on surfing are proposed to be mitigated by an untried and experimental artificial surf reef, which has not yet been designed and the effects of which will create significant problems. Notes peer review by ECoast has said the DHI technical report is fundamentally flawed and the model inappropriate. Examines results of other artificial reefs, which have not been successful. Concerned that artificial reef may pose a safety risk to swimmers and that rock reef material will end up on the beach. Considers the application falls short of fulfilling statutory requirements. Does not think the SMAMP in the proposed consent conditions will ensure the desired outcomes and thinks it is essential that a removal condition for the rock reef is included if significant adverse effects occur. Does not think alternatives were adequately considered.
447	GIBSON, MICHAEL	Oppose	Not Specified	Opposes the extension. Doesn't think the application takes into account that future aircraft may require shorter runways or the need for better road access. [In addition, part of the same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
448	C Watson Consultancy Limited	Oppose	Yes	Opposes the application. Concerned about the economic costs and environmental effects including those on marine ecology, traffic and associated noise, dust and air pollution. Considers the proposed council payment breaches the fundamental tenet of "user pays" economics and thus cannot be justified in terms of the NZ Treasury Better Business Case. Considers tourism a false friend as it increases the proportion of low-wage jobs. Particularly concerned about climate-change considerations and that the need to reduce carbon emissions requires less air travel. Thinks increasingly people will choose not to fly for this reason. Suggests the internet provides the means to remain connected internationally without flying.
449	Edwards, Mark	Oppose	No	Opposes the application. Critical of the economic business case, particularly that the benefits are likely to be national rather than regional so it doesn't make sense for the city residents to pay for it and states there is no evidence of need for it. Considers Lyall Bay will be subject to increasing erosion issues with sea-level rise, which will be magnified by the extension. Concerned about noise from night work and thinks residents will need double glazing.
450	Destination Great Lake Taupo	Support	No	Supports the application and highlights potential economic benefits, particularly to tourism. Destination Great Lake Taupo places considerable weight on having multiple international airports within easy driving distance of the Taupo region and considers that it will help with tourism flows and attract new international airlines, investors, and open up new tourism markets.
451	Tozer, Greg	Oppose	Yes	Opposes the application due to effects on water quality and marine ecology at Taputeranga Marine Reserve and Moa Point. Concerned that marine-derived fill from CentrePort may be contaminated.
452	CENTREPORT LIMITED	Support	Yes	Supports the application because of economic benefits and opportunities for synergy with other major infrastructure projects. The proposal provides an opportunity for dredge material from CentrePort Limited's proposed channel deepening project to be used as reclamation fill, promoting efficiencies and reductions in environmental effects for each respective project.
453	Bryn Whyman	Oppose	No	Opposes the application because of damage to marine ecology and fish populations with construction so close to popular areas for recreation fishing and diving and the Taputeranga Marine Reserve.
454	Underwood, Catharine	Oppose	Yes	Opposes the application on environmental grounds. Thinks there has been no consultation with residents in the wider Wellington area about increased plane noise and flying over new suburbs and that this will make Wellington a less pleasant place to live and visit. Concerned about impact on marine life, recreation, and surf at Lyall Bay and whether the fill used will be clean. Objects on economic grounds because there is no robust business case and it will mean council can't fund other projects with greater benefits. Objects to increased truck traffic and associated noise, dust, and safety concerns.
455	Johnson, Jamison	Support	No	Supports the application as it is needed to future proof the airport and ensure it does not become a bottleneck to future regional economic growth. Notes trend in commercial aviation is towards mid-sized passenger aircraft capable of travelling greater distances.
456	Nelson Airport Limited	Support	No	Supports the application as it will greatly improve economic prosperity of the Nelson/Tasman region. Wellington is a 25-minute flight from Nelson/Tasman rather than the 1hr 20min flight to Auckland, currently the main port of entry for tourists. One of Tourism NZ's stated objectives is to enable better disbursement of visitors into the regions and another long haul entry point will support this. Thinks the extension will also improve connection times for business interests in Nelson/Tasman, which will encourage people to choose to live in regional NZ.
457	Early Childhood Council	Support	No	Supports the application, particularly economic benefits. Keen to bring its annual conference back to Wellington after being forced away following the earthquake two years ago. Considers the extension would increase tourism opportunities and make Wellington a more attractive option for their annual conference, enabling them to further market for delegates from overseas constituencies. Satisfied that WIAL has mitigated any environmental impact concerns.
458	Dougherty, David	Support	No	Supports the application. Frequently travels internationally. Thinks infrastructure is never built for today but for tomorrow and for future generation's needs and that as stewards of our city we need to

				build the infrastructure appropriate to support those needs. Would personally use Wellington as a port of departure to Asia and Europe. Considers Air NZ's opposition is due to their economic business model and not about passenger needs. Submits that freight/cargo is a significant airline revenue stream and that direct flights to Asia are attractive to the needs of flower, produce, fine food and wine industries. Considers we need to build resilience into NZ's export abilities. Personally finds flying through Auckland inconvenient and costly.
459	Johnson, Michael	Support	No	Supports the application for the long-term economic growth and health of Wellington. Works for a global organisation where connectivity is greatly important to ensure they can keep senior positions based in Wellington rather than moving them to a more accessible city like Auckland. Does not think vocal minorities should stop progress.
460	Abraham, Quentin	Oppose	No	Opposes the application because of our climate-change commitments, the economic cost/benefit analysis, and passenger safety.
461	Kearns, Nowell & Velda	Support	Not Specified	Supports the proposed runway extension
462	Newtown Residents' Association Inc.	Oppose	Yes	Opposes the application based on the following concerns: the economic business case is weak and the demand forecasts are unconvincing; there are unknown economic risks to ratepayers and opportunity cost is not taken into account; significant negative effects of construction traffic through the city causing noise, congestion, pollution (dust), and added congestion; safety concerns raised by pilots; effects of rising sea levels have not been adequately investigated (climate-change); roading and traffic effects due to increased airport demand for passengers and freight; New Zealand's commitment to climate-change mitigation and the potential effects for long-haul flight costs and demand. The submitter questions whether delaying the applications by 15 years would allow for a better assessment of the costs and benefits.
463	Morris, Jonathan	Oppose	Yes	Opposes the application due to the following reasons: economic risk to Wellington ratepayers; traffic impacts; construction and operational noise impacts and disturbance; and visual landscape effects, permanently degrading their enjoyment of life.
464	Klaphake, John	Support	No	Supports the application as it will do a lot for the growth and viability of the Wellington region.
465	Cave, Michelle	Support	No	Supports the application due to the economic benefits of Wellington being better connected internationally. The construction work associated with the project will provide immediate economic benefits through local employment.
466	Wellington Institute of Technology & Whitireia Community Polytechnic	Support	Yes	Supports the application as it is likely to provide very significant economic benefits to the region. These benefits are through attracting international students, particularly as a result of direct flights to Asia, not only for WelTec and Whitireia, but also other tertiary education providers in the region.
467	Stace, Julia	Oppose	No	Opposes the application as it is a waste of ratepayers' money (economic). The proposal will damage the marine environment from extraction fill from the inner harbour and dumping it in Lyall Bay. Climate-change and sea level rise will cause the structure to fail.
468	Blakiston, Charles	Oppose	No	Opposes the application as they question the economic validity and justification of the proposal. Concerned about negative impacts to recreation, particularly surfing at "the corner", degradation of marine ecology, and reduced quality of life. Concerned about increased noise and traffic from construction impacts to residents.
469	Vanisselroy, Cameron	Oppose	No	Opposes the application as the economic benefits do not outweigh the costs, and there is no economic justification for the proposal.
470	Studd, Zoe	Oppose	Yes	Opposes the application. Greatly concerned about effects to recreation and ecology, particularly gathering kaimoana, protecting the marine reserve, protecting species such as the little blue penguin, and impacts to the Lyall Bay surf break. The submitter is concerned about changes in hydrology of both the bays, and the impact of sedimentation and contamination from fill. The submitter is dismayed that the proposal is considered in light of climate-change and associated sea level rise and increase in storm surges.
471	Sanson, Niroo	Oppose	Yes	Opposes the application. Resident of Moa Point for 20 years. Concerned about: construction impacts on ecology marine life and birds; erosion impacts on the bay and their home; round the clock construction effects on their health and wellbeing; and the runway extension will be a visual eyesore.
472	David Fowler	Oppose	Yes	Opposes the application as there is no proven economic need for the extension, they question the funding basis for the proposal, and construction traffic will seriously affect residents and the transport system in general.
473	Patterson, Gemma	Support	No	Supports as the tourism will economically help New Zealand.
474	Buchanan, Andrew	Oppose	Yes	Opposes the application as they do not believe the extension is justified and therefore there will be no return on investment for the project.
475	Faherty, Michael	Support	No	Supports the application as they believe it will have a positive social and economic impact on Wellington. The submitter believes that the requirements of the notified resource consent process are sufficient to ensure developers will need to ensure that any adverse effects are mitigated and/or outweighed by positive effects.
476	Chameleon Events	Support	Yes	Supports the extension due to the local and wider economic benefits that will be gained, and the increase in market competition between airports and airlines. The runway extension will decrease business costs for the submitter's business - Chameleon Events - and encourage further growth in the Wellington creative sector.
477	Gray, Elizabeth	Oppose	No	Opposes the application. Concerned about: construction noise, traffic and dust, especially during the night will be detrimental to the health and wellbeing of local residents; questions the demand for the runway extension and the economic justification for the project; risks to the ecology of marine life; damage to recreation water sports and surf at Lyall Bay; lack of investigation into alternate airport sites outside of the city.
478	Weber, Karl	Oppose	Yes	Opposes the application. Resident of Moa Point. Concerns are: Economic justification - reports produced have been widely discredited upon peer review; the environmental risks are borne by ratepayers, Wellington and south coast residents, while the benefits are almost entirely Infratil's; noise, traffic impacts and disruption to local residents during construction; reports commissioned suffer from incomplete data collection and flawed assumptions, thus are biased in favour of the extension; recreation - lack of access and use of Moa Point by all users, destruction of the surf break; Ecology - impacts to marine life, sediment and turbidity from fill construction activities, destruction of natural reef and giant kelp forest, impacts to rock lobsters and paua, impacts to little blue penguins, reef heron and other marine life; climate-change - no regard has been given to future access of the airport, increased extreme weather events and storm surges will impact construction and operation; no analysis of alternate sites; noise impacts to Moa Point residents, and past failures to implement noise mitigation for Moa Point residents.
479	Chitty, Christopher	Oppose	Yes	Opposes the application. Has owned a house in Moa Point for nearly 20 years. Concerns over: the lack of project economic viability; major disruption to traffic and noise and dust effects from construction; and underestimation of the severity of risk from waves and storm surges on the proposed extension.
480	Sharpe, Matt	Oppose	No	[Same part text as submission #50. Concerns about: economic cost-benefit analysis; and climate-change impacts.]

481	Carver, Bryan	Oppose	No	Opposes the proposal as the economic cost of the extension should be entirely financed by the airport company. If it is not financially viable then the development should not go ahead.
482	Barber, Peter	Oppose	Not Specified	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
483	Kane, Mary	Oppose	No	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]. With climate-change, Wellington Airport will be unuseable within 50 to 100 years.
484	Ennor, Mareke	Oppose	Yes	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
485	Wilson, Susan	Oppose	Yes	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
486	Bisley, Catherine	Oppose	Yes	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
487	Sargent, M F & G I	Support	No	Supports the proposal due to the economic benefits and growth that will result - stimulate the economy, increase market competition and boost tourism.
488	Kelly, Colin	Oppose	Yes	Opposes the application as: effects on the environment are more than minor; the economic business model is weak and unjustified; impacts to marine ecology and recreation (surfing); disturbance to the community; more regional traffic through Wellington increasing congestion.
489	Bisley, Charles	Oppose	Not Specified	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]. Submitter is particularly concerned by the dubious economic benefits and the environmental impact - all users and life associated with the ecosystem need to be considered.
490	Bisley, Jacqueline	Oppose	Yes	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
491	McDonald, Robert	Oppose	No	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
492	Martin, David	Oppose	No	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
493	Hill, Elizabeth	Oppose	No	[Same text as #419. Concerns about: economic cost; construction traffic; health impacts from noise, dust, and sewerage utilities pipe; safety of the RESA; effects on surf, recreation, and marine ecology; and climate-change impacts]
494	David Mitchell	Oppose	No	Opposes the application due to concerns with: negative impact on marine environment ecology; sediment from fill; visual impacts of the ugly protrusion into the bay; impacts to recreation surf break; impact to submitter's property due to erosion and damage to their seawall; noise pollution from increased flights; unjustified economic business case for the proposal.
495	Maich, Judith	Oppose	No	Opposes the proposal as they are unconvinced by the economic business case and justification for the project. Concerned about: huge increase in traffic through Lyall Bay due to construction, causing noise and dust air quality impacts; recreation - impacts on the surf break at Lyall Bay; Visual impacts on the whole landscape of Moa Point; water quality issues from sediment and fill; safety concerns raised by pilots.
496	Peach, Eric	Oppose	Yes	Opposes the application due to the uncertain and conflicting economic cost-benefit analyses, and the environmental consequences which are not fully explored or understood. Concerned about significant traffic disruption during construction activities.
497	Holmes, Melody	Oppose	Yes	Opposes the application. Concerned about: severe impacts on the environment, particularly marine ecology, kelp forests, little blue penguins and reef heron; impacts to recreation surfing diving and fishing; increased economic cost to ratepayers and airline passengers; lack of economic viability; climate-change - sea level rise and storm surges; safety of planes using the runway as identified by pilots; construction noise, traffic congestion and disruption; cultural values of the sacred south coast waters and kaitiaki/guardianship of the environment.
498	Nowotny, Sabine	Oppose	No	Opposes the application as the economic cost to ratepayers is too high, with no government funding support
499	Campbell, Robin	Oppose	No	Opposes the application as the economic benefits do not stack up, and therefore will not outweigh the significant environmental effects. Concerned with: construction traffic effects and disruption to local residents; recreation impacts to the surf break at Lyall Bay; visual impacts to Lyall Bay and Moa Point; impact on the marine environment ecology; contaminated dredge fill; climate-change and sea level rise effects.
500	Lineham, Oliver	Oppose	No	Opposes the application. Climate-change effects: proposal will increase greenhouse gas emissions which will have catastrophic effects; proposal is not in line with WCC Low Carbon Capital plan or GWRC Climate Change Strategy; bringing in larger aircraft will not reduce carbon emissions. Ecology effects: proposal will adversely affect little blue penguins and nationally endangered reef heron; construction will adversely affect marine life in Lyall Bay and the marine reserve; fill taken from the inner harbour is likely to be contaminated. Economic effects: economic benefits are vastly overstated; funding regime for the project is fundamentally unjust between ratepayers and private shareholder.
501	Tait, Janette	Oppose	No	Opposes the application and whole-heartedly supports the Guardians of the Bay's reasons not to proceed. [Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
502	Anstey, Clive	Oppose	Yes	Opposes the application and considers potential environmental effects are grossly understated and uncertain. Submits that: Economic cost-benefit analysis is uncertain, with no serious analysis of the benefits for ratepayers and those who currently live in and visit the affected environment. Costs and benefits are clearly framed within the corporate interests of WIAL. Natural character - south coast has high natural character. Assessment fails to acknowledge the significance of the changes and the visual intrusiveness of such a large structure in a largely undeveloped context. Amenity - report understates visual effects by having a predominance of viewpoints in urban settings and virtually ignoring the effects on visitors. Urban-design - proposed 'mitigation' would further urbanise the character of the proposed extension. If there is a need for additional facilities such as seats and car parks, these could be provided without an airport extension.

				Recreation - only 112 online survey respondents were from Lyall Bay and nearby suburbs. Moa Point is assuming increasing importance for diving and fishing and therefore the effects of the 300m exclusion zone and water turbidity during construction on recreational visitors is not addressed. Basis of conclusion that effects on recreation users would be acceptable is obscure. No attempt made to clearly differentiate construction effects from post-construction effects.
503	Save the Basin Campaign Inc	Oppose	Yes	Opposes the application. Comments particularly on construction and operational traffic impacts on the Basin Reserve area. Comments that the prospect of supply more marine-sourced fill appears to depend on dredging projects not under control of the applicant and barbing material would create another set of environmental issues in an already busy and sensitive marine environment. Submits that construction traffic should be assessed on the basis of the worst-case scenario in Technical Report 9, which is up to 1 truck movement per minute with hours 9.30am-2.30pm and 10pm-6am. Concerned about the length of the construction period and significant adverse effects on: public health, including road safety, dust, emissions, and sleep disturbance; economic productivity due to delays; and loss of amenity values through the centre of Wellington. Submits that applicant has not adequately considered alternative routes or methods. Post-construction traffic: considers applicant has failed to have regard to WCC's sustainable transport hierarchy and has considered only motor vehicle trips, to the Low Carbon Capital Plan as it will increase car use, and has failed to consider effects of increased vehicle journeys exacerbating existing parking and congestion and the effects of particulate emissions from the additional private motor vehicle use envisaged. Other issues - submits applicant has not considered climate-change, adequately demonstrated economic benefits, adequately acknowledged environmental effects including those on marine ecology, visual and landscape, amenity, and heritage. Does not consider the opportunity cost has been assessed or alternative locations or methods investigated.
504	Little, Jane	Oppose	No	Opposes the extension because (1) the applicant has no plan to reduce climate-change emissions; (2) economic case not proven viable; (3) requested proportion of public funding much higher than annual dividends; (4) no commitment from airlines; (5) no satisfactory mitigation and monitoring plan for marine ecology impacts; (6) no evidence that the Surf Protection Society's conditions will be met; (7) traffic impacts; and (8) safety concerns.
505	Hamilton, Geoff	Support	Yes	Supports the application. Works as a surf lifeguard and lives in Lyall Bay. Concerned with public safety at Lyall Bay beach and endorses work done by applicant to mitigate adverse effects. Considers it unlikely that the submerged wave focussing structure (SWFS) will be successful and permanent and encourages WIAL to consider an adaptive approach including consideration of when the SWFS should be modified, rebuilt or removed if necessary. Wants likely build-up of shingle on Lyall Bay beach to be mitigated through regular mechanised beach cleaning.
506	Shea, Richard	Oppose	Yes	Opposes the application because of: (1) airlines' lack of commitment, (2) WCC economic funding will detract from funding of other projects with benefits to a wider range of people, (3) project will likely go over budget, and (4) pilots' safety concerns.
507	Sebastian Schmidt	Oppose	No	Opposes the application as the economic benefits do not outweigh the cost. Regularly travel to Europe and reducing travel time by 1-2 hours does not make that much difference when travelling 27 hours or more. Lives close to the airport and are affected by noise currently. Expect noise levels will increase massively and already find it hard to have a conversation outside when planes are taking off. Also concerned about impact on surf in Lyall Bay.
508	Randerson, Rebecca	Oppose	No	Opposes the application because seeking any increase in fossil-fuel powered transportation, which contributes to climate-change, is foolish; because of negative consequences for marine ecology; and because they object to ratepayers contributing to the economic cost and think the city should invest the money elsewhere. Also does not trust the projected costs or accept the stated benefits as they and many people of Wellington will not reap any benefit.
509	Ducat, Michelle	Oppose	Yes	Opposes the application primarily because it will increase greenhouse gas emissions and contribute to climate-change. Climate-change will also affect the economic viability of the runway through sea level rise, storm surge, reduced travel demand, and NZ becoming an unethical tourist destination because of the carbon footprint of long-haul flights.
510	Neilson, Michael	Support	No	Supports the extension because of the economic benefits of more travellers coming directly to Wellington. Owns a quick service food restaurant and can only see value of increased arrival numbers coming into Wellington airport.
511	Jones, Jennifer Kay	Oppose	Yes	Opposes the application. Concerned about the long construction period, the economic uncertainty, and the impact of the additional flights for those in the vicinity of and beneath the flight path. Wants to know what other infrastructure would be needed to make a success of a larger airport. Construction-related concerns include: traffic congestion; health impacts of noise, vibrations, dust and other particulates; recreation impacts on the wellbeing and availability of the marine environment; mixed economic consequences with construction making the area less attractive; and adverse heritage effects on original Moa Point cottages. Post-completion concerns: - Loss of recreation fishing opportunities - Negative economic aspects of taking a large proportion of WCC infrastructure budget and restricting other investments. Psychological and actual financial consequences if the planned-for passengers fail to arrive in sufficient numbers to justify the costs. Little indication that Wellington infrastructure will be able to cope with vastly increased tourist numbers. Ernst & Young study does not include an assessment of the economic impacts of the construction itself. - Ability of the extension to withstand sea level rise and storm surge due to climate-change. - Health impacts such as noise for those in the airplane flight path.
512	Hill, Harold & Pat	Oppose	No	Opposes the application. Does not think an economic business case has been made if major airlines indicate they do not support it. Objects to rates being used to subsidise a company that does not have sufficient confidence in its proposal to invest heavily itself.
513	MacLennan, DR Anne	Oppose	Yes	Opposes the application because it does not take into account predictable social, atmospheric, economic and political future changes so the benefits are overstated and the harms are understated: Adverse health effects - construction will increase air pollution (dust) and potential for traffic accidents. Air travel is a source of air pollution e.g. soot and sulphates. Climate-change and increased air temperatures will increase air pollution from diesel exhaust and allergens. Economic futility - assuming increasing volumes of air traffic is naive as future flying behaviour will be very different from the present. Cost-benefit analysis doesn't factor in costs to local commmunity related to noise, disruption, and pollution. Climate-change - Aviation will be increasingly impacted by extreme weather events and increased CO2 levels are predicted to cause increased clear air turbulence in the jet stream, making long-haul flights longer, consume more fuel, and more hazardous. NZ has committed to reducing greenhouse gas emissions and air travel is a significant source of these.
514	Exley, Jonathon	Oppose	Yes	Opposes the application because of: traffic congestion; construction noise and vibration; WCC funds could be used more productively elsewhere; economic funding of a commercial company should not be by ratepayers; major airlines have not committed; existing traffic infrastructure could not cope with increased visitors; and increased air traffic noise will adversely affect local residents and businesses.

515	Poultney, Bronwyn	Oppose	No	Opposes the application because of: traffic congestion; construction noise and vibration; WCC funds could be used more productively elsewhere; economic funding of a commercial company should not be by ratepayers; major airlines have not committed; existing traffic infrastructure could not cope with increased visitors; and increased air traffic noise will adversely affect local residents and businesses. Alternative locations should be considered.
516	Fox, Christopher	Support	No	Supports the extension because of economic benefits of travel opportunities, tourism, visitors and international students arriving straight to the capital. Considers it will save time and money and larger planes will not only allow more passengers but benefit exporters sending precious cargoes such as fruit and flowers.
517	Cootes, Andrea	Oppose	Yes	Opposes the application. Lives on Moa Point and swims there frequently. Greatly values the marine ecology and recreation of the area and does not want this natural situation to be lost. Objects to ratepayer funds being used for the economic cost. Construction will negatively affect their health and well-being: noise, dust inhalation, vibration, sewage and marine pollution. Suffers from back injury and considers lack of sleep from construction activities will exacerbate this. Concerned that airport security will forbid swimming and walking access.
518	Sanders, Aidy	Oppose	Yes	Opposes the application. Lyall Bay is treasured by thousands of people year-round for the marine ecology and recreation activities such as surf lifesaving, swimming, walking, surfing, diving, and kayaking. Critical of AEE recreation report, particularly the short timescale and 4 observation points. Concerned about risks to use of the bay from traffic and construction noise, large marine exclusion zones, night work disturbing residents and wildlife, use of dredged sand for fill, and changes to water quality. Also concerned that predicted effects on surf underestimate the reduction in surfable waves. Review of the DHI study by eCoast questioned the modelling methodologies used including: no modelling of nearshore currents or small sediment movement around the bay; no allowance for wind effects on currents, longshore bars or detailed study of the surf-zone bathymetry; and wave buoy data used was collected at Baring head and not Moa point. Does not have faith in the proposed submerged wave focussing structure (SWFS) as there are many failed examples and thinks the cost could be closer to $50 million than the proposed $3 million. Thinks WIAL is a bad neighbour and sees little prospect of this changing. Notes that airport's marker buoy weighing over 1T was torn off its mooring in a 2015 storm and thinks the SWFS may meet the same fate. Thinks there's no economic rationale for the proposal and notes Air NZ's lack of support and pilots' association's safety concerns. Fears ratepayers will end up subsidising it and thinks the money should be spent elsewhere. Also can't see how the extension will help meet the IATA commitment to reduce climate-change emissions by 50% by 2050. Could only find one reference to climate-change in the WIAL report. Does not consider it is a good economic investment if it contributes to destroying the planet and considers it incompatible with a number of GWRC's Climate Strategy objectives. Believes if the airport needs to grow it should investigate moving to alternative sites.
519	Ayrosa, Sergio	Oppose	Yes	Opposes the extension as the costs, risks and environmental impact do not justify it. Thinks it's short-sighted to expand an international airport in the middle of an established, densely populated residential area. Can hear noise from 6am to 1am from airplanes crossing the harbour and is concerned bigger planes and more air traffic will make this worse. Can hear plane engines echoing around the harbour on from Roseneath and Hataitai to Shelly Bay. Witnessed an urban airplane crash in Sao Paolo that killed people in a residential area. Thinks the Lyall Bay airport should be downsized and a bigger international airport built on the outskirts where it has space to grow rather than next to the natural barrier of the ocean. Questions if we really want to destroy the pristine surf beach. Concerned about the economic costs and use of taxpayers' money.
520	Jones, Timothy	Oppose	Yes	Opposes the application. Climate-change: applicant has failed to have regard to the effects of sea level rise, storm surges, extreme wind speeds, and the economic impact on the project of likely measures taken to reduce greenhouse gas emissions from air travel during the project's lifetime. Does not think the precautionary approach in the NZCPS has been adopted. MfE's climate change projections predict extreme wind speeds are expected to increase by up to 10% in parts of the country by the end of the century and the applicant has not considered this. NZ has committed to reducing greenhouse gas emissions and the applicant has not assessed the impact of this on its economic viability. Traffic - Submits that construction traffic should be assessed on the basis of the worst-case scenario in Technical Report 9 since there is no evidence this will not eventuate. Concerned about adverse effects including on amenity, road safety, dust, emissions, noise and sleep disturbance for all those living, working and travelling alongside and near the proposed route, including the submitter's family. Especially concerned about health and safety implications for children attending the primary and secondary schools beside or near the route in Mt Victoria, Mt Cook and Te Aro. Post-construction traffic: considers applicant has failed to have regard to WCC's sustainable transport hierarchy and has considered only motor vehicle trips, to the Low Carbon Capital Plan as it will increase car use, and has failed to consider effects of increased vehicle journeys exacerbating existing parking and congestion and the effects of particulate emissions from the additional private motor vehicle use envisaged. Other issues - submits applicant has not adequately demonstrated economic benefits, adequately acknowledged environmental effects including those on marine ecology, visual and landscape, amenity, and heritage values. Does not consider the opportunity cost has been assessed or alternative locations or methods investigated.
521	Barraud, Josh	Oppose	No	Opposes the application due to concerns about the impact on the Wellington coast and recreation activities such as surfing and diving. Sceptical of economic benefits and concerned about cost to ratepayers and the safety of the runway.
522	Sajdl, Iva	Oppose	Yes	Opposes the application as a resident who lives near the airport. Concerns include: damage to south coast; increased noise pollution; increased risk of air traffic accidents; overly high economic costs; use of ratepayers' money; lack of viability; overestimated economic benefits; huge negative impact during construction on traffic, local residents, and surfers.
523	Business and Economic Research Limited	Support	Yes	Supports the application. Believe the VISTAS feasibility study of passenger demand and flows is accurate or conservative. BERL completed work in 2008 and 2012 with less comprehensive data concluded an initial service would be viable with flights four to five times weekly, increasing to a daily service within two years. Finds credible the Sapere Research Group cost-benefit analysis on the economic benefits. Completed work in 2008 and 2012 found similar significant direct benefits in terms of reduced travel times, new visitor expenditure, and lower fares. Assert that the SRG analysis could have been extended to measure some benefits they considered 'not able to be quantified', including: migrants, business growth-related opportunities, international student growth, urban density, property values, and local government rates revenue. BERL believes these benefits are measurable based on other work they have done. Also believe that the personal and social benefits include better service to current and future residents and businesses. Note that the extension will not necessarily benefit Air NZ as it will reduce domestic travel through Auckland and are not surprised by Air NZ's resistance to the initiative.
524	Burke, Judith	Oppose	No	Opposes the application. Noise from take-offs and landings make the window glass sing, rattles blinds, drowns out radio/TV. Prevailing northerly wind means most flights leave and arrive from the south. The bay acts like an amphitheatre. The 6-hour window for sleep frequently isn't if the midnight

				flight is late. When the Moa Point tunnel was installed, that precious sleep time was interrupted and submitter was unable to open windows for 2 years due to the dust. Mentions other cities where affected residents were assured of double and triple glazing for noise mitigation.
525	Tregonning, Russell	Oppose	Yes	Opposes the application because: (1) climate-change effects on the project will likely be considerable; (2) Unrestrained economic growth is the philosophy of the cancer cell and we need development to a low-carbon economy; (3) The business case doesn't stack up. Air NZ opposes it and pilots are concerned about safety. Tourism will probably decrease with time because of the need to change to a low-carbon economy worldwide; (4) Marine ecology will be threatened, particularly if Centreport dredging fill is used; (5) Disruption of city street traffic and noise, dust, emissions, and safety impacts; and (6) Recreation disturbance.
526	Ryan, Anne Paisley	Oppose	No	Opposes the application. Questions the economic viability of the project and high cost to ratepayers. Concerned with construction noise and traffic impacts to residents of the surrounding suburbs, particularly the 24/7 nature of construction. Believes that construction impacts to airport users have not been considered. Duration of the construction works is unacceptable. Believes the proposal will cause destruction to the coast in terms of ecology and visual impacts. Wave action will be destroyed so impact on surfing and recreation. Climate-change - long haul flights are likely to be restricted or banned, making the large and destructive project obsolete.
527	Leverton, Pauline	Support	No	Supports the runway extension as it will provide economic benefits to Wellington, and take the hassle out of overseas travel.
528	Ursin, Nicholas	Support	Yes	Supports the application due to the economic benefits as a result of job creation, tourist numbers, freight cost reductions and availability. They believe the short term effects of construction are outweighed by the long term benefits.
529	Howells, Martyn	Oppose	Yes	Opposes the application as they believe that the proposal fundamentally does not meet several parts of sections 5, 6 and 7 of the RMA, and constitutes an act of environmental vandalism. The submitter lives on Moa Point Road and the prolonged period of construction, particularly at night as proposed, will place a great strain on the submitter and local residents due to noise. They consider themselves to be directly affected by all facets of the construction and use of the proposal, and consider that no conditions of consent will adequately avoid, remedy or mitigate the effects on the residential and coastal environment.
530	Turley, Graham	Oppose	No	Opposes the application as they believe there is no economic justification for the proposal and therefore the economic risk to ratepayers is too high. They state that public transport to the airport needs to be improved, rather than a runway extension.
531	McGaveston, Philip	Support	No	[No submission text]
532	McGaveston, Jennifer	Support	No	[No submission text]
533	Tony Law	Support	No	Supports the runway extension as it will enhance economic development of world trade and tourism. They believe the long-term benefits must take precedence over any short term negative impacts that may affect some local individuals.
534	Bronwyn Kelly	Support	No	Supports the extension of the Wellington Airport as believes it will increase tourism which will have a positive economic impact on local businesses.
535	Mills, John Francis	Oppose	No	Opposes the application as they question the economic viability of the proposal and believe the demand forecast is overstated. The submitter states that runway safety concerns should be addressed, including building a bridge at the northern end of the runway over SH1.
536	Vivienne Mulholland	Oppose	No	Opposes the application as the proposal is too costly and has unacceptable economic risk. Increased airport noise is of major concern for residents of the eastern suburbs.
537	William Thomas & Pauline Pringle-Thomas	Oppose	No	Opposes the application on the grounds that the effects of climate-change have not been assessed or taken into account in the application, and that the extension is not viable in an economic sense when there are other projects to fund with more tangible benefits.
538	Feast, Deborah	Support	No	Supports the runway extension as it is vital for economic growth and development in Wellington
539	John Feast	Support	No	Supports the application as it is essential for the economic and commercial growth of the Wellington region. They state that additional costs are incurred for good and services, and business opportunities are lost due to the lack of direct long haul connection to Wellington. The runway extension may also significantly decrease the cost of constructing a second Mt Vic tunnel.
540	Levestam, John	Support	No	Supports the runway extension as they believe it is essential for the economic development of Wellington. They state that there are currently unnecessary additional costs and time involved with exporting goods and services due to the limited air facilities.
541	Kiwibank Limited	Support	No	Supports the proposal as direct long haul flights will provide significant economic benefits to the city, region and nation. They state that the runway extension is consistent with a number of economic development and strategic plans, and long term aspirations of local authorities and the business sector.
542	Cor, Antoinette	Oppose	Yes	Opposes the application. They have serious concerns regarding the significant impacts to recreation in Lyall Bay. The submitter believes that experts who have looked into this proposal assess that there would be much more detrimental impacts to the bay than stated in the application. Increasing size and number of aircraft would increase pollution (dust) and noise impacts on the area. Construction noise, particularly from construction traffic will have serious impacts on local residents. Increasing airport capacity will add to the serious traffic issues currently experienced in Wellington.
543	Johan Brounts	Support	No	Supports the application in order to stimulate economic activity, employment and tourism. The submitter requests that the design include public access to the seafront for recreation activities such as walking, running and fishing.
544	Thompson, Jon	Oppose	No	Opposes the application on the grounds of the long-term disruption to the ecology of a sensitive marine environment. There is not sufficient economic benefit to mitigate the local environmental destruction.
545	Bacon, Joshua (BACON Architect Studio Limited)	Support	No	Supports the application as it will promote a strong economic environment in Wellington.
546	Barwick, Jessie	Oppose	No	Opposes the application. They strongly believe that the runway extension will damage local ecology and recreation opportunities at Lyall Bay. The marine area affected by the proposal will cause damage to marine life and therefore affect recreation fishers and divers. Impacts to reef heron and little blue penguin. Their understanding is that the surf break at Lyall Bay will be irrevocably damaged. They believe the economic benefits of the proposal are overstated. Traffic impacts and congestion will cause significant impacts during construction and operation of the runway extension.
547	Corlett, Antony	Oppose	Yes	Opposes the runway extension as it has no sound economic basis and poses a large financial risk to ratepayers.
548	Te Papa Tongarewa	Support	Yes	Strongly endorses and supports the proposal. They consider that the significant long-term economic development and growth has been balanced with minimal environmental impacts as assessed by NIWA in the area of affected Wellington coastline.
549	Webber, David	Oppose	Yes	Opposes the application as it is not in the interests of the economic, social and environmental development of Wellington City or the region. The submitter is critical of the economic justification for the proposed development and believes the benefits are overstated. They believe that the extension

				must not be granted without a substantial investigation of the social, environmental and economic implications of the proposal.
550	Ian Cassels for The Wellington Company Group	Support	Yes	Supports the application as it will be provide economic benefits to Wellington and New Zealand.
551	Trotter, Douglas	Oppose	Yes	Opposes the application due to concerns and the lack of a compelling business case for the proposal. Believes that demand forecasts are based on inadequate data, and that a thorough economic cost-benefit analysis is not available. Questions whether geological risks have been adequately addressed. Concerned regarding: potential impacts of climate-change to the proposal; the impacts of construction traffic and noise; and the loss of surf recreation and viability of artificial surf structure.
552	Milligan, Willow	Oppose	No	[Same text as submission #50. Concerns included: environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
553	Boone, David	Oppose	Yes	Opposes the application. Submitter sits on the Committee for the Surfbreak Protection Society, and has been consistent contact with WIAL regarding recreation surfing and environmental impacts from the extension. Submits that WIAL has been in conflict with their commitment to preserving Lyall Bay's surf amenities since a meeting in December 2015. Believes that versions of the Surf Mitigation Adaptive Management Plan have been reversed by WIAL on what was previously agreed upon with the submitter. Believes that WIAL cannot be trusted to carry out a project of this magnitude successfully.
554	O'Rourke, Stephen	Oppose	No	Opposes the application. Believes there is no evidence of demand or economic viability. Submits that the local environment and community will be negatively affected during construction by truck traffic. Believes that the extension will negatively affect the beach and surf at Lyall Bay (recreation and erosion). Submits that the negative environmental impacts are significant and mitigation is not satisfactory.
555	Spargo, Graham	Support	Yes	Supports the application as significant economic benefits will accrue and help to strengthen the Wellington and lower North Island economies. Believes there is significant demand for long haul flights to Wellington. Resident of Lyall Bay beach and will overlook construction - satisfied that relevant environmental and construction effects have been addressed.
556	Strong, Callum	Oppose	No	Opposes the application. Submitter is a spear fisherman and is concerned about impacts to marine ecology and recreation. Concerned about use of dredge fill from harbour entrance.
557	Hartshorn, Guy	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
558	Smith, William	Support	No	Supports the application as it will contribute economic benefit, whereas it will not have much effect on the environment.
559	Baird, Susan	Oppose	No	Opposes the application. Believes that the demand or need for the extension does not exist, and the economic benefits are overstated. Concerned regarding not meeting international standards for runway run-off area. Concerned about large impact caused by construction traffic and noise. Critical of the assessment of impacts to the environment and believe that the scale of proposed mitigation measures against the significant impacts of the extension is laughable. Concerned about utilities and resilience, particularly the wastewater outfall and stormwater systems. Believes there is a lack of contingency and recognition of climate-change effects - particularly increase in frequency and severity of storm surges.
560	Sarah Free	Oppose	Yes	Opposes the application as it will have significant adverse environmental and social impacts. Construction impacts: severe effects on residents from 24/7 noise and vibration from haul trucks; dust; local traffic effects and safety risks to residents; restriction zones over 4 years will be very limiting for recreation users. Long-term impacts: uncertainty regarding the stability of the runway extension due to climate-change; effects to the surf break; uncertainty of maintenance of the sewer outfall and stormwater utilities; impacts to ecology; increased traffic congestion; and increased greenhouse gas emissions.
561	Tagliavini, Giuseppe	Oppose	Yes	Opposes the application as it will dramatically change the visual character of Lyall Bay and Moa Point, cause traffic impacts, and will not deliver economic benefits.
562	Smith, Ian	Oppose	No	Opposes the application. Believes that the demand does not exist for long haul services out of Wellington, and that the economic benefits to the city are overstated. Concerned about the safety of the runway in not meeting the international standards. Construction would totally disrupt transport and daily life - causing significant noise and traffic impacts.
563	Collor, Bianca	Oppose	Yes	Opposes the application. Critical of the lack of critical information and detail in many areas of the application, and a proper assessment of the benefits and costs cannot be made. Believes there is no need for the runway extension and the proposal is not viable. Submits that infrastructure in the City and airport corridor must be improved to alleviate current traffic congestion, and to allow for increased passenger numbers if the extension goes ahead.
564	Helen Salisbury	Oppose	Yes	Opposes the application. Submitter believes that air quality (dust) emissions due to airport operation must be addressed during the consent process. Presents that currently they experience black residue on their property due to aircraft emissions, and that air quality concerns are not adequately addressed in the application. Concerned on the operational noise impacts on local residents from the increasing number and size of planes. Believes the curfew should be strengthened, with no increase in the number of night flights, and no Code E aircraft should be prohibited from arriving during the curfew and night time shoulder. Any impact on the recreation surfing should be investigated and appropriately mitigated. Concerned about noise, vibration and traffic congestion from haul trucks. Submits that WIAL should be required to use sea-based haulage, and land based haulage through airport land instead of residential areas.
565	Ludermir, Pablo	Oppose	No	[Same text as submission #50. Concerns included: economic cost-benefit analysis; and environmental effects including surfing, recreation, and marine ecology.]
566	Reid, Alan	Oppose	No	Opposes the application for the following reasons: the case for the benefits from the extension carries too much uncertainty; the effects on the natural environment and communities outweigh any economic benefit; biosecurity risks and costs associated with greater international flights; and that public funding would have greater benefit to the Wellington community if it was invested in other infrastructure, particularly to alleviate traffic congestion.
567	Davidson, Ben	Oppose	No	Opposes as it will ruin the only good safe surf spot on the south coast most accessible to all Wellingtonians.
568	Machado, Flavia	Oppose	No	[Same text as submission #50. Concerns included: economic cost-benefit analysis; and environmental effects including surfing, recreation, and marine ecology.]
569	Sajdl, Zlata	Oppose	Yes	Opposes the application for the following reasons: priority for ratepayer's money should be used to strengthen existing infrastructure to reduce the risk of earthquake damage; there will be huge and permanent damage to the south coast; huge ongoing noise pollution; economic benefits are overstated and the proposal is not viable; significant traffic impacts and disruption to local residents; traffic congestion on Wellington roads that cannot cope with the increase in passengers.
570	Curry, Peter	Oppose	No	[Same text as submission #50. Concerns included: economic cost-benefit analysis; and environmental effects including surfing, recreation, and marine ecology.] Believes the proposal is not worth the economic risk and increased debt to WCC.
571	Holden, Ashley	Oppose	No	Opposes the application due to the high economic cost and no guarantee of return on investment

572	Ann Cunninghame	Support	No	Supports this application as believes it will have minimal environmental impact and significant strategic and economic benefits for the region.
573	Weta Workshop	Support	No	Supports the application due to the potential for economic benefit for the submitter (Weta) and for the region in terms of facilitating increased tourist numbers - particularly the Asian market through direct long haul connectivity.
574	Erwin, Mark	Support	Not Specified	Supports the application for the greater economic good of the Wellington region, progress and greater industry
575	Erwin, Anne	Support	Not Specified	Supports the application for the economic development of Wellington regarding tourism and industry
576	Victoria University of Wellington	Support	Yes	Supports the application due to the economic benefits that will be gained. Specific economic gains will be due to international recruitment, retention and investment; increasing international students; and international connectivity. Submitter presents that the proposal will play a major role in improving the City's environmental sustainability - direct flights from Singapore to Wellington would save around 3% and 9% of current CO2 emissions compared with flying via Sydney or Auckland, respectively.
577	Esson, Rachel	Oppose	No	Opposes the application. Believe that the proposal is not viable, and the damage to the environment will not be outweighed by the economic benefits. Concerned with safety and length of the RESA - note pilots association concerns. Proposal will have a huge negative benefit to the environment, coastal ecology and visual character of the coast. Increased number and size of planes will increase noise and air pollution (dust).
578	Baier, Joerg	Oppose	No	Opposes the application due to the high economic cost with no proven benefits, and the massive damage to the environment the proposal would cause.
579	Pollock, Fingal	Oppose	No	Opposes the application due to concerns regarding noise and climate-change. Believes that hearing loss is occurring in the suburbs surrounding the airport, particularly in children, due to current airport operations - these impacts will increase with larger aircraft. Questions how much carbon will be released due to construction and operation of the proposal, and whether climate-change agreements can be met if this proposal goes ahead.
580	MacFarlane, Graeme (Metrolink Trading Limited)	Support	No	Supports the application, particularly how the extension would: (1) increase tourism opportunities; (2) make Wellington a more attractive option for international students; (3) increase Wellington Airport's freight capacity. Satisfied that WIAL has mitigated any environmental impact concerns.
581	Burton, Tara	Oppose	No	[Same text as submission #50. Concerns included by submitter: economic cost-benefit analysis; environmental effects including surfing, recreation, and marine ecology.]
582	Esson, Victoria	Oppose	Yes	Opposes the runway extension due to concerns over the safety of the runway operation - noting the pilots association advice. They believe Wellington is already well connected by the current airport.
583	Air New Zealand Limited	Oppose	Yes	Opposes the application. Reasons given are: it does not achieve the purpose and principles of the RMA; the extension is not necessary, the purported economic and operational benefits will not be realised; the consideration of alternatives has been inadequate; it is contrary to the NZ Coastal Policy Statement 2010; it is contrary or inconsistent with relevant regional and district policy statements and plans; and it does not give effect to, nor is it consistent with, Tourism 2025, or other tourism strategic documents or plans. The submitter is critical of the market demand analysis and forecasting for long haul flights to Wellington, and believes that the proposal is not commercially viable. The submitter is concerned that the applicant has not adequately engaged with them as the largest airline user of the airport, and therefore believes the economic analysis of the project results in much higher forecast benefits than is likely. They believe the application over-estimates the benefits to Wellington airline passengers, and the wider economic benefits to the region. The submitter presents that funding has yet to be obtained for the proposal, so the economic costs of the project cannot be fully assessed. They contend that the proposal will not achieve sufficient return on investment to justify the development, and the costs will be borne by public funding and airline passengers. They present that the proposal fails to meet the threshold test under Policy 10 of the NZCPS - that land reclamation should be avoided unless it will provides significant regional or national benefit, or that particular regard should be provided for "efficient operation" of infrastructure. The submitter is concerned that the proposal will cause unnecessary adverse effects to the environment that will not be avoided, remedied or mitigated, or without any offsetting positive effects or other effects. These include adverse effects to visual landscape and natural character, coastal processes, hydrodynamics and sediment processes, marine ecology and water quality, and recreation including surfing and fishing.
584	Hutt Valley Chamber of Commerce & Industry	Support	Yes	Supports the application as the every effort has been made to mitigate environmental and community impacts, and therefore the benefits of extending the runway exceed the costs. Believe there will be significant economic benefits due to increased tourism, increased international students and increased freight capacity and lower costs for regional exporters. The submitter believes that the 3 areas most affected by the proposal - Moa Point residents, surfing recreation at Lyall Bay, and potential disturbance of sea life ecology - have been mitigated in the application due to the diligence and concerted effort by the applicant in the AEE and community consultation.
585	Wilkinson, Fraser	Oppose	Yes	Opposes the application. Questions the need for the extension - the airport functions perfectly as it is. Believes ugly extension would could significant visual impacts and spoil the south coast. Recreation impacts - the submitter frequently uses Moa Point for eating lunch, and this would be spoiled. Significant construction impacts - extra truck traffic, noise, road damage and dust impacts, which will affect a far greater area than just the eastern suburbs. Operational noise impacts - they can tolerate the current noise levels, but believe that large long-haul aircraft to Wellington is another matter entirely in terms of noise impacts.
586	Vandeleur, Kara	Oppose	Not Specified	Opposes the application. Submitter works from home with a clear view of the airport. Believes economic investment in the runway extension should not take place until sufficient feasibility studies have been conducted, and a written commitment is made from definitive airlines that they have strong interests in scheduling large flights to Wellington. Believes that current infrastructure, particularly traffic, cannot handle the increase in passengers that will come from large planes, and significant investment in Wellington City infrastructure would be necessary.
587	Murphy, Tim	Oppose	No	Opposes the extension as it puts the economic benefits of the airport above the negative impacts on the marine environment and wider community. Lives in Lyall Bay and will be impacted by noise and increased traffic on Onepu Road and by effects on Lyall Bay water quality where they recreationally swim and surf. Roading networks are already struggling and a larger airport will put an increased load on this.
588	Hyam, Peter Nelson	Oppose	Yes	Opposes the application as it will prove to be a significant economic and environmental loss and cost. Particularly comments on: (1) Marine ecology in the fill area - will affect legally protected species such as Spiny Red Crayfish, paua and kina and there is no information on how the project will uphold the existing legal protection. (2) Traffic congestion - does not accept existing infrastructure will easily absorb the proposal traffic. Notes current congestion issues on Lyall Bay foreshore, along Cobham Drive and Ruahine Street 9-11am Saturday and Sunday, weekend traffic in Ruahine Street, traffic going to the Kilbirnie Indoor Sports stadium. Thinks the project heavy traffic will add significant: congestion, hazards, infrastructure wear and tear, and increased private property maintenance. (3) Marine ecology in the remaining bay - extension will shield the bay to some degree and may be sedimentation and partial stagnation impacts from changes to surf waves. (4) Concerned about impact on recreation in Moa Point Bay (5) Dust contamination - mitigation strategies are only within 50m of its source but submitter believes the dust will travel further than this and is concerned there is no monitoring, mitigation or remedial

				plan to keep dust and grit from affecting e.g. appliances and roof gutters.
589	Guan, Bo	Support	Not Specified	Supports the application as it is good to get economic growth, more tourists, direct flights, and boost employment.
590	Baker, Peter	Neutral	Not Specified	Wants to improve or maintain the recreational surf park at Lyall Bay. Wishes the beach and the contribution to its surfing from the extension to be a positive growth aspect and enable many more visitors and locals to enjoy it.
591	Tourism Industry Aotearoa	Support	Yes	Supports the application. MBIE's NZ Tourism Forecasts 2016-2022 expected to grow by an annual 5.4% and international spend by an annual 7.5% to 2022 and TIA recognises significant infrastructure is required to cater for strong tourism growth. Improved regional dispersal is a key goal. Thinks it would be useful to understand more about the pull factors of direct services from Asia/US to Wellington and needs more itinerary building/ future visitor flows modelling to understand regional dispersal benefits from the extension. Considers the proposal potentially has significant air connectivity economic benefits but is concerned over the reliance on local and central government funding.
592	Gill, Jagmohan	Support	No	Supports as it will economically benefit every Wellington resident directly or indirectly and NZ as a whole.
593	Winifred Ryan & Anne McKinnon	Oppose	No	Opposes the extension. Concerned about traffic, dust, and noise disruption during construction and that economic benefit will be to only a few - the rich. Concerned about damage to Wellington's reputation as the 'coolest little Capital' and its natural capital. Considers the extension will be a visual eyesore and that the solution for surf effects is not guaranteed. Thinks the intimate nature of Wellington would be lost by changes necessary to host many more tourists and house more citizens and opposes the cost to ratepayers. Notes lack of airline commitment.
594	Andersen, Svend	Oppose	No	Opposes the application. Lives near the airport and will be personally affected by traffic noise during construction. Considers that the airport should be paying Wellington for the disruption and environmental damage, not asking to be subsidised. Thinks that if there is a demonstrable economic benefit, the airport should only be rewarded afterwards and that if they are not confident enough in their success to raise the money themselves, why should Wellington be shouldering the bill of their gamble? Also considers that there must be more suitable alternative sites.
595	Goodwill, James	Oppose	No	Opposes the extension but supports economic development for Wellington. Believes we should look at more viable sites around the region as insisting on an expensive and potentially unsustainable extension on reclaimed land, and adversely impacting marine life, is a futile exercise.
596	Howard, Mark	Oppose	No	Opposes the extension and is concerned about degradation of surf in Lyall Bay. Wants to see ideas in place to reduce the impact including: removal of the breakwater, a solid side to the new runway rather than boulders that absorb the wave energy, and installation of lights along the corner surf break to increase surfable hours. Concerned that the wave focussing device is unproven and other attempts at artificial reefs have failed.
597	Massey University	Support	Yes	Supports the application on the grounds of economic benefits. Leaves potential negative environmental consequences for others to investigate and report on. Increasing international student numbers studying on the Wellington campus is critical to achieving Massey University's growth agenda. Significant economic and logistical advantages for Massey staff, students and their families entering/departing through a gateway airport closer to campuses in Wellington and Palmerston North. Not having direct flights into the capital from major international cities can negatively influence prospective students' choice of study destination. Considers direct flights could provide an incentive for greater numbers of students' families to accompany them on their return to NZ to graduate.
598	Wollerman, Philip	Oppose	Yes	Opposes the application. Thinks the extension will make only a minor difference to current surf at The Corner. Opposes the untried wave focussing structure and thinks the money would be better used on improving the existing wave. Suggests this could be done by extending into the area of the Corner and lining the wall with sheer concrete. The quality of The Corner wave noticeably deteriorated after the original steel wall lining was replaced with rip-rap, which diffused the swell and available energy. Wants this opportunity to be examined.
599	Connor, Corrina	Oppose	No	Opposes the extension because of effects on marine ecology; lack of provision made for climate-change impacts such as sea level rise; effects on surf and recreation on the south coast including from sediment and heavy traffic; and economic implications for ratepayers.
600	Pike, Errol	Oppose	Yes	Opposes the application, particularly because of damage to infrastructure, disruption to traffic and inconvenience to residence by construction and in particular by transporting fill. Construction period of up to ten years will have considerable and lengthy disruption to traffic in the eastern suburbs. Considers WIAL has ignored eastern suburbs residents in the past when it seriously inconvenienced access to the western side of the airport by installing ticket barriers. Notes existing traffic issues around the Basin Reserve and considers it irresponsible to add to this congestion. Suggests all fill is brought by water barges instead. Also opposes the runway extension for reasons covered by other submissions. Feels WIAL public consultations were little more than PR spin and has little confidence that WIAL will change their approach to the local community.
601	Robinson, Michael	Oppose	No	Opposes as it has environmental impacts that outweigh the questionable economic returns
602	Hunt, Dennis	Support	Yes	Supports the application due to the economic benefits for Wellington.
603	Hughes, Amy	Oppose	No	Opposes the extension. Lives on Queen's Drive parallel to the proposed extension and will be directly affected by noise and light and doesn't want to live next to a construction site for 10 years. Does not think there is economic demand for a long-haul runway or that it is necessary for Wellington. Also concerned about impacts on marine ecology and wants to know if climate-change impacts have been taken into account.
604	Lyall Bay Surf Life Saving Club	Conditional	Yes	Conditionally supports on the basis that appended conditions form part of the consented activities. Has agreed these changes with the applicant. Submits in relation to effects on surf, recreation, the beach, and club buildings. Changes in beach level will restrict timely deployment of rescue equipment and use of facilities. Concerned that the effects of the extension and proposed submerged wave focussing structure are understood and do not cause adverse erosion, accretion, or safety impacts. Proposes conditions to mitigate potential adverse effects on these.
605	Mead, Tania	Oppose	No	Opposes the application. Thinks it is a white elephant project and is concerned about the economic cost to ratepayers and that there will be less money for WCC to spend on other projects. Also concerned about environmental costs including on surf with no evidence the artificial reef will work and on recreation with the 300m exclusion zone.
606	Woolhouse, Anna	Oppose	Yes	Opposes the application because of effects on recreation and marine ecology; doubts about long-term safety with climate-change sea level rise and storm surges; traffic disruption; economic costs to WCC; acceptability of the extension to pilots in terms of safety; costs to airport users; concern about whether Wellington's infrastructure is up to the task of accommodating more tourists; and the need for WCC to spend funds on more pressing needs.
607	Kidman, Fiona	Oppose	Yes	Opposes the application and agrees with the Guardians of the Bay points. Lives overlooking the airport and agrees with Pilots Association about safety concerns with hazardous cross winds. Concerned that Miramar Peninsula is frequently difficult to access because of traffic congestion and the extension will increase this. Disagrees that more international students will come because of direct flights.

608	Peter Marshall	Support	No	Supports the application as it is essential Wellington has an airport that permits long-haul aircraft. Considers it will have economic benefits such as making Wellington more attractive to multinational conglomerates and points to how Luton Airport in the UK revitalised a large town.
609	Lutzebaeck, Beate	Oppose	Yes	Opposes the application because of environmental impacts on marine habitat. Thinks the economic benefits are uncertain and tourists will not be attracted by destroyed natural habitats.
610	McDonald, Insook	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
611	New Zealand Festival	Support	No	Supports initiatives that will increase the potential for increased visitation to the region and improve international connections
612	Gunson, Michael	Oppose	Yes	Opposes as believes it would impact negatively on Lyall Bay's surf breaks, and on Wellington's community and culture as a whole. Endorses submissions by Surfbreak Protection Society and Guardians of the Bays.
613	Miramar Maupuia Progressive Association	Conditional	No	Supports the application in principles but questions the length of time. Stresses the need for establishment of a liaison group prior to work starting.
614	Hunt, Leigh	Oppose	Yes	Opposes the application. Lives and operates a small business at Moa Point and will be directly affected. Considers the application contrary to the RMA, the Regional Coastal Plan, proposed Natural Resources Plan and the NZCPS; is not economic; and fails to assess alternatives. Concerned about effects on health and recreation from loss of marine ecology. Snorkels, runs, and mountain bikes in the area. Does not think it is economic because airlines don't support it and Auckland and Christchurch airports extend their runways without ratepayer funding.
615	McMullan, John	Oppose	No	Opposes because of destruction of marine habitat and surf break. Thinks WIAL has removed any attempt to beautify the area with urban-design and is interested only in carparks. Does not think there will be an economic benefit.
616	Gardner, Robyn	Support	No	Supports the application for economic benefits. Will most likely shift to Auckland if the extension does not go ahead as they intend to travel a lot more in the future. Particularly supports how the extension would: (1) increase tourism opportunities; (2) make Wellington a more attractive option for international students; (3) increase Wellington Airport's freight capacity. Satisfied that WIAL has mitigated any environmental impact concerns.
617	Gardner, Susan	Support	No	Supports the application for economic benefits. Will most likely shift to Auckland if the extension does not go ahead as they intend to travel a lot more in the future. [In addition, same text as submission #616]
618	Hamish Tweedie, Angerlia Oliver, Hazel Tweedie, Alana Cooper	Oppose	Yes	Opposes the application. Live in Lyall Bay. Reasons for opposition: Traffic infrastructure - inadequate to current needs, especially around the Basin Reserve, and no point increasing airport demand without feed-in infrastructure. Noise - increased noise from flight traffic especially at the edges of the curfew period; construction noise during the night curfew and during calm weather conditions when noise will travel further. Concerned WCC has a conflict of interest and does not adequately investigate noise complaints regarding the airport. Recreation and visual amenity impacts on Lyall Bay. Alternative sites - only study is from 1992. Property rights in Lyall Bay - have been expropriated over time without recompense by increasing airport development. Expropriation of public space for private purposes. Dubious economic benefits.
619	McKay, Andrew	Oppose	Not Specified	Opposes the extension. Regularly uses Lyall Bay area for recreation and is a marine ecologist. Reasons for opposition: concerns about economic benefits, noting BARNZ criticisms; pilots' safety concerns with length of the RESA; climate-change impacts such as sea level rise; Wellington Boardriders Club's criticism of baseline monitoring data; and ecology impacts on the south coast.
620	Sunita Singh & Gavin Dench	Oppose	No	Opposes the extension. Lives in Melrose with a view including the airport. Concerned about effects of traffic congestion; marine ecology and birdlife; airport safety; that the extension will bring airport activity closer to other coastal areas, e.g. Te Raekaihau Point and Hue te Taka; recreation and tourist experiences; visual intrusive nature of the extension; and effect of increased numbers of visitors on Wellington, especially on traffic infrastructure.
621	Tervoort, Rod	Oppose	Yes	Opposes the application, particularly because of effects on surf. Has surfed the break for the last 28 years and considers the carpark construction and revetment wall have had a negative impact on the wave. Concerned that the modelling suggests the impacts will be greatest during long period swell events, which are the events that produce the best quality waves. Has limited faith in the proposed wave focussing structure and wants to know if it has worked anywhere else.
622	HAWKINS CONSTRUCTION LIMITED	Support	Yes	Supports the extension. [Includes part of the same text as submission #308 concerning potential economic benefits]
623	350 Aotearoa - Wellington Branch	Oppose	Yes	Opposes the application primarily because it will increase aviation emissions at a time when humanity needs to drastically reduce CO2 emissions in the very near term to address climate-change. Concerned that there is no assessment of climate-change impacts in the AEE.
624	Hawes, Freijah	Oppose	Yes	Opposes the extension because it cannot be undone and it will ruin Lyall Bay, a prized area for many people in the Wellington area.
625	Greenwood, Christine	Oppose	No	Opposes the application. Reasons: economic business case, cost to ratepayers, and likely increased fares; noise and disruption from construction; unsuccessful runway extensions within NZ in Hamilton and Rotorua; lack of commitment from airlines; pilots' safety concerns; climate-change considerations; recreation impacts; marine ecology impacts; and use of potentially DDT-contaminated fill.
626	Flynn, Tony	Support	No	Supports the application because of the economic benefits for Wellington and the lower North Island's future.
627	Puddick, Kirsten	Oppose	Yes	Opposes the application. Lives in Lyall Bay and concerned about increased traffic on Onepu Road and Lyall Bay Parade. Values recreation and amenity of Lyall Bay beach and thinks increased traffic will negatively affect local businesses like surf shops and cafes. Would like to see investigation into other locations that don't require reclamation as well as more evidence that a larger airport is required. Concerned about economic viability; cost to ratepayers and increased travel costs; pilots' safety concerns; effects on surf waves; and marine ecology.
628	Hardstaff, Peter	Oppose	No	Opposes the extension because the economic case is spurious at best and the environmental case against it is robust. Thinks the fact that the airport won't bankroll the whole thing shows they are not confident it is economically viable.
629	Sajdl, Dennis	Oppose	Yes	Opposes the application. Reasons: use of ratepayers' funds; economic viability including unlikely benefits and lack of airline support; safety concerns with this geographic location; dust and noise impacts; traffic congestion; and ensuring Wellington has regular and timely connections to key Australian hubs will deliver better choices and lower cost for air travellers in and out of Wellington.
630	Parbhu, Jeetan (Jeff Gray BMW & Mini)	Support	No	[No submission details]
631	Kilford, Brent	Oppose	No	Opposes as it will ruin any surf at Lyall Bay

632	Pierson, Marilyn	Support	Not Specified	Supports the application. Travels internationally frequently and believes it would bring economic benefits. Also thinks there need to be significant traffic improvements to ease congestion and allow for an increase in traffic.
633	Hogan, Brendan	Support	No	Supports the application. Reasons: economic benefits; appropriate conditions can address environmental effects; no weight should be given to veiled trade competitor effects from competing airports or airlines; as the capital, Wellington should not have airport infrastructural constraints; and it is in the nation's interest because it will spread operational resilience in the event of natural hazards so that resources can be quickly transported to affected parts of the country.
634	Clark, Sandra	Oppose	No	Opposes the extension. Unconvinced demand exists for it and thinks the need for a passenger tax to partially fund it will discourage airport users. Concerned about environmental impact on sensitive ecosystems. Has noticed increased erosion at the eastern end of the beach and thinks the extension may have a detrimental effect on the beach. Also concerned about traffic, especially during construction.
635	Gorbey, Ken	Support	No	Supports the extension as a ratepayer and as a constant user of the airport.
636	Williams, Christian	Oppose	Yes	Opposes the extension because of the poor economic business case; negative environmental effects including on marine ecology, surf, noise, and increased climate-change emissions; and because it is inconsistent with WCC's Low Carbon Capital plan.
637	Teichert, Charles	Oppose	No	Opposes the application. Lives locally and concerned about cumulative impact of the extension alongside intensification of residential and retail/commercial developments such as the new indoor ASB stadium which are increasing traffic movements. Concerned the proposal will add to traffic congestion, noise and reduced amenity. [In addition, same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
638	Lindsay Park	Oppose	No	Opposes the application. Concerned about economic business case and thinks it should not be funded by ratepayers. Traffic queues already exist near the wharves when luxury cruise boats arrive. Concerned about environmental effects: surf; noise and pollution; loss of natural environmental; and rising wind levels.
639	Skibin, Evan	Oppose	No	Opposes the application as it will be detrimental to Wellington's beauty and the money is better spent on other improvements.
640	Course, Addison	Oppose	No	Opposes the application because of adverse effects on the Lyall Bay surf break.
641	Parkin, Tim	Oppose	No	Opposes the application because of adverse effects on the Lyall Bay surf break.
642	Nikolai Artemiev	Support	Yes	Supports as believes it will provide many economic benefits to the Wellington region.
643	Purohit, Harish (Delaware North)	Support	No	Supports the application because of economic benefits such as lower fares, reduced travel times, increased tourism, more job opportunities, direct revenue impact, and local business growth due to increased visitor numbers.
644	Nelson Regional Development Agency	Support	No	Supports the application. NRDA works with Nelson Airport, Wellington Airport and Positively Wellington Tourism promoting visitors to/from Nelson. Considers the extension will have economic benefits for the Nelson Tasman region such as increased tourism and business travel.
645	Dean, Frederik	Oppose	Yes	Opposes because of safety concerns, traffic congestion, noise, impact on the south coast, increased housing costs and unproven economic benefits.
646	Parker, Lawrence	Oppose	Yes	Opposes because of (1) Economic viability; (2) misaligned incentives with councillors seeking to gain commercial credibility and non-council owner stakeholders not properly exposed to commercial risks; (3) ratepayer subsidies; (4) unsustainable investment; (5) public policy failure as a whole of NZ approach to the need for international airport facilities would show the proposal cannot be justified; (6) disruption during construction; (7) impact on the south coast and on water recreation; and (8) personally has travelled internationally and the brief inconvenience of the Auckland/Wellington leg is irrelevant. Thinks the convenience of the airport to Wellington city mitigates any inconvenience from lack of direct flights.
647	Murphy, Rita	Oppose	No	Opposes the application. Lives in Lyall Bay and will be affected by the construction. Concerned about noise on Onepu Road from trucks and larger airplanes throughout the night; dust pollution and effect on their children; traffic, especially safety impact on children crossing Onepu road on bikes; sea pollution in Lyall Bay and effects on recreation. Also concerned about the economic viability and lack of consideration of alternative sites.
648	Property Council New Zealand	Support	Yes	Supports the application because the economic benefits will outweigh adverse effects. Submits that it will provide for the broad economic well-being of Wellington and individuals. References 2007 International Air Transport Association (IATA) report on economic impacts of improved links to the global air transport network, Wellington's current connectivity, and potential increases in connectivity with the extension. Considers some of the benefits include increasing Wellington's market exposure and increased tourism. Submits that the project is viable and there is sufficient demand, using the recent Singapore Airline flights as an example. Comments on runway capacity and which routes the extension could support.
649	Cotter, Maria	Oppose	No	Opposes the application. Economic business case concerns: cost to ratepayers; lack of support from airlines; potential for WCC to cut funding to other projects to pay for budget over-runs; and no guarantee of greater economic growth. Environmental concerns: traffic effects including noise, carbon emissions, dust, safety, congestion and damage to road infrastructure; and effects on Lyall Bay and Moa Point beach areas, including to recreation and ecology.
650	Philpott, Emma	Oppose	No	[Same text as submission #605. Concerns regarding: economic business case; effects on surf and recreation.]
651	Cunningham, Carolynne	Oppose	No	Opposes the application and is concerned about the economic costs, project funding, and need for the extension; traffic and noise impacts; and effects on marine reserve and on Lyall Bay beach. Considers that if Wellington must have a larger airport it should be build outside the city, which would also keep the potential for an air disaster away from populated areas.
652	SURFBREAK PROTECTION SOCIETY INC	Oppose	Yes	Opposes the application. Submits primarily regarding effects on surf. Gives background information on SPS and notes increasing number of people who surf has increased and expected to increase. Considers section 6 and section 7 matters relevant to surfing and economic value of surf breaks. Opposes WIAL's proposal because it is inconsistent with NZCPS policies. Notes heritage significant of Lyall Bay in terms of Duke Kahanamoku's visit in 1915. Includes criticisms of WIAL's technical reports, particularly that the submerged wave focussing structure is unproven [Appends peer review by eCoast as commissioned by the Wellington Boardriders Club, which details concerns with the applicant's technical reports]. Opposes placing rock material into the predominantly sandy beach and is concerned it will be subject to future erosion. Also concerned that the public exclusion zone may obstruct access to the centre of Lyall Bay and also questions how WIAL intend to police these zones. Appendix 1 - SPS's submission to WIAL including historic photos

				Appendix 2 - eCoast technical review of the DHI surfing impact study Concerned that the urban-design promenade extension would be subject to large swell events and may require an extension of the current Moa Point sea wall, with associated impacts on Lyall Bay. WIAL's maintenance of the sea wall has interfered with the swell corridor for The Corner surf break. Submits that the promenade is unacceptable. Critical of the AEE on recreation, particularly that surfing offers sightseeing opportunities for local cafes and encourages economic activity in the area. Objects to the applicant's assertions about the value of the Lyall Bay surf break.
653	Nicolson, Heather	Support	No	Supports the application due to the economic benefits that will be generated by increased business, cheaper exporting of goods, and tourism.
654	Morgan, Benjamin	Oppose	Yes	Opposes the application for the following reasons: the economic case was based on flawed assumptions and biased data - the economic benefits are overstated and the extension is not viable; traffic impacts during construction, noise and nuisance to residents (dust); effects to the surf break (recreation); and effects to sea life ecology, which could be devastating.
655	Rongotai Green Party Branch	Oppose	Yes	Opposes the application for the following reasons: it will not promote the management of sustainable resources and will not achieve the purpose of the RMA; is contrary to Part 2 and other provisions of the RMA, and other relevant planning and non-statutory documents including the RCP, PNRP and NZCPS; the applicant has no plans to reduce GHG emissions and failed to analyse the impact of climate-change; the economic capital expense has not been proven viable by an independent application to Treasury's Better Business Case Framework; WIAL/WCC reports have not been peer reviewed and are clearly biased in favour of the applicant; no clear and satisfactory mitigation and monitoring plan for all expected impacts on south coast marine ecology, including the habitat loss of threatened species; the assessment of marine life has been sub-standard; the limited data collection provides an incomplete picture of fill sedimentation effects and risks to natural hazards; no evidence that the fill material is not contaminated; the proposal contains no evidence that the Surfbreak Protection Society's conditions will be met, and WIAL has actively tried to get Lyall Bay surf removed as an area of national significance in the Draft Regional Plan (recreation); significant noise, dust, vibration and traffic impacts during construction,, with no compensation proposed; proposal does not contain evidence that Pilots Association concerns were taken into account.
656	Bennion, Tom (Bennion Law)	Oppose	Yes	Opposes the application due to the application not considering the full effects of climate-change, which significantly undermines the economic case for the extension. Submits that air travel demand within the next 2 to 3 decades will reduce due to voluntary and compulsory GHG reduction measures, changes in passenger views regarding GHG emissions, and changes in the international and domestic economy due to climate-change effects. Direct ecological effects of the extension include loss of intertidal and subtidal habitat.
657	Shearer, Ian	Oppose	Yes	Opposes the application for the following reasons: climate-change - significant addition to climate change impacts from construction and operation, measures addressing sea level rise in the application are very limited; traffic effects during construction are unacceptable; a robust business case has not been presented so economic investment is not justified; concerned with impacts to marine ecology, and giant kelp forests and little blue penguins; recreation fishing and diving activities will be affected. Submits the following conditions if consent is granted: (1) That at least 90% of fill material is pumped from barges; (2) WIAL become major partners in the development of a light rail system to connect to Wellington railway station.
658	Kennett, Paul	Oppose	No	Opposes as it will lead to increased climate-change emissions.
659	Bollinger, Timothy	Oppose	Yes	Opposes the application as it will destroy the environment for the economic gain of WIAL. Believes that the runway extension is not necessary or justified. Submits that the visual impact of the extension is totally out of scale and character to the existing coastline, and will adversely impact on local residents.
660	Taylor, Erin	Oppose	Yes	Opposes the application for the following reasons: climate-change is a planetary emergency that must be tackled at all levels, and this proposal is irresponsible from a climate-change perspective; concerned about coastal erosion, which is accelerating due to climate-change; the extension will destroy the Lyall Bay surf beach for recreation; qualities of the marine environment ecology will be threatened.
661	Mt Victoria Residents Association	Oppose	Yes	Opposes the application for the following reasons: it will not achieve the purpose of the RMA; there has not been sufficient assessment of alternatives; the cost-benefit analysis exaggerates the economic benefits and the demand forecasts are overstated; the effects on marine ecology are not adequately mitigated; climate change impacts from increase in frequency and size of planes; increased operational noise impacts; noise, traffic and dust emission impacts from construction haul trucks.
662	Feith, Renee	Oppose	Yes	Opposes due to noise pollution and massive environmental impact on the marine environment and recreational use of the bay.
663	Hovey, Richard	Oppose	Yes	Opposes the application on the basis of climate-change effects, which are not considered in the application or the economic analysis.
664	Te Runanga o Toa Rangatira Inc	Neutral	Yes	Neutral to the application. Submitter acknowledges the effort that WIAL have taken to mitigate any potential adverse cultural effects. To allow the submitter to practice kaitiakitanga, they recommend an MOU is developed and added as a condition to consent. The MOU should include WIAL to engage and collaborate on the development of an Environmental Management Plan, engaging on: monitoring programme with cultural health indicators to monitor effectiveness of artificial reef system; research on impact of fill sediment on larval stages of taonga species and modelling of the sediment plume; survey of surrounding areas for taonga species; impacts of wave focussing structure on ecology. Submitter recommends that an iwi monitor is resourced and present during works, and is supportive of the accidental discovery protocol.
665	Cranston, Tony	Neutral	Not Specified	[Incomplete submission]
666	The Hurricanes	Support	Yes	Supports the application due to economic benefits and opportunities for Wellington, and ease of travel.
667	Gibson, Megan	Oppose	No	Opposes the application as the proposal does not demonstrate economic viability, and the economic benefits are grossly overstated. Concerned about significant traffic impacts that are unfair and unreasonable to the eastern suburbs residents. Mitigation of the environmental and social impacts put forward in the application is limited.
668	Tourism Industry Aotearoa Hotel Sector	Support	Not Specified	Supports the application as economic growth and tourism growth requires significant investment such as the runway extension, which will complement investment from the tourism and accommodation sectors.
669	FOREST AND BIRD, WELLINGTON BRANCH	Oppose	Yes	Opposes the application for the following reasons: is contrary to the purpose and principles in Part 2 of the RMA; the environmental assessments are inadequate and superficial; there is insufficient detail on the nature of the proposed fill and potential contamination; the effects on ecology, particularly threatened or at risk species have not been investigated; issues of stormwater runoff have not been adequately addressed; climate-change effects of sea level rise and storm surges have not been adequately considered; and the environment could be irreparably damaged in the implementation of an unsustainable project that lacks a credible economic business case.

670	O'Byrne, Con	Support	Not Specified	Supports the runway extension as it will deliver great economic benefit, with minimal effects on the surrounding environment.
671	NZ TRANSPORT AGENCY	Neutral	Yes	Areas of interest are: construction traffic and related effects on the wider transport network (SH1 and SH2); and traffic generation from passengers and freight going to and from the Airport in its new operating capacity, and what effects there will be on the transport networks in the Wellington region. Submitter seeks: conditions of consent that will avoid, remedy, mitigate and manage the adverse effects on the transport network of truck hauling and construction materials; clarification of the modelling used to determine what operating effects are likely to occur on the transport network during construction and once at full capacity; conditions of consent to avoid, remedy, mitigate or manage any adverse effects that the operating effects of the airport substantiate a material impact contributing to the need for transport network upgrades; and any alternative relief that would address the concerns of the submitter. The submitter anticipates the above matters can be resolved prior to the hearing via further discussion and working with the applicant to agree to conditions.
672	WEEBER, YVONNE	Oppose	Yes	Opposes the application as it is: inconsistent with Part 2 of the RMA; inconsistent with, and contrary to, the policies of the NZCPS; and inconsistent with, and contrary to, the objectives and policies of the Regional Policy Statement, Regional Coastal Plan and the District Plan. Submission is a detailed assessment of the application, focussing on urban-design and landscape architecture matters. Submits that the application is contrary to s5, and many subsections of s6 and s7 of the RMA. Likely to have impacts to water quality and marine ecology. Application is contrary to NZCPS: Objectives 2 & 4 and associated policies, Policies 11, 14, 15 and 16 - protecting visual landscapes and coastal environment; Objective 4 and Policies 18, 19 and 25; Objective 5 and Policy 3 - climate-change. Proposal is inconsistent with WRPS Objectives and Policies addressing water quality, and protection of natural character of the coastal environment. Proposal is inconsistent with WRPS urban-design principles. Land reclamation is not fully justified and all available alternatives have not been considered. Proposal is contrary to the Proposed Natural Resources Plan, particularly Objectives 54, 55, 56 & 58. Proposal will impact on marine ecology through turbidity and sediment from fill. Development is contrary to the District Plan Open Space B zone Objectives and Policies. Effects to visual landscape and natural character are irreversible, and more than minor. Construction of the extension will have more than minor effects on the recreation pursuits of people in Lyall Bay and Moa Point. Submits that Technical report 6 is not thorough enough in data or analysis for recreational activities. Concerned about residents living on truck haulage routes being subject to traffic, noise, dust and visual effects during construction. Submits that the AEE and technical reports do not provide a true picture of the effects of the proposal, and that the cumulative effects of another reclamation are not analysed by the applicant in a comprehensive way. Submits that Technical Report 25 down-plays the significance of adverse effects to marine ecology and environmental quality as temporary in nature. Believes the reclamation will put another headland - that is engineered with no natural character - into the southern coastline. Submits that the significance of visual effects would range from high to extreme, and are understated in the Boffa Miskell assessment. Disagrees with the urban-design assessment of the extension in Technical Report 23 p9, and believes that the urban design effects will range from extreme to very high-high for Moa Point and Lyall Bay residents respectively. Concerned that a precedent will be set by this reclamation that further reclamation will be easier in future. Submits that the urban-design assessment under the Urban Design Protocol focuses on context and connectivity, rather than the more fundamental custodianship guidance which should have been applied to the southern coastline. Considers that the application creates substantial custodianship effects and does not support an enjoyable, safe public space and quality environment.
673	Harrison, Ian	Oppose	Yes	Opposes the application as the economic benefit numbers have been grossly exaggerated. The submitter presents their review paper of the cost-benefit analysis (Tailrisk Economics - December 2015, 11 pages) as detailed support of their submission - that the cost-benefit is based on flawed assumptions, incorrect or incomplete data, and favourable estimates. Submit in the review paper that the effects of climate-change have not been taken into account in the cost-benefit analysis.
674	Weale, Denita	Oppose	Yes	Opposes due to the impact on the environment and animals.
675	Smith, Alex	Oppose	No	[Same text as submission #50. Concerns included: environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.] Submits that we are currently facing runaway climate change, and we should not be encouraging the most carbon intensive form of transport.
676	Turner, Ellery	Oppose	Yes	Opposes due to the impact on the environment and animals.
677	Barry Wilson for Wellington Loyal & Progressive Group	Support	Yes	Supports the application for reasons (1) necessary to future proof the city and regions; (2) in-bound tourism economic benefits; (3) Believes we should be developing return flights from China and Air NZ lobbying against the extension is monopolistic, nationally disloyal, and boorish; (4) is over the time wasted in Auckland waiting; (5) to grow tourism in NZ's shopping, fashion, cultural and food capital; (6) Wellington is the gateway to the Wairarapa and Marlborough.
678	Sangster, Oliver	Neutral	No	Regularly surfs at Lyall Bay and endorses the submission of Wellington Boardriders Club [#281]. Supportive of consent being granted based on the conditions for surfing impact mitigation being imposed as suggested by Wellington Boardriders.
679	TE NGARU ROA A MAUI	Oppose	Yes	Opposes the application. Te Ngaru Roa a Maui (TNRM) is a surf organisation based on cultural tangata whenua values. Surf impacts: critical of evidence for DHI claim that the Corner will be impacted upon by only 4-8%. Concerned there could be adverse effects from substantial urban-design works to Moa Point Promenade extension. Notes DHI report replies on NIWA Sediment Transport Modelling that only covered a small window of 8 weeks with minimal simulation of strong southerly winds that can cause significant sediment transport into Lyall Bay. Concerned that the SWFS will be constructed by an excavator that may only operate in fair weather conditions, resulting in long delays or potential damage to the structure while left uncompleted. Considers that most of the provisions in the Draft Surf Mitigation and Adaptive Management Plan should have been undertaken previously. Concerned that SWFS success is uncertain with high risk of shoreline erosion or that the SWFS will be damaged in storm events - no information provided on how this will be removed if so. Concerned about traffic impacts such as noise, travel times, health and safety, and vibration, especially on directly affected Moa Point road residents; impact on marine ecology from habitat destruction, constant compacting and machinery noise over 4-5 years and use of Centreport fill that may contain toxins and DDT; effects on recreation users of toxic DDT laden water. Concerned the economic cost benefit analysis is flawed and asks why if it is such a good investment, WIAL is not paying for the extension out of its own reserves; concerned that the effects of the exclusion zone on recreation have been downplayed. Submits that the proposal does not meet statutory requirements.
680	Lamb, Pete	Oppose	No	Opposes due to effects on recreation, specifically fishing
681	Heuston, Sean	Oppose	Yes	Opposes the application. Lives in Lyall Bay and believes the extension will negatively change the look and feel of the area. Also concerned about: questionable economic viability of the project, costs, traffic, construction impacts on noise, air pollution and road safety, surf effects, safety of big planes landing and departing, marine ecology effects and climate-change effects on people.

682	Heuston, Veronika	Oppose	Yes	Opposes the application. Lives in Lyall Bay and believes the extension will negatively change the look and feel of the area. Also concerned about: questionable economic viability of the project, costs, traffic, construction impacts on noise, air pollution and road safety, surf effects, safety of big planes landing and departing, marine ecology effects and climate-change effects on people.
683	McGivney, Gary	Oppose	No	Opposes the application. Opposes taxpayer funds being spent on this project and destruction of the bay for the alleged economic gains of a runway that no airline has said they will use.
684	Bisley, William	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
685	Wellington Culinary Events Trust Inc	Support	No	Supports the application. WECT's core activities are to deliver Visa Wellington on a Plate and Beervana and long-term aim is to grow activities with a view to attracting an international audience. Success in gaining an international attendance will increase with direct access to Wellington from long-haul destinations. Airport provides access to national and global market for the WCET and is a catalyst in maintaining and encouraging economic growth and tourism. Direct entry point into central NZ will provide more choice for tourists.
686	SHADBOLT, MARY	Oppose	No	Opposes the extension. Lives in Maupuia close to the airport. Reasons for opposing: lack of proper economic business case including that WIAL appear not to want to take the risk of major investment, lack of airline support, and questionable assumptions about tourist behaviour; traffic effects during construction, especially night haulage noise, congestion, and road safety effects.
687	Zwartz, David	Oppose	No	Opposes the application. Reasons: (1) Concerned at lack of independent economic business case and thinks other infrastructure improvements would show better return than this one and that if the runway extension case is financially sound, WIAL is capable of financing it by conventional means; (2) Lack of airline support and pilots' safety concerns; (3) construction effects. Strongly opposes increase in truck traffic using the Basin Reserve Area and Mt Victoria tunnel; (4) environmental effects on marine ecology of Lyall Bay, Moa Point, Taputeranga Marine Reserve; (5) climate-change effects such as sea level rise and storm surge throw doubt on future safety of the extension; and (6) alternative airport sites. Current site is vulnerable to earthquake damage and sea level rise and with northward population growth, calls for reconsideration of siting of the airport further north.
688	Board of Airline Representatives New Zealand Inc	Oppose	Yes	Opposes the application because it fails to meet the tests set out in Part 2 of the RMA. Other reasons: InterVISTAS Reports BARNZ commissioned Ailevon Pacific Aviation Consulting to review the InterVISTAS Reports [attached as appendix to submission] and considers they provide an overly optimistic view of Wellington Airport's non-stop long-haul service potential: (a) Wellington travel market is small and slow-growing; (a) extent of Wellington's catchment is smaller than identified; (c) INTERVISTAS overestimates existing and potential long-haul demand; (d) INTERVISTAS incorrectly assumes Wellington's location is advantageous for connections compared to Auckland and Christchurch; (e) projections ignore the role that Auckland and Sydney play in catering to non-stop long haul demand. Provides reasons why the potential routes to Singapore, Los Angeles, Dubai via Melbourne, Hong Kong, and other Asia are unlikely to eventuate. Economic analysis CBA misleading because (a) Although InterVISTAS says the forecasts by route are mutually exclusive, they are all included in the projections of benefits; (b) benefit of additional visitors' spending is significantly overstated because it does not take proper account of labour costs and fixed capital costs of meeting the demands of these passengers; (c) benefits associated with savings in travel time are overstated because they use values based on estimates made overseas in higher income countries than NZ; (d) The spreadsheets suggest that for the early years the CBA uses higher numbers of passengers than those implied by InterVISTAS demand forecasts; (e) Omissions of substantial costs such as the costs of environmental damage and mitigation. When corrected for errors, the CBA benefit cost ratio is less than 1.0. BARNZ considers it likely that if the projected non-stop long haul flights do not eventuate, WIAL would increase charges for all other services to collect the additional approximately $47m per annum required, which would increase airfare costs. Other effects Adverse environmental effects on (a) the Lyall Bay surf break; (b) many years of traffic effects during construction; (c) amenity impacts from the visual effect of the extension; (d) effects on marine life and recreation. Includes appendices with further details: Appendix 1 - background to BARNZ Appendix 2 - Ailevon Pacific Aviation Consulting Report review of the WIAL passenger forecast reports Appendix 3 - Spreadsheets in support of Sapere CBA Appendix 4 - Issues with the spreadsheets underlying the Sapere CBA
689	Barrowman, Andrew	Support	No	Supports the application.
690	Barbara Mitcalfe & Chris Horne	Oppose	Yes	Opposes the application. Economic concerns: funding of the proposal, reduced council funds for other essential projects, and potentially exaggerated benefit/cost ratio. Climate-change concerns: appears to ignore NZ's commitment to slash greenhouse gases and effects of increased storm surges and sea level rise. Marine ecology concerns: sediment plumes blanketing benthic communities. Construction impacts concerns: traffic, noise, and vibration effects on roads and residents. Concerned it may increase landing fees if the project proceeds and that no airline has committed to flying unsubsidised long haul flights. Questions Infratil's record on airport management. Believes Dominion Post advertisements are misleading in terms of how many international links the extension would bring and wants to know who paid for them.
691	Paua Industry Council Limited & PauaMAC2	Support	No	Supports the application due to increased freight export opportunities, and the opportunity to enhance the marine habitat for paua in Lyall Bay. Recommends conditions to facilitate the recolonisation of affected marine species following construction.
692	Morris, Alice	Support	No	Supports the application because of economic benefits such as increased tourism, domestic and international trade and freight movement. Has friends in China who have sent their children to study in Melbourne rather than Wellington because of the difficulty in getting here.
693	Moreton, Shirley	Oppose	Yes	Opposes the application. Lives in Moa Point and 4 years of construction noise, traffic, dust, and pollution will cause serious disruption to their life. Concerned about effects on marine ecology and the exclusion zones that won't allow use of Moa Point or Lyall Bay beaches for recreation for years. Notes damage from previous storms and asks whether the extension will work or will it be submerged sometimes? Doesn't believe the extension will bring more economic benefits and thinks if it is needed it should be located at the top of the south island. Thinks costs are likely to cost more than estimated.
694	Sustainability Trust	Oppose	Yes	Opposes the extension, with specific concerns relating to: (1) ongoing climate-change carbon emissions increases; (2) congestions and safety issues from increased truck traffic and wants to see detailed assessment of mitigation measures to improve low-carbon options during construction; (3) use of public funds for a purpose that will provide questionable economic benefit.
695	Nicolson, John (Irwell Rest Home)	Support	No	Supports the application. Considers there is demand for long-haul services and increasing the length of the runway has the potential to reduce fuel consumption and thus climate-change carbon

				emissions. Notes noise levels are not expected to be significantly louder or breach any of the long-term compliance regulations and WIAL has consulted with local residents about sound proofing buildings with double glazing. Considers recreation impacts minor and surf impacts mitigated by a wave focussing structure. Considers sediment will disperse quickly with no lasting effects on marine ecology. Thinks that if the extension occurs at the same time as the proposed harbour entrance dredging, the synergies could result in significantly lower traffic volumes. Highlights economic benefits including increased tourism, business productivity, increased student tourism, freight productivity, and an increase in aviation related expenditure.
696	Short, Katherine	Oppose	Yes	Opposes the application. Concerned the economic business case doesn't stack up and disagrees with subsidising SIA to fly into Wellington. Travels internationally regularly but would rather the south coast stays as it is and spend a few extra hours going through Auckland. Concerned about maintenance and safety challenges of the location and risk of cost overruns. Concerned about effects on marine ecology if kelp is smothered by sediment.
697	Roberts, Ben	Oppose	No	Opposes the extension because of safety concerns; impact on the environment; noise as they live nearby; and because why should the local council and taxpayers fund this?
698	Thomson, Christine	Oppose	No	Opposes the application primarily because it runs counter to the need to reduce climate-change carbon emissions.
699	Campbell, David John	Oppose	No	Opposes the application as it exaggerates the economic benefits and minimises the environment effects. Considers WIAL should risk more than 10% of their own money. Concerned at traffic effects and finds it difficult to accept WIAL's assessment that the extra numbers of long-haul aircraft take-offs would be within the day/night average noise limits set for the airport.
700	Kleyn, Russell	Oppose	No	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.] Supports GOTB summary of reasons.
701	St Patrick's College	Neutral	Yes	Neutral towards the extension but seriously concerned about the impact of heavy truck traffic movements during construction, especially the proposal to use a route that includes Evans Bay Parade. Particularly concerned about the impact of thirty 23m-long HPMV's trucks per hour travelling past St Patrick's College on health and safety of staff and students. Safety concerns: the College shares classes with St Catherine's College and students move between the schools during the day, many crossing Evans Bay Parade. Two driveways exit from the college onto Evans Bay Parade - concerned about safety of turning vehicles; many students also walk to College from Hataitai and there is no controlled pedestrian crossing apart from the lights at Cobham Drive; would also like to acknowledge and express concerns about the safety of disabled students attending Kimi Ora and crossing Evans Bay Parade. Health concerns: dust and debris from traffic as they move past the College; impact of increased traffic noise on classroom activities and on recreational time during planned breaks; and impact on the College's 3 tenanted flats located on Evans Bay Parade. Wants a route to be found that only uses State Highway 1.
702	Hicks, Matthew	Oppose	Yes	Opposes the application. Concerned about the cost to ratepayers; effect on marine environment; safety of pilots landing planes. Expresses a number of doubts about the economic business case, particularly Infratil's decision not to contribute significantly, expected economic benefits, cost of insurance, and declining international enrolments in WIAL's catchment region. Highlights issues with the location and considers a further north alternative site would be better and would avoid the traffic and disruption from construction.
703	Skrzynski, Peter	Oppose	Yes	[Same text as submission #50. Concerns about: economic cost-benefit analysis; construction effects including traffic; environmental effects including surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.]
704	WEBSTER, ELISE	Oppose	Yes	Opposes the application. Lives at Moa Point and will be directly affected by construction and the extension itself. Concerns include: not being able to swim or collect kai moana, disrupted sleep from noise, dust, and exclusion zone preventing recreation. Visual impact concerns: vast concrete monstrosity festooned by rubbish and plastic bags caught in the barbed wire around the perimeter of the runway. Noise: concerned noise impact is underestimated and that all plans will take off immediately in front of their house. Cultural: of Ngati Toa descent and considers that Ngati Toa have not been made aware of the detailed information about impacts on mana whenua. Economic: considers WCC has failed to insist on a comprehensive business case using Treasury's Better Business Case model and concerned at lack of response to criticisms of the technical reports.
705	Warwick, James	Oppose	No	Opposes the extension. Has seen changes in surf, rips, sand levels and erosion over time and believes they have been exacerbated by the previous runway extension, maintenance on sea wall, and installation of storm water pipes on the seaward side of the road and concerned the extension will exponentially increase this negative impact. Concerned about traffic congestion and longer travel times; recreation and surf effects; safety of extension length. Unconvinced by proposed wave mitigation structure. Concerned that the applicant's reports downplay the environmental impact and has no confidence in the economic business case and thinks these need independent review. Considers extending north into Evans Bay would have less environmental impact.
706	Randerson, Jackie	Oppose	Yes	Opposes because of concerns about impacts on recreation and social life; economic costs and funding by public money; global advice is to build away from the coast to plan for climate-change; and increased air fare charges increasing inequality.
707	Knox, Johanna	Oppose	Yes	Opposes the application because it will subtract from Wellington's value, likely be a huge economic risk, be disruptive during construction, impact on Lyall Bay's recreation and surf community value, and destroy the coast's environmental values.
708	Rotmann, Sea	Oppose	Yes	Opposes the application. Lives at Moa Point and will be directly affected. Has a PhD on the environmental impacts from sediment and turbidity stress on marine fauna and experience in a number of environmental roles. Considers the sampling methodology and data collection the technical reports are based on flawed and the description of Lyall Bay/Moa Point ecology and faunal and floral assemblage inaccurate and thus the assessment inadequate. Social impact concerns Uses bay extensively for a range of recreation activities and concerned about the impact of the 300m exclusion zones. Considers recreation impact reports lack local experience. Concerned about: human health and safety during construction; traffic and noise impacts, especially increased traffic through main access roads to Moa Point and questions the airport's assertion that Moa Point Road won't be off-limits. Considers the applicant's suggestion that Moa Point residents can be accommodated in hotels during loud periods of construction unrealistic. Doesn't think the application has taken into account the considerable forces of Cook Strait. Considers the reports have visual landscape values to residents and visitors. Economics Considers forecasting and cost-benefit analysis flawed and concerned about cost to ratepayers and increased airport charges, which will impact the submitter personally. Alternative sites Does not consider the applicant has adequately assessed alternatives.
709	Qantas Airways Limited	Oppose	Yes	Opposes the application. On the basis of Qantas Group's existing operations and growth plans, does not believe a substantial investment in runway infrastructure is required at this time. Acknowledges possible economic benefits but considers over-investment in infrastructure is likely to result in higher

				ticket prices in the medium term which could reduce demand and have negative economic impacts.
710	Swartz, Jonathan	Oppose	Yes	Opposes the application. Lives in the outer cone of the flight path and already finds large plane noise disruptive and the extension would increase this problem. Concerned at the length of the construction time, particularly the night haulage times; that the economic business case is costly and not viable; and concerned about effects on marine ecology and recreation including surf.
711	Stubbs, Samantha	Support	No	[Part of the same text as submission #695. Highlights economic benefits and comments on effects on noise, recreation, surf, and marine ecology]
712	Hue te Taka Incorporated	Oppose	Yes	Opposes the application. HtT's objective is to protect the interests of Moa Point residents impacted by the proposal and it considers there are no conditions of consent that will adequately avoid, remedy or mitigate the adverse effects on them. Submits that consultation with Moa Point residents has been inadequate and details process to date. Believe alternative locations have not been adequately considered. Environmental concerns HtT has members who whakapapa to local mana whenua and are concerned about impacts on cultural values including mauri and kaimoana. Value the environment for recreation, kai moana, views, marine ecology and concerned about impacts on these. Consider the technical reports are lacking sufficient and validated data. Social, health and safety and recreational impacts Consider their way of life will be destroyed. Critical of recreation reports, particularly limited knowledge of fisheries undertaken in the area. Concerned about impacts on surf, and impacts of noise, dust, traffic, vibration, and access to evacuation zones. Do not think the proposed mitigation options adequate. Economics Critical of economic viability, costings, and do not want their rates to support it.
713	Wellington Regional Economic Development Agency	Support	Yes	Supports the application as WREDA is a strong advocate of improvements in Wellington's international connectivity. Highlights economic benefits including more tourists, increased convenience, more international students, reduced possibility of businesses relocating, making Wellington a more attractive destination, international business activity, raised profiled of Wellington and broadening the appeal of NZ. Considers there is sufficient demand and growth to support the extension.
714	CHORUS NZ LTD	Support	No	Supports the extension on the basis of socio-economic benefits and improved business connectivity. No Chorus assets within the immediate vicinity of the proposal but they note any proposals to relocate or disturb infrastructure would be managed through the network utilities management plan as proposed by the applicant. Do not comment on environmental effects but anticipate these would be subject to appropriate conditions.
715	Todd, Geoff	Support	No	Supports the application as a truly international airport is a critical component for the region to thrive. Comments on economic benefits: reduced cost of doing international business, increased convenience of travel, and connectivity with the global economy.
716	Kettles, Helen	Oppose	Yes	Opposes the application. Uses Lyall Bay beach for recreation and has an active interest in maintaining the health of the coastline. Reasons for opposition include: risky investment with no independent economic business case; wants rate money to be spent elsewhere; increased costs of regional flights; airline pilots' safety concerns; site may not be sustainable with climate-change and tsunami risk; noise, traffic, and dust impacts; concerned about public exclusion zones; impacts on marine ecology and use of contaminated fill. Also concerned about visual impact, reduction in natural character and surf effects.
717	Collins, Tim	Oppose	No	Opposes the extension because of adverse effects on the high quality surf waves at The Corner.
718	Pilcher, Ricci	Oppose	No	Opposes the extension because the effects on marine ecology, the coastline, and surf cannot be undone.
719	Lambrechtsen, DR Nicolaas	Oppose	Yes	Opposes the application because does not want Wellington ratepayers to be levied for a project that should stand on its own economic merits and concerned that there is no mention in the reports of the technical problems with wave erosion when extending the runway southwards. Fearful that there will be cost over-runs due to rock placements being washed away in severe storms.
720	Gibson, Cliff	Oppose	Not Specified	Opposes because no ratepayer money should be invested as the economic business case is not believable and the major shareholder would be the major beneficiary.
721	Bowler, Patrick	Support	Yes	Supports the application as it balances the need for an airport capable of connecting Wellington by direct flights to a wider range of countries, with the need to minimise the impact on the environment.
722	Kominik, Anna	Oppose	Yes	Opposes the application. Concerns about negative economic consequences including project viability and cost to ratepayers; pilots' safety concerns; and decreased attractiveness of Wellington resulting from the project. Concerns about environmental effects, particularly on surfing, recreation, marine ecology and use of contaminated fill; and climate-change impacts.
723	Strathmore Park Progressive & Beautifying Association Inc	Oppose	Yes	Opposes the application as it will adversely impact a proportion of Strathmore Park residents. Notes WIAL has not attempted to consult with those residents identified as receivers of construction noise. Wants noise mitigation measure named "runway 35" from Technical Report 8 to be considered. Encourages residents input into the Community Liaison Group but does not think such a group should be responsible for managing a consent allowing 24-hour construction with sound levels known to cause sleep disturbance. Considers proposed noise during the night curfew unacceptable. Acknowledges that while homes within the Air Noise Boundary have the opportunity to be insulated and ventilated, homes in their suburb are offered a subsidy of less than 100% cost. Want noise insulation work to proceed prior to start of construction and on a 100% subsidy basis. Opposes specific sections of the AEE noise reports.
724	Palmer, Karen	Support	Not Specified	Supports the application as the present arrangement through Auckland is slow and pedantic and the population base in Wellington would be appropriately served by the extension.
725	Yule, Mike	Oppose	Yes	Opposes the application on the basis that the risks and benefits have not been sufficiently independently explored and that it is unfairly funded. Homeowner in Breaker Bay and uses this reef for diving and other recreation. Concerned about the WIAL advertisements being biased and that there is no independent assessment of the economic business case. Considers risks and costs entirely socialised and likely to result in economic disadvantage, particularly with potential for remedial investment to mitigate surf depletion, coastal erosion or contamination of the seabed. Sceptical of lack of consideration for the impact of climate-change.
726	Ryrie, David & Gillian	Oppose	No	Opposes the application. Includes a number of questions about WIAL's demand forecasts, climate-change impacts, and noise impacts on Strathmore, Miramar, Kilbirnie and Hataitai. Also concerned about cost and economic funding by WCC and lack of consideration of alternatives.
727	Guardians of the Bays Incorporated Society	Oppose	Yes	Opposes the application for reasons including: Marine environment - unclear extent of effects and inadequate information and data in reports. Lyall Bay/Moa Point environment inadequately described. Climate-change - failed to take a precautionary approach or give regard to possible effects of sea level rise and storm surge. Does not give effect to WCC's Low Carbon Capital Plan.

				Recreation, fishing, kaimoana - permanent loss of Airport Rights surf break, inadequate consideration of effects of 300m exclusion zone for up to 4 years on recreation activities, unproven submerged wave focussing structure. Urban-design, landscape, visual amenity - submits that effects on amenity values will be significant and adverse; disagrees with assessment that the extension would look sufficiently 'natural' to be acceptable or well-integrated into existing context. Submits that the assessment fails to acknowledge significance of changes. Passenger forecasts - based on flawed data with catchment over-exaggerated to include destinations as far south as Kaikoura. Concerned ticket prices will increase for passengers to cover costs. Economic analysis - Cost-benefit analysis flawed and compounded by overly optimistic passenger forecasts. Cultural values - GOTB represent some people who whakapapa to local mana whenua and are concerned about adverse effects on mauri, water quality, kaimoana, and local taonga. Construction impacts; noise; traffic; and health and safety
728	Ramanathan, Bhageerathy	Oppose	No	Opposes the application because no reliable studies done on economic benefits and environmental cost to the south coast is too high.
729	Green Party Wellington Province	Oppose	Yes	Opposes the application on social, environmental, and economic grounds. Economic concerns include: no plan to reduce greenhouse gas emission or analyse impact of climate-change on the airport's economic future; high proportion of public funding; lack of independent peer review of report. Environmental concerns include: no satisfactory mitigation plan for marine ecology impacts; sub-standard assessment of marine life; no proposal for long-term data collection on hydrodynamics, sediment movement especially geomorphological and seismic data of Lyall and Moa Point Bays; unknown fill composition; surf effects; no evidence residents will be compensated for noise, dust and vibration issues from traffic; no strategy to mitigate transport bottleneck implications of the proposed route; and no evidence that pilots' safety concerns with the length of the RESA have been taken into account.
730	Pemberton, Ruth	Oppose	Not Specified	Opposes the application because of effects on marine ecology, particularly from contaminated fill; effects on recreation and surf; traffic effects during construction, particularly the use of Evans Bay Parade and Onepu Rd as a route; overstated economic benefit/cost predictions; lack of support from airlines; and lack of consideration of climate-change impacts.
731	de Lisle, Jane	Oppose	No	Opposes the application due to concerns about the economic business case; environmental impacts from traffic, noise, and effects on marine life and recreation as well as increasing climate-change contributions; and airline pilots' safety concerns for larger planes landing.
732	Hoy, Dolores	Oppose	Yes	Opposes the application due to lack of convincing economic business case, high cost to ratepayers, and negative effects of increased traffic.
733	Brodie, Chanelle	Oppose	Yes	Opposes the application because there will be greater adverse effects compared to positive effects for Wellington. Reasons include: visual impact of eliminating existing natural environment and impact on marine ecology; social and recreation effects including on the surf break; and effects on the character of the coastal environment, particularly on the region's outstanding natural features and landscapes located within view of the airport extension site.
734	Woodward, Iona	Oppose	No	Opposes the extension as not enough evidence of the promised economic benefits and the extensive disruption and costs of construction have not been justified.
735	OraTaio: The NZ Climate and Health Council	Oppose	Yes	Opposes the application. Concerned about economic viability, particularly in the context of the new global zero net emissions direction; physical viability, particularly in the context of climate-change; and adverse health impacts from construction including dust, diesel truck pollution, increased truck volumes discouraging active transport growth, noise effecting sleep quality and quantity, and risks from contaminated fill from Centreport dredging.
736	Montgomerie, Christine	Neutral	Yes	Neutral towards the application. Concerned about overstated economic cost-benefit predictions, risk to ratepayers and unconvinced tourists will opt to do a figure-8 travel itinerary. Main concern is regarding traffic impacts during the construction and beyond. Wants a condition to ensure all fill is transported via barge and a more comprehensive transport plan developed to enable increased visitors to commute between the CBD and airport more easily.
737	Springford, Elizabeth	Oppose	Yes	Opposes the application, mainly due to concerns about lack of climate-change considerations. Also concerned considerable money has been spent before any independent economic business analysis and that the airport has attempted to exclude surf interests from the process and has proposed a remedy that is relatively untested. Would like to see how much the airport is donating to mayoral and councillor candidates declared publicly.
738	The New Zealand Air Line Pilots Association	Oppose	Yes	Opposed to an extension of the Wellington Airport runway unless the extension includes an adequate Runway End Safety Area or it incorporates an Engineered Material Arresting System.
770	Webster-Adams, Lily	Oppose	No	Opposes the application as the runway will not only affect the direct area it is proposed to occupy, but neighbouring bays and communities, and the future for the wider city. Notes that Government and Airlines do not support it and believes that it will fall short economically of funding and support, leaving the potential of long life debt to be paid off as a city. Notes that people will visit Wellington for the culture and will not be enticed to visit by the runway. Shares concerns for international students as believes that Wellington is not adequately prepared to support the supposed influx of students who will come here if the runway is extended.
	LATE SUBMISSIONS			
739	Bent, John	Oppose	Yes	Opposes the application because of concerns about costs, lack of evidence, and adverse effects.
740	Cotter, Sophie	Oppose	No	Opposes the application because they do not believe a thorough environmental impact analysis has been conducted. Particularly concerned about noise pollution, traffic congestion, and pollution effects on recreation at Lyall Bay beach.
741	Schone, Janice & Fritz	Oppose	Yes	Opposes because they are not satisfied the project is feasible considering the weather and sea conditions, because they would prefer the airport for large aircraft relocated to Ohakea with a fast train service to Wellington, and because a proper economic business case has not been produced.
742	Kane, Patricia	Oppose	Yes	Opposes the application as no airlines are interested; truck traffic every 2 minutes; safety of the length of runway; and adverse effects on marine ecology in the reserve and little blue penguins nesting near Moa Point.
743	Appropriate Technology for Living Association	Oppose	Yes	Opposes the extension because (1) has not seen a good economic business plan; (2) network approach using Auckland will produce less greenhouse gas; (3) need to reduce climate-change emissions; (4) sea-level rise and storm surge make this an unwise location; (5) construction traffic; and (6) people are attracted to Wellington for reasons other than easy airline access.
744	Power Squadron Marine Management	Oppose	Yes	Opposes the application because impacts on fishing are generally poorly considered; there will be a negative impact on commercial rock lobster fishing; and the intended vessel exclusion zone is too big and will exacerbate the negative impact on rock lobster fishing.

				Consider that there is potential for short to medium term habitat loss for paua and lobster to be offset by new created habitat. Outlines potential adverse effects of displacement of commercial rock lobster from the grounds inside the construction zone, including: competition for catch on adjacent grounds; decreased average rock lobster fishing incomes; increased gear and spatial conflicts between commercial and amateur fishermen; and increased risk of gear loss and accidents if fishermen feel they are forced to fish where/when they may not otherwise have attempted. Submits the applicant has not obtained sufficient information to understand these effects. Details the Quota Management System that applies to rock lobsters and that the proposed construction zone is sited within Statistical Area 915 of the rock lobster fishery. Details constraints on this fishery and impacts of displacement of fishermen from the construction exclusion zone. There are twenty or more commercial pots regularly set in the general area proposed to be closed to fishing during and after construction with an estimated daily value of $2,600 and seasonal value of $89,000/tonne. Applicant makes no provision to address the impact.
745	Housing New Zealand	Neutral	Yes	Neutral towards the application but would like to seek clarification on and suggests changes to the proposal to address potential impacts on HNZ properties just outside the airport noise boundary line and within the flight path.
746	Bagnall, David	Oppose	No	Opposes the application. Critical of the economic assessment being based on the proportion of the population of the world who can fly directly to Wellington as does not consider this a key factor in tourists' decision making. Considers it will have a negative impact on tourism. Notes primary mitigation action proposed for loss of visual amenity is to purchase properties at Moa Point but this does not reduce the impact on visual amenity for other users of the area. Applicant does not assess liquefaction risk to the fill used to create the runway.
747	McCallum, Elizabeth	Support	No	Supports the application. Travels frequently internationally and direct flights to Asia would be of economic benefit to their business as they frequently visit their suppliers there. Considers it would be of significant advantage to have a streamlined transport system direct to the airport from the railway station.
748	Cawthorn, Isabella	Oppose	No	Opposes the application on the basis of poor process. Believes level of debate and information has not been sufficient for economic expenditure of this magnitude and is concerned about conflicts of interests.
749	World of WearableArt Limited	Support	No	Supports the application as it will sustain and encourage economic development within Wellington and the wider region. Currently 50% of WOW designers come from outside NZ and 3% of the audience and WOW has a focus on growing this. Extending the runway will help grow WOW's international audience, support their activity with design university engagement, and help ensure ease of involvement in the awards from leading creative directors and theatre specialists.
750	Grigg, Tim	Support	No	Supports the application.
751	Knox, Andrea	Oppose	No	Opposes the application as it should be privately funded and not subsidised by ratepayers, and also the climate-change impact of extra carbon emissions.
752	Jackson, Adele	Oppose	No	Opposes the application primarily because it is unnecessary and the costs will affect both ratepayers and passengers; and secondarily because it will adversely affect the environment, particularly marine ecology and traffic noise, disruption and safety impacts.
753	Wilkinson, Geoffrey	Support	No	Supports the application. Reasons include: increased safety; lower emissions; ability for larger aircraft utilisation, which will produce less emissions as their engines are more efficient; lower noise levels; better airport infrastructure to handle increased visitor numbers; economic benefits; build it and they will come; and more efficient connections to the rest of the world.
754	Horner, Maurice & Jenny	Support	Not Specified	Supports the application as believes it is essential for the economic development of middle New Zealand and will help pull development away from the Auckland agglomeration to the benefit of a more balanced New Zealand.
755	Fitzgerald, Matthew	Oppose	No	Opposes the application as it is not a viable economic option for Wellington and ratepayers should not be funding it.
756	McKay, Bernard	Oppose	No	Opposes the application because of effects on marine ecology at Moa Point as well as recreation and diving activities.
757	Walker, Christopher	Oppose	Yes	Opposes the application as the money could be spent elsewhere and there is not enough evidence of economic benefits. Considers the risk of ruining the surf too high.
758	Wevers, Maarten	Oppose	No	Opposes the application on the grounds that a proper economic business case has not yet been made for the investment of ratepayer funds. Considers it would be difficult to promote Wellington as a separate destination, particularly in Asian markets, and notes the hub model is well established in aviation economics. Does not think there would be sufficient passenger demand for flights.
759	Dinamani, Giri	Support	Not Specified	Supports the application as Wellington needs the runway extension to fully leverage its reputation so tourists worldwide can directly access the coolest little capital in the world. Wellington is ideally suited to being a larger tourism hub but an airport that can serve many different countries is needed for that to happen.
760	Hargreaves, Bridget	Support	No	Supports the application as more flights in and out of Wellington will be good for the economy in terms of visitor numbers and jobs. Also likes the idea of having direct access to other destinations around the world.
761	Hartstonge, Peter	Support	No	Supports the application as it will enable flights to/from further afield overseas thereby greatly benefitting many travellers in time, money and convenience, while also growing the Wellington region. Notes personal benefit of being able to fly directly to Perth to visit family.
762	Hartstonge, Jill	Support	No	Supports the application as it will be good for Wellington to have larger aircraft landing here, bringing tourists directly and therefore more money into Wellington economy. Notes the convenience of not having to go to Auckland first in order to take a longer flight overseas.
763	Miller-Fergusson, Corrinne	Oppose	No	Opposes the application. Considers the cost does not make sense and is worried that airfares will increase. Concerned about disruption to residents from noise and traffic and effects on surf. Notes the wave focussing device is not guaranteed to work. Considers the marine ecology and recreation values around Moa Point may be compromised, particularly from contamination of marine-derived fill sediment.
764	BURRELL, BRIAN	Oppose	No	Opposes the application due to the effects and ecological damage caused during construction, and on-going effects if constructed.
765	Cotterall, Stephen	Oppose	Yes	Opposes the application. Concerned at lack of evidence for economic benefits and that the extension is unnecessary. Concerned about effects on surf and marine ecology; noise; and possibility of increased costs, particularly because of the location extending into Cook Strait.
766	Weir, Janet	Support	Yes	Supports the extension because (1) they host international college students and a direct flight would encourage more international students; (2) direct flights would support their son's plan to import/export goods from Ho Chi Minn; (3) a $100,000 grant a few years ago for surfers to build an artificial reef was not picked up and they query the enthusiasm of the current group of surfers professing concern about their hobby at Lyall Bay; (4) don't think the extension would affect marine life including penguins; and (5) it will improve the economic and international future for us all.
767	Bradbury, Noel	Support	No	Supports the application as it will enhance trading and notes that Wellington City will 'wither on the vine' if it can't handle modern aircraft. Comments on the associated need for roads to be upgraded.

768	Walsh, Stephen	Support	No	Supports the extension as it will meet development and safety requirements. Believes that making it easier for international visitors will enable more local investment in tourist attractions and infrastructure and has good potential to have compounding economic benefit. Notes that traffic alternatives need to be looked into, instead of heavy trucks lumbering through the central city. Also comments that a longer runway will provide a potential support option for Wellington in the event of a major disaster.
769	Bramley, Neil	Support	No	Supports the application as it will help promote tourism and make Wellington a better place to live. Submitter is in the lobster export business and notes the time saving for delivering live lobster in good quality, as well as making it easier to travel the globe and bring customers here to show what we have on offer in Wellington.
771	Leanne Bramley	Support	No	Supports the extension as no major city can really get its tourism and business centre running to full capacity without the ability to have direct international flights. Believes that it is great for exports of some of our main resources like seafood and other business interactions, and for tourists to be able to visit without being side-tracked to other destinations.
772	Jenkins, Pete	Oppose	No	Opposes the application as it will ultimately not result in any airline support and therefore not justify the significant economic cost to ratepayers. Believes that visitors travelling to Wellington on private or Government business are not time/cost sensitive and are used to having to transit through hub ports internationally to achieve this.
773	Flewelling, Sally	Oppose	No	[Same text as submission #50. Concerns included: economic cost-benefit analysis; and environmental effects including surfing, recreation, and marine ecology.]
774	Graykowski, Judith	Oppose	Yes	Opposes the application and notes that it has failed to conduct a Social Impact Assessment outlining the scale and impact of the project on the neighbourhoods and peoples/tangata whenua of the Bays: homes, community spaces, schools sporting precincts, and recreational leisure activities - walking, bicycling, running, swimming pursued in the outdoors around Evans Bay, Lyall Bay and nearby. Notes concerns about carbon emissions and contribution of the project to climate change. Concerned that the application will not promote the management of sustainable resources and will not achieve the purpose of the RMA; is contrary to Part 2 and other provisions of the RMA, and other relevant planning and non-statutory documents including the RCP, PNRP and NZCPS; will not meet foreseeable needs of future generations; will not enable social, economic and cultural wellbeing; does not avoid, remedy or mitigate adverse effects on environment; and fails to adequately assess alternatives.
775	McKenzie, Alisdair	Support	No	Supports the application and notes the significant time and money savings as a frequent international business traveller. Also notes that the extension would generate additional services and passengers inbound and outbound and stimulate increased economic and tourist activity to benefit the city, region and country.
776	Mulholland, Marlene Nora	Oppose	Yes	Opposes the application. Lives at Moa Point and is concerned about the impact of fill on marine ecology, particularly on nesting little blue penguins, recreation and the visual eyesore of an extension with barb or razorwire. Concerned about the economic business case and that Infratil are trying to buy up houses on Moa Point Rd to prevent noise, dust and other construction-related complaints. Believes the community's amenity values, health and safety and property values in the small heritage suburb should count for something too.

Appendix 13: Provisions of relevant planning documents

Appendix 2: Provisions of the relevant planning documents

The New Zealand Coastal Policy Statement 2010

Objective 1

To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:

- maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature;
- protecting representative or significant natural ecosystems and sites of biological importance and maintaining the diversity of New Zealand's indigenous coastal flora and fauna; and
- maintaining coastal water quality, and enhancing it where it has deteriorated from what would otherwise be its natural condition, with significant adverse effects on ecology and habitat, because of discharges associated with human activity.

Objective 2

To preserve the natural character of the coastal environment and protect natural features and landscape values through:

- recognising the characteristics and qualities that contribute to natural character, natural features and landscape values and their location and distribution;
- identifying those areas where various forms of subdivision, use, and development would be inappropriate and protecting them from such activities; and
- encouraging restoration of the coastal environment

Objective 3

To take account of the principles of the Treaty of Waitangi, recognise the role of tangata whenua as kaitiaki and provide for tangata whenua involvement in management of the coastal environment by:

- recognising the ongoing and enduring relationship of tangata whenua over their lands, rohe and resources;
- promoting meaningful relationships and interactions between tangata whenua and persons exercising functions and powers under the Act;
- incorporating mātauranga Māori into sustainable management practices; and
- recognising and protecting characteristics of the coastal environment that are of special value to tangata whenua

Objective 4

To maintain and enhance the public open space qualities and recreation opportunities of the coastal environment by:

- recognising that the coastal marine area is an extensive area of public space for the public to use and enjoy;

- maintaining and enhancing public walking access to and along the coastal marine area without charge, and where there are exceptional reasons that mean this is not practicable providing alternative linking access close to the coastal marine area; and
- recognising the potential for coastal processes, including those likely to be affected by climate change, to restrict access to the coastal environment and the need to ensure that public access is maintained even when the coastal marine area advances inland.

Objective 5

To ensure that coastal hazard risks taking account of climate change, are managed by:

- locating new development away from areas prone to such risks;
- considering responses, including managed retreat, for existing development in this situation; and
- protecting or restoring natural defences to coastal hazards.

Objective 6

To enable people and communities to provide for their social, economic, and cultural wellbeing and their health and safety, through subdivision, use, and development, recognising that:

- the protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and within appropriate limits;
- some uses and developments which depend upon the use of natural and physical resources in the coastal environment are important to the social, economic and cultural wellbeing of people and communities;
- functionally some uses and developments can only be located on the coast or in the coastal marine area;
- the coastal environment contains renewable energy resources of significant value;
- the protection of habitats of living marine resources contributes to the social, economic and cultural wellbeing of people and communities;
- the potential to protect, use, and develop natural and physical resources in the coastal marine area should not be compromised by activities on land;
- the proportion of the coastal marine area under any formal protection is small and therefore management under the Act is an important means by which the natural resources of the coastal marine area can be protected; and
- historic heritage in the coastal environment is extensive but not fully known, and vulnerable to loss or damage from inappropriate subdivision, use, and development.

Policy 2: The Treaty of Waitangi, tangata whenua and Māori heritage

In taking account of the principles of the Treaty of Waitangi (Te Tiriti o Waitangi), and kaitiakitanga, in relation to the coastal environment:

(a) recognise that tangata whenua have traditional and continuing cultural relationships with areas of the coastal environment, including places where they have lived and fished for generations;

(b) involve iwi authorities or hapū on behalf of tangata whenua in the preparation of regional policy statements, and plans, by undertaking effective consultation with tangata whenua; with such consultation to be early, meaningful, and as far as practicable in accordance with tikanga Māori;

(c) with the consent of tangata whenua and as far as practicable in accordance with tikanga Māori, incorporate mātauranga Māori1 in regional policy statements, in plans, and in the consideration of applications for resource consents, notices of requirement for designation and private plan changes;

(d) provide opportunities in appropriate circumstances for Māori involvement in decision making, for example when a consent application or notice of requirement is dealing with cultural localities or issues of cultural significance, and Māori experts, including pūkenga2, may have knowledge not otherwise available;

(e) take into account any relevant iwi resource management plan and any other relevant planning document recognised by the appropriate iwi authority or hapū and lodged with the council, to the extent that its content has a bearing on resource management issues in the region or district; and

(i) where appropriate incorporate references to, or material from, iwi resource management plans in regional policy statements and in plans; and

(ii) consider providing practical assistance to iwi or hapū who have indicated a wish to develop iwi resource management plans;

(f) provide for opportunities for tangata whenua to exercise kaitiakitanga over waters, forests, lands, and fisheries in the coastal environment through such measures as:

(i) bringing cultural understanding to monitoring of natural resources;

(ii) providing appropriate methods for the management, maintenance and protection of the taonga of tangata whenua;

(iii) having regard to regulations, rules or bylaws relating to ensuring sustainability of fisheries resources such as taiāpure, mahinga mātaitai or other non commercial Māori customary fishing; and

(g) in consultation and collaboration with tangata whenua, working as far as practicable in accordance with tikanga Māori, and recognising that tangata whenua have the right to choose not to identify places or values of historic, cultural or spiritual significance or special value:

(i) recognise the importance of Māori cultural and heritage values through such methods as historic heritage, landscape and cultural impact assessments; and

(ii) provide for the identification, assessment, protection and management of areas or sites of significance or special value to Māori, including by historic analysis and archaeological survey and the development of methods such as alert layers

and predictive methodologies for identifying areas of high potential for undiscovered Māori heritage, for example coastal pā or fishing villages.

Policy 4 Integration

Provide for the integrated management of natural and physical resources in the coastal environment, and activities that affect the coastal environment. This requires:

(a) co-ordinated management or control of activities within the coastal environment, and which could cross administrative boundaries, particularly:

  (i) the local authority boundary between the coastal marine area and land;

  (ii) local authority boundaries within the coastal environment, both within the coastal marine area and on land; and

  (iii) where hapū or iwi boundaries or rohe cross local authority boundaries;

(b) working collaboratively with other bodies and agencies with responsibilities and functions relevant to resource management, such as where land or waters are held or managed for conservation purposes; and

(c) particular consideration of situations where:

  (i) subdivision, use, or development and its effects above or below the line of mean high water springs will require, or is likely to result in, associated use or development that crosses the line of mean high water springs; or

  (ii) public use and enjoyment of public space in the coastal environment is affected, or is likely to be affected; or

  (iii) development or land management practices may be affected by physical changes to the coastal environment or potential inundation from coastal hazards, including as a result of climate change; or

  (iv) land use activities affect, or are likely to affect, water quality in the coastal environment and marine ecosystems through increasing sedimentation; or

  (v) significant adverse cumulative effects are occurring, or can be anticipated.

Policy 6 Activities in the coastal environment

1. In relation to the coastal environment:

  (a) recognise that the provision of infrastructure, the supply and transport of energy including the generation and transmission of electricity, and the extraction of minerals are activities important to the social, economic and cultural well-being of people and communities;

(b) consider the rate at which built development and the associated public infrastructure should be enabled to provide for the reasonably foreseeable needs of population growth without compromising the other values of the coastal environment;

(c) encourage the consolidation of existing coastal settlements and urban areas where this will contribute to the avoidance or mitigation of sprawling or sporadic patterns of settlement and urban growth;

(d) recognise tangata whenua needs for papakāinga3, marae and associated developments and make appropriate provision for them;

(e) consider where and how built development on land should be controlled so that it does not compromise activities of national or regional importance that have a functional need to locate and operate in the coastal marine area;

(f) consider where development that maintains the character of the existing built environment should be encouraged, and where development resulting in a change in character would be acceptable;

(g) take into account the potential of renewable resources in the coastal environment, such as energy from wind, waves, currents and tides, to meet the reasonably foreseeable needs of future generations;

(h) consider how adverse visual impacts of development can be avoided in areas sensitive to such effects, such as headlands and prominent ridgelines, and as far as practicable and reasonable apply controls or conditions to avoid those effects;

(i) set back development from the coastal marine area and other water bodies, where practicable and reasonable, to protect the natural character, open space, public access and amenity values of the coastal environment; and

(j) where appropriate, buffer areas and sites of significant indigenous biological diversity, or historic heritage value.

2. Additionally, in relation to the coastal marine area:

(a) recognise potential contributions to the social, economic and cultural wellbeing of people and communities from use and development of the coastal marine area, including the potential for renewable marine energy to contribute to meeting the energy needs of future generations:

(b) recognise the need to maintain and enhance the public open space and recreation qualities and values of the coastal marine area;

(c) recognise that there are activities that have a functional need to be located in the coastal marine area, and provide for those activities in appropriate places;

(d) recognise that activities that do not have a functional need for location in the coastal marine area generally should not be located there; and

(e) promote the efficient use of occupied space, including by:

(f) requiring that structures be made available for public or multiple use wherever reasonable and practicable;

(i) requiring that structures be made available for public or multiple use wherever reasonable and practicable;

(ii) requiring the removal of any abandoned or redundant structure that has no heritage, amenity or reuse value; and

(iii) considering whether consent conditions should be applied to ensure that space occupied for an activity is used for that purpose effectively and without unreasonable delay.

Policy 10 Reclamation and de-reclamation

1. Avoid reclamation of land in the coastal marine area, unless:

(a) land outside the coastal marine area is not available for the proposed activity;

(b) the activity which requires reclamation can only occur in or adjacent to the coastal marine area;

(c) there are no practicable alternative methods of providing the activity; and

(d) the reclamation will provide significant regional or national benefit.

2. Where a reclamation is considered to be a suitable use of the coastal marine area, in considering its form and design have particular regard to:

(a) the potential effects on the site of climate change, including sea level rise, over no less than 100 years;

(b) the shape of the reclamation, and, where appropriate, whether the materials used are visually and aesthetically compatible with the adjoining coast;

(c) the use of materials in the reclamation, including avoiding the use of contaminated materials that could significantly adversely affect water quality, aquatic ecosystems and indigenous biodiversity in the coastal marine area;

(d) providing public access, including providing access to and along the coastal marine area at high tide where practicable, unless a restriction on public access is appropriate as provided for in policy 19;

(e) the ability to remedy or mitigate adverse effects on the coastal environment;

(f) whether the proposed activity will affect cultural landscapes and sites of significance to tangata whenua; and

(g) the ability to avoid consequential erosion and accretion, and other natural hazards.

3. In considering proposed reclamations, have particular regard to the extent to which the reclamation and intended purpose would provide for the efficient operation of infrastructure, including ports, airports, coastal roads, pipelines, electricity transmission, railways and ferry terminals, and of marinas and electricity generation.

4. De-reclamation of redundant reclaimed land is encouraged where it would:

(a) restore the natural character and resources of the coastal marine area; and

(b) provide for more public open space.

Policy 11 Indigenous biological diversity (biodiversity)

To protect indigenous biological diversity in the coastal environment:

(a) avoid adverse effects of activities on:

(i) indigenous taxa4 that are listed as threatened5 or at risk in the New Zealand Threat Classification System lists;

(ii) taxa that are listed by the International Union for Conservation of Nature and Natural Resources as threatened;

(iii) indigenous ecosystems and vegetation types that are threatened in the coastal environment, or are naturally rare;

(iv) habitats of indigenous species where the species are at the limit of their natural range, or are naturally rare;

(v) areas containing nationally significant examples of indigenous community types; and

(vi) areas set aside for full or partial protection of indigenous biological diversity under other legislation; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on:

(i) areas of predominantly indigenous vegetation in the coastal environment;

(ii) habitats in the coastal environment that are important during the vulnerable life stages of indigenous species;

(iii) indigenous ecosystems and habitats that are only found in the coastal environment and are particularly vulnerable to modification, including estuaries, lagoons, coastal wetlands, dunelands, intertidal zones, rocky reef systems, eelgrass and saltmarsh;

(iv) habitats of indigenous species in the coastal environment that are important for recreational, commercial, traditional or cultural purposes;

(v) habitats, including areas and routes, important to migratory species; and

(vi) ecological corridors, and areas important for linking or maintaining biological values identified under this policy

Policy 13 Preservation of natural character

1. To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

   (a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

   (b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment; including by:

   (c) assessing the natural character of the coastal environment of the region or district, by mapping or otherwise identifying at least areas of high natural character; and

   (d) ensuring that regional policy statements, and plans, identify areas where preserving natural character requires objectives, policies and rules, and include those provisions.

2. Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:

   (a) natural elements, processes and patterns;

   (b) biophysical, ecological, geological and geomorphological aspects;

   (c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;

   (d) the natural movement of water and sediment;

   (e) the natural darkness of the night sky;

   (f) places or areas that are wild or scenic;

   (g) a range of natural character from pristine to modified; and

(h) experiential attributes, including the sounds and smell of the sea; and their context or setting.

Policy 14 Restoration of natural character

Promote restoration or rehabilitation of the natural character of the coastal environment, including by:

(a) identifying areas and opportunities for restoration or rehabilitation;

(b) providing policies, rules and other methods directed at restoration or rehabilitation in regional policy statements, and plans;

(c) where practicable, imposing or reviewing restoration or rehabilitation conditions on resource consents and designations, including for the continuation of activities; and recognising that where degraded areas of the coastal environment require restoration or rehabilitation, possible approaches include:

(i) restoring indigenous habitats and ecosystems, using local genetic stock where practicable; or

(ii) encouraging natural regeneration of indigenous species, recognising the need for effective weed and animal pest management; or

(iii) creating or enhancing habitat for indigenous species; or

(iv) rehabilitating dunes and other natural coastal features or processes, including saline wetlands and intertidal saltmarsh; or

(v) restoring and protecting riparian and intertidal margins; or

(vi) reducing or eliminating discharges of contaminants; or

(vii) removing redundant structures and materials that have been assessed to have minimal heritage or amenity values and when the removal is authorised by required permits, including an archaeological authority under the Historic Places Act 1993; or

(viii) restoring cultural landscape features; or

(ix) redesign of structures that interfere with ecosystem processes; or

(x) decommissioning or restoring historic landfill and other contaminated sites which are, or have the potential to, leach material into the coastal marine area.

Policy 15 Natural features and natural landscapes

To protect the natural features and natural landscapes (including seascapes) of the coastal environment from inappropriate subdivision, use, and development:

(a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment; and

(b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment; including by:

(c) identifying and assessing the natural features and natural landscapes of the coastal environment of the region or district, at minimum by land typing, soil characterisation and landscape characterisation and having regard to:

(i) natural science factors, including geological, topographical, ecological and dynamic components;

(ii) the presence of water including in seas, lakes, rivers and streams;

(iii) legibility or expressiveness—how obviously the feature or landscape demonstrates its formative processes;

(iv) aesthetic values including memorability and naturalness;

(v) vegetation (native and exotic);

(vi) transient values, including presence of wildlife or other values at certain times of the day or year;

(vii) whether the values are shared and recognised;

(viii) cultural and spiritual values for tangata whenua, identified by working, as far as practicable, in accordance with tikanga Māori; including their expression as cultural landscapes and features;

(ix) historical and heritage associations; and

(x) wild or scenic values;

(d) ensuring that regional policy statements, and plans, map or otherwise identify areas where the protection of natural features and natural landscapes requires objectives, policies and rules; and

(e) including the objectives, policies and rules required by (d) in plans.

Policy 18 Public open space

Recognise the need for public open space within and adjacent to the coastal marine area, for public use and appreciation including active and passive recreation, and provide for such public open space, including by:

(a) ensuring that the location and treatment of public open space is compatible with the natural character, natural features and landscapes, and amenity values of the coastal environment;

(b) taking account of future need for public open space within and adjacent to the coastal marine area, including in and close to cities, towns and other settlements;

(c) maintaining and enhancing walking access linkages between public open space areas in the coastal environment;

(d) considering the likely impact of coastal processes and climate change so as not to compromise the ability of future generations to have access to public open space; and

(e) recognising the important role that esplanade reserves and strips can have in contributing to meeting public open space needs.

Policy 19 Walking access

1. Recognise the public expectation of and need for walking access to and along the coast that is practical, free of charge and safe for pedestrian use.

2. Maintain and enhance public walking access to, along and adjacent to the coastal marine area, including by:

    (a) identifying how information on where the public have walking access will be made publicly available;

    (b) avoiding, remedying or mitigating any loss of public walking access resulting from subdivision, use, or development; and

    (c) identifying opportunities to enhance or restore public walking access, for example where:

        (i) connections between existing public areas can be provided; or

        (ii) improving access would promote outdoor recreation; or

        (iii) physical access for people with disabilities is desirable; or

        (iv) the long-term availability of public access is threatened by erosion or sea level rise; or

        (v) access to areas or sites of historic or cultural significance is important; or

        (vi) subdivision, use, or development of land adjacent to the coastal marine area has reduced public access, or has the potential to do so.

3. Only impose a restriction on public walking access to, along or adjacent to the coastal marine area where such a restriction is necessary:

(a) to protect threatened indigenous species; or

(b) to protect dunes, estuaries and other sensitive natural areas or habitats; or

(c) to protect sites and activities of cultural value to Māori; or

(d) to protect historic heritage; or

(e) to protect public health or safety; or

(f) to avoid or reduce conflict between public uses of the coastal marine area and its margins; or

(g) for temporary activities or special events; or

(h) for defence purposes in accordance with the Defence Act 1990; or

(i) to ensure a level of security consistent with the purpose of a resource consent; or

(j) in other exceptional circumstances sufficient to justify the restriction.

4. Before imposing any restriction under (3), consider and where practicable provide for alternative routes that are available to the public free of charge at all times.

Policy 22 Sedimentation

1. Assess and monitor sedimentation levels and impacts on the coastal environment.

2. Require that subdivision, use, or development will not result in a significant increase in sedimentation in the coastal marine area, or other coastal water.

3. Control the impacts of vegetation removal on sedimentation including the impacts of harvesting plantation forestry.

4. Reduce sediment loadings in runoff and in stormwater systems through controls on land use activities.

Policy 23 Discharge of contaminants

1. In managing discharges to water in the coastal environment, have particular regard to:

(a) the sensitivity of the receiving environment;

(b) the nature of the contaminants to be discharged, the particular concentration of contaminants needed to achieve the required water quality in the receiving environment, and the risks if that concentration of contaminants is exceeded; and

(c) the capacity of the receiving environment to assimilate the contaminants; and

(d) avoid significant adverse effects on ecosystems and habitats after reasonable mixing;

(e) use the smallest mixing zone necessary to achieve the required water quality in the receiving environment; and

(f) minimise adverse effects on the life-supporting capacity of water within a mixing zone.

2. In managing discharge of human sewage, do not allow:

(a) discharge of human sewage directly to water in the coastal environment without treatment; and

(b) the discharge of treated human sewage to water in the coastal environment, unless:

(i) there has been adequate consideration of alternative methods, sites and routes for undertaking the discharge; and

(ii) informed by an understanding of tangata whenua values and the effects on them.

3. Objectives, policies and rules in plans which provide for the discharge of treated human sewage into waters of the coastal environment must have been subject to early and meaningful consultation with tangata whenua.

4. In managing discharges of stormwater take steps to avoid adverse effects of stormwater discharge to water in the coastal environment, on a catchment by catchment basis, by:

(a) avoiding where practicable and otherwise remedying cross contamination of sewage and stormwater systems;

(b) reducing contaminant and sediment loadings in stormwater at source, through contaminant treatment and by controls on land use activities;

(c) promoting integrated management of catchments and stormwater networks; and

(d) promoting design options that reduce flows to stormwater reticulation systems at source.

5. In managing discharges from ports and other marine facilities:

(a) require operators of ports and other marine facilities to take all practicable steps to avoid contamination of coastal waters, substrate, ecosystems and habitats that is more than minor;

(b) require that the disturbance or relocation of contaminated seabed material, other than by the movement of vessels, and the dumping or storage of dredged material does not result in significant adverse effects on water quality or the seabed, substrate, ecosystems or habitats;

(c) require operators of ports, marinas and other relevant marine facilities to provide for the collection of sewage and waste from vessels, and for residues from vessel maintenance to be safely contained and disposed of; and

(d) consider the need for facilities for the collection of sewage and other wastes for recreational and commercial boating.

Policy 24 Identification of coastal hazards

1. Identify areas in the coastal environment that are potentially affected by coastal hazards (including tsunami), giving priority to the identification of areas at high risk of being affected. Hazard risks, over at least 100 years, are to be assessed having regard to:

(a) physical drivers and processes that cause coastal change including sea level rise;

(b) short-term and long-term natural dynamic fluctuations of erosion and accretion;

(c) geomorphological character;

(d) the potential for inundation of the coastal environment, taking into account potential sources, inundation pathways and overland extent;

(e) cumulative effects of sea level rise, storm surge and wave height under storm conditions;

(f) influences that humans have had or are having on the coast;

(g) the extent and permanence of built development; and

(h) the effects of climate change on:

(i) matters (a) to (g) above;

(ii) storm frequency, intensity and surges; and

(iii) coastal sediment dynamics; taking into account national guidance and the best available information on the likely effects of climate change on the region or district.

Policy 25 Subdivision, use, and development in areas of coastal hazard risk

In areas potentially affected by coastal hazards over at least the next 100 years:

(a) avoid increasing the risk10 of social, environmental and economic harm from coastal hazards;

(b) avoid redevelopment, or change in land use, that would increase the risk of adverse effects from coastal hazards;

1.1.2 encourage redevelopment, or change in land use, where that would reduce the risk of adverse effects from coastal hazards, including managed retreat by relocation or removal of existing structures or their abandonment in extreme circumstances, and designing for relocatability or recoverability from hazard events;

(a) encourage the location of infrastructure away from areas of hazard risk where practicable;

(b) discourage hard protection structures and promote the use of alternatives to them, including natural defences; and

(c) consider the potential effects of tsunami and how to avoid or mitigate them.

Regional Policy Statement (RPS):

Policy 35: Preserving the natural character of the coastal environment – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, particular regard shall be given to preserving the natural character of the coastal environment by:

(a) minimising any adverse effects from point source and non-point source discharges, so that aquatic ecosystem health is safeguarded;

(b) protecting the values associated with estuaries and bays, beaches and dune systems, including the unique physical processes that occur within and between them from inappropriate subdivision, use and development, so that healthy ecosystems are maintained;

(c) maintaining or enhancing amenity – such as, open space and scenic values – and opportunities for recreation and the enjoyment of the coast by the public;

(d) minimising any significant adverse effects from use and enjoyment of the coast by the public;

(e) safeguarding the life supporting capacity of coastal and marine ecosystems;

(f) maintaining or enhancing biodiversity and the functioning of ecosystems; and

(g) protecting scientific and geological features from inappropriate subdivision, use and development.

Policy 36: Managing effects on natural character in the coastal environment – consideration

When considering an application for a resource consent, notice of requirement or a change, variation or review of a district or regional plan, a determination shall be made as to whether an activity may affect natural character in the coastal environment, and in determining whether an activity is inappropriate particular regard shall be given to:

(a) the nature and intensity of the proposed activity including:

  (i) the functional need or operational requirement to locate within the coastal environment

  (ii) the opportunity to mitigate anticipated adverse effects of the activity

(b) the degree to which the natural character will be modified, damaged or destroyed including:

  (i) the duration and frequency of any effect, and/or

(ii) the magnitude or scale of any effect;

(iii) the irreversibility of adverse effects on natural character values;

(iv) whether the activity will lead to cumulative adverse effects on the natural character of the site/area.

(c) the resilience of the site or area to change;

(d) the opportunities to remedy or mitigate previous damage to the natural character;

(e) the existing land uses on the site.

Policy 37: Safeguarding life-supporting capacity of coastal ecosystems – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, particular regard shall be given to safeguarding the life-supporting capacity of coastal and marine ecosystems by maintaining or enhancing:

(a) any area within the intertidal or subtidal zone that contains unique, rare, distinctive or representative marine life or habitats;

(b) areas used by marine mammals as breeding, feeding or haul out sites;

(c) habitats in the coastal environment that are important during the vulnerable life stages of indigenous species;

(d) habitats, corridors and routes important for preserving the range, abundance, and diversity of indigenous and migratory species;

(e) any area that contain indigenous coastal ecosystems and habitats that are particularly vulnerable to modification – such as, estuaries, lagoons, coastal wetlands, dunelands, rocky reef systems and salt marshes; and

(f) the integrity, functioning and resilience of physical and ecological processes.

Policy 39: Recognising the benefits from renewable energy and regionally significant infrastructure – consideration

When considering an application for a resource consent, notice of requirement or a change, variation or review of a district or regional plan, particular regard shall be given to:

(a) the social, economic, cultural and environmental benefits of energy generated from renewable energy resources and/or regionally significant infrastructure; and

(b) protecting regionally significant infrastructure from incompatible subdivision, use and development occurring under, over, or adjacent to the infrastructure; and

(c) the need for renewable electricity generation facilities to locate where the renewable energy resources exist; and

(d) significant wind and marine renewable energy resources within the region.

Policy 40: Maintaining and enhancing aquatic ecosystem health in water bodies – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a regional or district plan, particular regard shall be given to:

(a) requiring that water quality, flows and water levels and aquatic habitats of surface water bodies are managed for the purpose of safeguarding aquatic ecosystem health;

(b) requiring, as a minimum, water quality in the coastal marine area to be managed for the purpose of maintaining or enhancing aquatic ecosystem health; and

(c) managing water bodies and the water quality of coastal water for other purposes identified in regional plans.

Policy 41: Minimising the effects of earthworks and vegetation disturbance – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a regional or district plan, particular regard shall be given to controlling earthworks and vegetation disturbance to minimise:

(a) erosion; and

(b) silt and sediment runoff into water, or onto or into land that may enter water, so that healthy aquatic ecosystems are sustained.

Policy 42: Minimising contamination in stormwater from development– consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district plan, the adverse effects of stormwater run-off from subdivision and development shall be reduced by having particular regard to:

(a) limiting the area of new impervious surfaces in the stormwater catchment;

(b) using water permeable surfaces to reduce the volume of stormwater leaving a site;

(c) restricting zinc or copper roofing materials, or requiring their effects to be mitigated;

(d) collecting water from roofs for domestic or garden use while protecting public health;

(e) using soakpits for the disposal of stormwater;

(f) using roadside swales, filter strips and rain gardens;

(g) using constructed wetland treatment areas;

(h) using in situ treatment devices;

(i) using stormwater attenuation techniques that reduce the velocity and quantity of stormwater discharges; and

(j) using educational signs, as conditions on resource consents, that promote the values of water bodies and methods to protect them from the effects of stormwater discharges.

Policy 43: Protecting aquatic ecological function of water bodies– consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, particular regard shall be given to:

(a) maintaining or enhancing the functioning of ecosystems in the water body;

(b) maintaining or enhancing the ecological functions of riparian margins;

(c) minimising the effect of the proposal on groundwater recharge areas that are connected to surface water bodies;

(d) maintaining or enhancing the amenity and recreational values of rivers and lakes, including those with significant values listed in Table 15 of Appendix 1;

(e) protecting the significant indigenous ecosystems and habitats with significant indigenous biodiversity values of rivers and lakes, including those listed in Table 16 of Appendix 1;

(f) maintaining natural flow regimes required to support aquatic ecosystem health;

(g) maintaining fish passage;

(h) protecting and reinstating riparian habitat, in particular riparian habitat that is important for fish spawning;

(i) discouraging stock access to rivers, lakes and wetlands; and

(j) discouraging the removal or destruction of indigenous wetland plants in wetlands.

Policy 48: Principles of the Treaty of Waitangi – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district or regional plan, particular regard shall be given to:

(a) the principles of the Treaty of Waitangi; and

(b) Waitangi Tribunal reports and settlement decisions relating to the Wellington region.

Policy 51: Minimising the risks and consequences of natural hazards – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review to a district or regional plan, the risk and consequences of natural hazards on

people, communities, their property and infrastructure shall be minimised, and/or in determining whether an activity is inappropriate particular regard shall be given to:

(a) the frequency and magnitude of the range of natural hazards that may adversely affect the proposal or development, including residual risk;

(b) the potential for climate change and sea level rise to increase the frequency or magnitude of a hazard event;

(c) whether the location of the development will foreseeably require hazard mitigation works in the future;

(d) the potential for injury or loss of life, social disruption and emergency management and civil defence implications – such as access routes to and from the site;

(e) any risks and consequences beyond the development site;

(f) the impact of the proposed development on any natural features that act as a buffer, and where development should not interfere with their ability to reduce the risks of natural hazards;

(g) avoiding inappropriate subdivision and development in areas at high risk from natural hazards;

(h) the potential need for hazard adaptation and mitigation measures in moderate risk areas; and

(i) the need to locate habitable floor areas and access routes above the 1:100 year flood level, in identified flood hazard areas.

Policy 53: Public access to and along the coastal marine area, lakes and rivers – consideration

When considering an application for a subdivision consent, or a coastal or land use consent on public land, or a change, variation or review of a district plan to address subdivision or rezoning, particular regard shall be given to enhancing public access to, and along:

(a) areas of the coastal marine area, and lakes and rivers with:

  (i) places, sites and areas with significant historic heritage values identified in accordance with policy 21;

  (ii) areas of indigenous ecosystems and habitats, and areas with significant indigenous biodiversity values identified in accordance with policy 23;

  (iii) outstanding natural features and landscapes identified in accordance with policy 25;

  (iv) special amenity landscapes identified in accordance with policy 27;

(v) places, sites and areas with high natural character identified in accordance with policy 36; and

(vi) the rivers and lakes identified in Table 15 of Appendix 1;

(b) Wellington Harbour and Porirua (Onepoto Arm and Pauatahanui Inlet) Harbour; Except where there is a need to protect:

(c) sensitive indigenous habitats of species;

(d) the health or safety of people;

(e) sensitive cultural and historic heritage values; and/or

(f) the integrity and security of regionally significant infrastructure.

Policy 57: Integrating land use and transportation – consideration

When considering an application for a resource consent, notice of requirement, or a change, variation or review of a district plan, for subdivision, use or development, particular regard shall be given to the following matters, in making progress towards achieving the key outcomes of the Wellington Regional Land Transport Strategy:

(a) whether traffic generated by the proposed development can be accommodated within the existing transport network and the impacts on the efficiency, reliability or safety of the network;

(b) connectivity with, or provision of access to, public services or activities, key centres of employment activity or retail activity, open spaces or recreational areas;

(c) whether there is good access to the strategic public transport network;

(d) provision of safe and attractive environments for walking and cycling; and

(e) whether new, or upgrades to existing, transport network infrastructure have been appropriately recognised and provided for.

Policy 58: Co-ordinating land use with development and operation of infrastructure – consideration

When considering an application for a resource consent, notice of requirement, or a plan change, variation or review of a district plan for subdivision, use or development, particular regard shall be given to whether the proposed subdivision, use or development is located and sequenced to:

(a) make efficient and safe use of existing infrastructure capacity; and/or

(b) coordinate with the development and operation of new infrastructure.

Objectives:

4.1.2 People and communities are able to undertake appropriate uses and developments in the coastal marine area which satisfy the environmental protection policies in the plan, including activities which:

- rely on natural and physical resources of the coastal marine area; or
- require a coastal marine area location; or
- provide essential public services; or
- avoid adverse effects on the environment; or
- have minor adverse effects on the environment, either singly or in combination with other users; or
- remedy or mitigate adverse effects on the environment and provide a net benefit to the environment.

4.1.3 The adverse effects that new activities may have on existing legitimate activities in the coastal marine area are avoided, remedied or mitigated as far as is practicable.

4.1.5 The natural character of the coastal marine area is preserved and protected from inappropriate use and development.

4.1.6 Important ecosystems and other natural and physical resources in and adjacent to the coastal marine area are protected from inappropriate use and development.

4.1.7 Public health is not endangered through the effects of previous, present or future activities in the coastal marine area.

4.1.8 Public access along and within the coastal marine area is maintained and enhanced.

4.1.9 Amenity values in the coastal marine area are maintained and enhanced.

4.1.10 Important views to and from the coastal marine area are retained.

4.1.11 Any adverse effects from natural hazards are reduced to an acceptable level.

4.1.12 That the location of structures and/or activities in the coastal marine area does not increase the risk from natural hazards beyond an acceptable level.

Policies:

4.2.2 To recognise and distinguish between those parts of the coastal marine area which retain natural character, and those areas where natural character has already been compromised, and to encourage appropriate new developments only in the latter areas.

4.2.3 When considering the significance of adverse effects of activities on the coastal marine area, to recognise and distinguish between:

- those activities which require occupancy on a "permanent" basis, and those which can effectively relinquish coastal space at a future date;

- those activities which have irreversible adverse effects and those for which adverse effects are reversible; and

- those activities which have short term adverse effects and those which have on-going or long term adverse effects.

4.2.4 To recognise and give appropriate weight to the potential for cumulative adverse effects resulting from two or more activities in the coastal marine area.

4.2.5 To adopt a precautionary approach to resource management decisions in the coastal marine area, particularly in those situations where it is difficult to predict adverse effects with any certainty.

4.2.8 To recognise existing lawful commercial and recreational users of the coastal marine area, and to protect them from the adverse effects of new activities as far as is practicable.

4.2.10 To protect sensitive, rare, or unusual:

- habitats;

- natural and physical resources; and

- ecosystems

from the adverse effects of use and development. In particular, the values of the areas identified by this Plan either as an Area of Significant Conservation Value or an Area of Important Conservation Value shall be protected.

4.2.17 To recognise that there are circumstances when public access along the coastal marine area is not appropriate; and other circumstances where it is not practicable because of the nature of the coastline.

4.2.18 To recognise that the coastal marine area is an extensive area of public open space, and to ensure that the interests of the public, both now and in the future, are given a high priority when making decisions on the allocation of any land of the Crown or any related part of the coastal marine area.

4.2.19 To recognise the importance of amenity values in the coastal marine area, and to avoid, where practicable, any adverse effects on these values; where avoidance is not practicable, to remedy, or mitigate the adverse effects.

4.2.20 To recognise the importance of the coastal environment to recreation activities, and to avoid, where practicable, any adverse effects on these values; where avoidance is not practicable, to remedy, or mitigate the adverse effects.

4.2.21 Use and development of the coastal marine area must take appropriate account of natural hazards, and any adverse effects arising from the storage, use, disposal, or transportation of hazardous substances.

Tangata Whenua

Objectives:

4.1.13 Characteristics of special spiritual, historical or cultural significance to tangata whenua, including waahi tapu, tauranga waka, mahinga maataitai and taonga raranga, are protected.

4.1.16 Tangata whenua are consulted on resource consent applications which may affect their interests and values.

Policies:

4.2.27 To not allow use and development which would restrict the access of tangata whenua to sites of cultural significance on land of the Crown, unless that access can specifically be provided for, or the loss can be adequately remedied.

Management

Objectives:

4.1.19 In addition to the requirements of objective 4.1.16, opportunities are provided for people and communities to be involved in any decision-making about significant activities in the coastal marine area, and in the management of natural and physical resources in that area.

Policies:

4.2.33 To identify explicitly the occupancy component on any resource consent which is granted for an activity in the coastal marine area which requires occupation of land of the Crown and any related part of the coastal marine area

4.2.34 To ensure that, as far as practicable, all stakeholders are involved in the coastal management process and that the decision making process is transparent.

4.2.35 To consider placing conditions on resource consents for the purpose of avoiding, remedying or mitigating any adverse effects which are associated with, or are a consequence of, an activity, particularly where adverse effects impact on the following matters:

- fauna, flora or habitat;
- lawful public access;
- natural character;

- amenity values;
- views to and from the coastal marine area;
- characteristics of spiritual, historical or cultural significance to tangata whenua; or
- recreational opportunities.

4.2.36 To have regard to the following matters when determining the nature and extent of any conditions to be placed on a resource consent:

- the significance of the adverse effects arising as a consequence of, or in association with, the proposed activity;
- the extent to which the proposed activity contributes to the adverse effects;
- the extent to which the adverse effects of the proposed activity can and have been dealt with by other means;
- any proposals by the applicant to avoid remedy or mitigate, adverse effects, and any agreements reached at pre hearing meetings;
- the extent to which the community as a whole benefits from the proposed activity and from any proposed conditions on a consent;
- the financial cost of complying with any conditions on a consent; and
- the extent to which a condition placed on a consent will avoid, remedy or mitigate any adverse effects.

4.2.37 To avoid, remedy or mitigate adverse effects, conditions on a resource consent may relate to all or any of the following:

- design and project implementation, choice of materials, site improvements;
- habitat restoration, rehabilitation, creation and improvement;
- restocking and replanting of fauna or flora (with respect to replanting, preference will be given to the use of indigenous species, with a further preference for the use of local genetic stock);
- works and services relating to the improvement, provision, reinstatement, protection, restoration or enhancement of the matters listed in 4.2.35.

Section 5 – Reclamation and draining of foreshore and seabed:

Environmental

Objectives:

5.1.1 The area of foreshore and seabed reclaimed from the coastal marine area is minimised.

5.1.2 All reclamations are fully justified having regard to available alternatives, properly designed, use appropriate material, and are constructed only for activities consistent with the sustainable management of natural and physical resources.

5.1.3 Areas of foreshore or seabed with particularly high conservation values are not reclaimed. These include but are not limited to:

- areas containing sensitive, rare, or unusual habitats, natural and physical resources, and ecosystems;
- areas possessing particularly high cultural, or spiritual or historic values or features; and
- all those areas identified by this Plan as an Area of Significant Conservation Value or an Area of Important Conservation Value.

Policies:

5.2.1 To recognise that all reclamation and draining of the coastal marine area will, by removing foreshore, seabed, and water from the coastal marine area, have adverse effects. These effects, and the extent to which they can be mitigated or remedied, must be balanced against any possible positive effects from the reclamation.

5.2.3 To not allow reclamation or draining of any foreshore or seabed if there are practicable alternatives, either within or outside of the coastal marine area, which, on balance, have less significant adverse effects on the environment.

5.2.4 Subject to Policy 5.2.3, to allow reclamation of the foreshore or seabed only if the reclamation is required for one or more of the following purposes:

- an activity which must be located immediately adjacent to the coastal marine area;
- airport or seaport purposes;
- river management;
- enhancement of public access to or along the coastal marine area;
- restoration or enhancement of amenity values;

- the provision of a road or rail transport link; and Reclamation and Drainage of Foreshore and Seabed 41

- an activity carried out on land in the coastal marine area where the title is not held by the Crown provided that the net beneficial effects to the environment can be demonstrated; unless the circumstances are exceptional.

5.2.6 To ensure that all reclamations are no larger than the minimum necessary to provide for the activity for which the reclamation is to be used.

5.2.7 To ensure that the external appearance of a proposed reclamation has regard to the existing character of an area, and is designed to minimise adverse effects on ecological and physical processes.

5.2.8 To ensure that adequate allowance is made for the following factors when designing any reclamation which is to be used for major public works:

- rising sea levels as a result of climate change, using the best current estimate scenario of the International Panel on Climate Change (IPCC);

- waves and currents;

- storm surge; and

- major earthquake events.

5.2.9 To ensure that reclamations are designed to prevent the subsequent leaching of any contaminants into the coastal marine area.

5.2.10 Subject to Policy 4.2.17, to ensure that esplanade reserves are created on all new reclamations; and to provide for esplanade strips where these are necessary to enhance or maintain access to the coastal marine area.

Management

Objectives:

5.1.4 All proposals for reclamations, other than small reclamations likely to cause only minor adverse effects, are subject to input from the public and from territorial authorities.

Policies:

5.2.11 To ensure that public input is sought for all proposals for reclamation or draining of foreshore or seabed, other than for small reclamations likely to cause only minor adverse effects.

Section 6 - Structures:

Environmental

Objectives:

6.1.1 Appropriate structures which enable people and communities to provide for their economic and social well-being are allowed.

6.1.2 There is no inappropriate use or development of structures in the coastal marine area.

Policies:

6.2.1 To consider the following as appropriate in the coastal marine area:

- the use and development of structures in the coastal marine area for;

  (1) activities which are functionally dependent upon a location in the coastal marine area; or

  (2) activities which support and service those which must locate in the coastal marine area, and which, because of a lack of a suitable space or operational constraints, cannot be located outside of the coastal marine area;

  - the use and development of structures in the Lambton Harbour Development Area;
  - the use and development of structures for defence purposes; or
  - the development of structures for network utility operations.

6.2.2 To not allow the use or development of structures in the coastal marine area where there will be: adverse effects on:

- any Area of Significant Conservation Value, or Area of Important Conservation Value;
- characteristics of special spiritual, historical or cultural significance to Maori identified in accordance with tikanga Maori;
- significant places or areas of historic or cultural significance; or
- significant ecosystems; or significant adverse effects on:
- the risk from natural hazards;
- navigation channels;
- coastal processes, including waves, tidal currents and sediment transport;
- amenity values;
- existing lawful public access;
- natural character;
- views to and from the coastal marine area;
- recreational uses; or

- structures of architectural or historic merit; unless such adverse effects can be satisfactorily mitigated, or remedied.

6.2.5 To ensure that adequate allowance is made for the following factors when designing any structure:

- rising sea levels as a result of climate change, using the best current estimate scenario of the International Panel on Climate Change (IPCC);
- waves and currents;
- storm surge; and
- major earthquake events.

6.2.6 To ensure that all exterior lighting associated with activities on structures in the coastal marine area is directed away from adjacent activities, streets and navigational channels, so as to avoid the spill of light or glare which might be:

- detrimental to the amenity of residential and other activities;
- a hazard to traffic safety on streets outside the coastal marine area;
- a hazard to navigation in the coastal marine area; and
- detrimental to wildlife, including bird nesting, roosting, and navigation.

6.2.7 To ensure that all structures in the coastal marine area which are visible and/or accessible are adequately maintained so that:

- the structure remains safe; and
- any adverse effects on the visual amenity of the area are minimised.

6.2.9 To have particular regard to any relevant provisions in appropriate district plan(s) relating to the protection of important views when assessing an application for an activity involving the development of a structure in the coastal marine area.

Section 7 - Destruction, damage or disturbance of foreshore or seabed:

Environmental

Objectives:

7.1.1 The area of bedrock destroyed is minimised.

7.1.2 The adverse effects from activities which destroy, damage, or disturb foreshore or seabed are avoided, remedied or mitigated.

Policies:

7.2.1 To allow activities involving damage or disturbance to any foreshore or seabed, where the adverse effects are short term, reversible, or minor; and to allow other activities where adverse effects can be satisfactorily avoided, remedied or mitigated. As a guide, the

following criteria will need to be met for the activity to be deemed to have minor adverse effects:

- the activity will not require exclusive use of the foreshore or seabed, and will not preclude public access to and along the foreshore past the site of the disturbance or damage;
- any adverse effects on plants and animals or their habitat will be short term, and the area will be naturally recolonised by a similar community type;
- the activity will not result in any significant increase in water turbidity or elevated levels of contaminants;
- the activity will not have any off-site adverse effects;
- the activity will not adversely affect shoreline stability;
- the activity will not have any permanent adverse effects on the amenity values of the foreshore or seabed;
- the activity will not have any adverse effect on natural character;
- the activity will not destroy or damage historic sites;
- the activity will not have any adverse effects on the Hutt Valley aquifer; and
- the activity will not have any adverse effects on mahinga maataitai, waahi tapu or any other sites of significance to iwi.

7.2.4 To not allow any activity which results in the destruction of any foreshore or seabed unless:

- no practicable alternative is available; and
- any adverse effects are mitigated or remedied to the extent practicable, including reinstatement of the foreshore or seabed.

Management

Objectives:

7.1.4 The positive effects from activities which disturb foreshore or seabed are recognised where such activities are undertaken for the well-being of the community. Activities with minor adverse effects are allowed.

Section 8 – Deposition of substances on foreshore or seabed

Environmental

Objectives:

8.1.2 Beach nourishment is used as a means of mitigating the adverse effects of coastal erosion.

8.1.3 The adverse effects of all deposition of sand, shingle, shell or other natural material are avoided, remedied, or mitigated. In particular, there are no significant effects on:

- fauna, flora or habitats; or
- fish spawning and nursery grounds; or
- physical coastal processes or characteristics; or
- mahinga maataitai; or
- human health or safety.

Policies:

8.2.1 To allow the deposition of sand, shingle, shell or other natural material on areas of foreshore or seabed if the purpose of that deposition is to combat beach or shoreline erosion, or to improve the amenity value of the foreshore, provided that all of the following criteria can be met:

- the composition of the material is suitable for the site, will remain on the foreshore or seabed for a reasonable period of time, and will not result in increased water turbidity or wind borne sediment transport;
- the deposition will not adversely affect the amenity value of the foreshore or seabed through significant changes in beach slope or texture; and
- the deposition will not cause any significant adverse effects on marine fauna or flora, or human values or uses of the area

8.2.2 Subject to Policy 8.2.1, to not allow the deposition of substances on any foreshore or seabed in those situations where there are practicable alternatives either within or outside the coastal marine area which would have less adverse effects on the environment.

Section 10 – Discharges to land and water

Environmental

Objectives:

10.1.1 High quality water in the coastal marine area is protected and not degraded through human activities.

10.1.3 The quality of water in the coastal marine area is, as far as practicable, consistent with the values of the tangata whenua.

Policies:

10.2.1 To manage all water in the following areas for shellfish gathering purposes:

- Those parts of the coastal marine area mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 519 829 and NZMS 260 Sheet R27 568 829;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 574 828 and NZMS 260 Sheet R27 580 828. From mean high water springs seawards for 200 metres of Taputeranga Island and outcrops but not west of a point at NZMS 260 Sheet R27 582 826;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 596 831 and NZMS 260 Sheet R27 600 833, including the rock outcrops at Te Raekaihau;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 615 835 and NZMS 260 Sheet R27 628 843, including the rock outcrops at Tarakena Bay/Palmer Head;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 637 847 and NZMS 260 Sheet R27 639 849;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 638 884 and NZMS 260 Sheet R27 629 898;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R27 676 866 and NZMS 260 Sheet R27 650 825;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres surrounding Somes Island and Mokopuna Island;
- Those parts of the coastal marine area from mean high water springs seawards for 200 metres surrounding Ward Island; and
- All other parts of the coastal marine area except that described in Policy 10.2.2.

10.2.2 To manage all water in the following areas for contact recreation purposes:

- Those parts of the coastal marine area within Wellington Harbour and the Wellington South Coast landward of a straight line extending between a point 1000 metres offshore of Baring Head (NZMS 260 Sheet R28 657 749) and 1000 metres offshore of Tongue Point (NZMS 260 Sheet Q27 484 828), except that described in Policy 10.2.1;
- Those parts of the coastal marine area within Porirua Harbour, Pauatahanui Inlet and the Porirua and Plimmerton Coast landward of a straight line extending between the north-eastern end of Onehunga Bay at NZMS 260 Sheet R26 657 113 and the north-eastern end of Plimmerton Beach at NZMS 260 Sheet R26 659 131;
- Those parts of the coastal marine area in Lake Onoke from the outlet to the sea at NZMS 260 Sheet R28 892 766 to the coastal marine area boundary at NZMS 260 Sheet R28 890 796;
- Those parts of the coastal marine area in Titahi Bay landward of a line extending from Ruakutane Point at NZMS 260 Sheet R27 632 096 to NZMS 260 Sheet R26 639 102;

- Those parts of the coastal marine area surrounding Paekakariki from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R26 730 210 and NZMS 260 Sheet R26 749 241;
- Those parts of the coastal marine area of Raumati South to Waikanae Beach from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R26 760 270 and NZMS 260 Sheet R26 817 376;
- Those parts of the coastal marine area surrounding Te Horo Beach from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R25 854 435 and NZMS 260 Sheet R25 859 443;
- Those parts of the coastal marine area surrounding Otaki Beach from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet R25 882 492 and NZMS 260 Sheet R25 890 508;
- Those parts of the coastal marine area surrounding Riversdale Beach from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet T27 677 073 and NZMS 260 Sheet T27 685 087; and
- Those parts of the coastal marine are surrounding Castlepoint from mean high water springs seawards for 200 metres between the points NZMS 260 Sheet U26 812 278 and NZMS 260 Sheet U26 812 298.

10.2.3 To have particular regard to the criteria in Appendix 6 in order to determine, when considering applications for resource consents, if a discharge is able to comply with Policies 10.2.1 and 10.2.2.

10.2.4 To allow discharges of contaminants or water to land or water in the coastal marine area which do not meet the requirements of Policies 10.2.1, 10.2.2 and 10.2.3 only if, after reasonable mixing:

- the discharge is not likely to cause a decrease in the existing quality of water at that site; or
- the discharge would result in an overall improvement in water quality in the coastal marine area; or
- the discharge was present at the time this plan was notified and the person responsible for the discharge has defined a programme of work for the upgrading of the discharge so that it can meet the requirements of policies 10.2.1, 10.2.2and 10.2.3; or
- the discharge is of a temporary nature or associated with necessary maintenance works or there are exceptional circumstances and that it is consistent with the purposes of the Act to do so.

10.2.8 To ensure that where appropriate coastal permits to discharge contaminants to land or water in the coastal marine area contains conditions for monitoring:

- the effects of the discharge; and
- compliance with any conditions or standards imposed on the consent.

10.2.9 To have particular regard to the adverse effects of the discharge of water or contaminants to land or water in the coastal marine area on areas:

- containing important ecosystems or species;
- used for fisheries purposes;
- used for fish spawning purposes;
- used for the gathering or cultivating of shellfish for human consumption;
- used for contact recreation purposes;
- used for industrial abstraction;
- which are significant because of their natural values;
- which are significant because of their aesthetic values; and
- with significant cultural value.

10.2.11 To have particular regard to the views, values, aspirations and customary knowledge of tangata whenua when assessing applications to discharge contaminants to land or water in the coastal marine area.

Section 11 – Discharges to Air

Environmental

Objectives:

11.1.2 Activities which result in discharges of contaminants to air are allowed where there are no significant adverse effects on existing ambient or local air quality.

11.1.4 Nuisance and other adverse effects of atmospheric particulate are minimised

Policies:

11.2.2 To not allow the discharges of dust, fumes, smoke, spray, odour, or any other contaminants if such a discharge:

- is likely to cause a significant decrease in the existing air quality at the site;
- has an objectionable or offensive odour;
- may result in unacceptable degradation of existing amenity;
- may adversely affect the health or welfare of any persons; or
- may adversely affect any rare, threatened or endangered species.

Management

Objectives:

11.1.5 There are no significant adverse effects outside the coastal marine area which are caused by discharges to air that occur within the coastal marine area.

Policies:

11.2.3 To have particular regard to the potential for adverse effects outside the coastal marine area which may be caused by a discharge to air within the coastal marine area.

Section 12 – Taking, use, damming or diversion of water

Environmental

Objectives:

12.1.1 There are no significant adverse effects on the environmental, amenity or cultural values of the coastal marine area caused by the taking, using, damming, or diverting water.

12.1.2 People and communities are able to take, use, dam, or divert water in the coastal marine area to provide for their social, economic, and cultural well being where there are no adverse effects on the environment.

12.1.3 The mauri of the coastal marine area is protected from any adverse effects associated with taking, use, damming, or diversion of water in the coastal marine area.

Policies:

12.2.1 To allow any activity involving the taking, use, damming, or diverting of water in the coastal marine area provided that the activity has no discernible adverse effects on the natural or physical values of the coastal marine area.

12.2.4 To ensure that any adverse effects on native fish spawning or migration, which are caused by any activity involving the taking, use damming or diversion of water in the coastal marine area are avoided or remedied.

12.2.5 To have regard to the effects of any taking, use, damming, or diversion of water in the coastal marine area on the mauri of the coast.

4.1.2 Discharges to air in the Region are managed in a way, or at a rate which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while ensuring that adverse effects, including any adverse effects on:

- local ambient air quality;
- human health;
- amenity values;
- resources or values of significance to tangata whenua;
- the quality of ecosystems, water, and soil; and
- the global atmosphere;

are avoided, remedied or mitigated.

Objective 4.1.2 is implemented by Policies 4.2.4-4.2.25 in particular.

4.2.1 To have regard to the Regional Ambient Air Quality Guidelines in Appendix 2, in managing the Region's air resource.

Explanation: *Ambient air quality guidelines set out desired levels of specified contaminants in the air. Ambient air quality reflects the* ***cumulative*** *effects of all activities. The ambient air quality guidelines, as adopted from the National Ambient Air Quality Guidelines (MFE, 1994), are outlined in Appendix 2. In this Appendix:*

- *the* ***maximum acceptable levels*** *are defined as the level adequate to protect the health of individuals. These levels would be applied in areas where existing activity has had a significant effect on air quality; and*
- *the* ***maximum desirable levels*** *are defined as the level that will provide maximum protection to the environment, taking into account existing air quality, community expectations, economic implications, and the purpose and principles of the Act. Desirable levels are appropriate guidelines or targets in rural or residential areas, and in other areas with good air quality. These levels are based on Canadian standards and do not appear in the National Ambient Air Quality Guidelines.*

Averaging times are the times over which the average level of the indicator should not exceed the levels given in the guidelines. The methods (Australian Standards) to be used for measuring the indicators are indicated in Appendix 2.

These guidelines are not generally intended to be used to set individual emission limits. They are likely to be used in this way only when the nature or scale of a proposed activity is likely to have effects on air quality which outweigh all other activities in the area, and/or when there is data available on the effects of all other discharges in an area.

4.2.4 To avoid, remedy or mitigate any adverse effect of the discharge of contaminants to air that is noxious, dangerous, offensive, or objectionable.

Explanation: *This policy reflects the general duty under section 5 of the Act to promote the sustainable management of natural and physical resources by avoiding, remedying or mitigating adverse effects. It also reflects the general duty placed on all persons under section 17 of the Act to "avoid, remedy or mitigate any adverse effect on the environment from an activity carried on, by or on behalf of that person". It applies to all individuals or groups carrying out an activity which involves the discharge of a contaminant to air.*

4.2.5 To avoid or minimise, where appropriate and practicable, the discharge of contaminants to air at their source.

Explanation: *Most discharges to air are "wastes", in that they are unwanted by-products of a process. It is now commonly accepted (e.g., in central government waste management policy) that priority should be given to minimising wastes at source. The words "where appropriate and practicable" in this policy indicate that in some situations alternative ways of avoiding, remedying or mitigating the adverse effects of air pollution may be more appropriate than avoiding or minimising emissions at their source.*

4.2.7 To avoid, remedy or mitigate the adverse effects of the discharge of contaminants to air on amenity values.

Explanation: *This policy recognises the need to protect amenity values most commonly affected by the emission of smoke, dust and odour.*

4.2.9 To give particular consideration, where relevant, to the following matters when assessing an application for a resource consent to discharge contaminants to air:

1. the volume, composition and characteristics of the discharge, including the maximum ground level concentration of significant contaminants in the discharge, especially hazardous contaminants identified in Appendix 1 and any contaminants listed in Appendix 2;
2. the frequency, intensity, duration, offensiveness, location and time of the discharge;
3. the potential for the discharge to be reduced at source, and in particular, the desirability of minimising the emission of any of the "Hazardous Air Contaminants" identified in Appendix 1;
4. any actual or potential effects of the discharge on human health and safety;
5. any actual or potential effects of the discharge on amenity values, including any effects of odour or particulate matter arising from the discharge;
6. any actual or potential effects of the discharge on resources or values of significance to tangata whenua;
7. any actual or potential effects of the discharge on the health and functioning of ecosystems, plants and animals, including indigenous ecosystems and plants and animals of commercial significance;
8. any actual or potential effects of the discharge on other environmental media;
9. any actual or potential effects on the global atmosphere;

10. any cumulative effects which may arise over time or in combination with other effects;
11. any effects of low probability but high potential impact;
12. any positive effects arising from activities associated with the discharge; and
13. any other relevant matters.

Explanation: *This policy sets out the matters to which the Council will give particular consideration when assessing an application to discharge a contaminant to air. These matters will be considered to the extent relevant to the particular application (not all of the matters in this Policy will be relevant to all discharges). The Policy does not limit the matters that may be considered by the Council.*

Part (1) examines the nature of the discharge. Particular attention will be given to the presence of any hazardous contaminants identified in Appendix 1 and/or any of the provisional regional ambient air quality indicators identified in Appendix 2. Part (2) lists six factors which need to be considered when assessing the effects of a discharge. Part (3) looks at the potential for the effects of the discharge to be reduced through the use of cleaner production techniques and the use of emission control technology. In particular, the Council will consider the potential for any hazardous contaminants to be reduced.

The remaining parts of the Policy relate to the actual and potential effects that a discharge may have on various aspects of the environment. In Part (4), "health" includes the physical, mental and social health of any individual or group of individuals. This is closely related to Part (5), which includes an examination of nuisance effects, effects on visibility, and effects on the appearance of structures (e.g., soiling of buildings). In relation to Part (6), effects such as loss of visibility or the presence of offensive odours may impair the cultural significance of waahi tapu or valued natural and physical resources (taonga). Part (7) of the Policy is particularly concerned with effects on indigenous ecosystems, other ecosystems of high national, regional or local value, and effects on plants and animals of commercial significance. Part (8) examines the cross-media effects of contaminants discharged to air (e.g., the effects on water quality and aquatic ecosystems of any discharge to air which may precipitate into water). Part (9) of the Policy examines effects of potential global significance, including the discharge of contaminants that may contribute to global warming or ozone depletion or similar problems. Particular attention will be given to the need to be consistent with any central government commitments in these areas.

Cumulative effects (Part (10)) may arise either from the interaction of two or more contaminants (e.g., nitrogen dioxide can contribute to the formation of acidic compounds that can harm plants and animals), from the accumulated effects of a single contaminant over time (e.g., fluoride can accumulate in stock from grazing on pasture and feed), or from the cumulative effects of a number of discharges in one area. Effects of low probability but high potential impact include effects that might occur in an emergency discharge situation. Positive effects are included within the meaning of "effect" in

section 3 of the RMA.

Regional Plan for Discharges to Land (RPDL)

Objectives:

4.1.5 The adverse environmental effects of discharges of liquid contaminants from point sources into or onto land are avoided, remedied or mitigated.

Policies:

4.2.19 To allow discharges of liquid contaminants to land which are not likely to have adverse effects on soil, water quality and amenity values, particularly where the effects of the contaminants would be greater if they were discharged directly into water.

Objective O2

The importance and contribution of land and water to the social, economic and cultural well-being of the community are recognised.

Policy P7: Uses of land and water

The cultural, social and economic benefits of using land and water for:

(a) aquaculture, and

(b) treatment, dilution and disposal of **wastewater** and **stormwater**, and

(c) industrial processes and commercial uses associated with the potable water supply network, and

(d) community and domestic water supply, and

(e) electricity generation, and

(f) food production and harvesting, and

(g) gravel extraction from rivers for flood protection and control purposes, and

(h) irrigation and stock water, and

(i) firefighting, and

(j) contact recreation and **Māori customary use**, and

(k) transport along, and access to, water bodies

shall be recognised.

Policy P8: Beneficial activities

The following activities are recognised as beneficial and generally appropriate:

(a) activities for the purpose of restoring natural character, **aquatic ecosystem health**, **mahinga kai**, outstanding water bodies, sites with significant **mana whenua** values, and sites with significant indigenous biodiversity values, and

(b) activities that restore natural features such as beaches, dunes or wetlands that can buffer development from natural hazards, and

(c) day-lighting of piped streams, and

(d) removal of aquatic weeds and pest plants, and

(e) the establishment of river crossings (culverts and bridges) or fences and fence structures that will result in the exclusion of regular **livestock** access from a water body, and

(f) the retirement, fencing and planting of riparian margins, and

(g) the retirement of **erosion prone land** from **livestock** access, and

(h) maintenance and use of existing structures in the coastal marine area, **natural wetlands** and the beds of rivers and lakes, and

(i) removal of dangerous or derelict structures in the coastal marine area, **natural wetlands** and beds of lakes and rivers, and

(j) structures necessary to provide for monitoring resource use or the state of the environment in the coastal marine area, **natural wetlands** and beds of lakes and rivers, and

(k) activities necessary to maintain safe navigation, and

(l) artworks that support and enhance public open space.

Objective O9

The recreational values of the coastal marine area, rivers and lakes and their margins and **natural wetlands** are maintained and enhanced.

Policy P133: Recreational values

The adverse effects of use and development in the coastal marine area on recreational values shall be managed by providing for a diverse range of recreational opportunities while avoiding conflicts and safety issues.

Objective O10

Public access to and along the coastal marine area and rivers and lakes is maintained and enhanced.

Policy P9: Public access to and along the coastal marine area and the beds of lakes and rivers

Reduction in the extent or quality of public access to and along the coastal marine area and the beds of lakes and rivers shall be avoided except where it is necessary to:

(a) protect the values of estuaries, sites with significant mana whenua values identified in Schedule C (mana whenua), sites with significant historic heritage value identified in Schedule E (historic heritage) and sites with significant indigenous biodiversity value identified in Schedule F (indigenous biodiversity), or

(b) protect public health and safety, or

(c) provide for a temporary activity such as construction, a recreation or cultural event or stock movement, and where the temporary restrictions shall be for no longer than reasonably necessary before access is fully reinstated, and

with respect to (a), (b) and (c), where it is necessary to permanently restrict or remove existing public access, the loss of public access shall be mitigated or **offset** by providing enhanced public access at a similar or nearby location.

Objective O12

The social, economic, cultural and environmental benefits of regionally significant infrastructure and renewable energy generation activities are recognised. Policy P12: Benefits of regionally significant infrastructure and renewable electricity generation facilities.

The benefits of **regionally significant infrastructure** and **renewable energy generation activities** are recognised by having regard to:

(a) the strategic integration of infrastructure and land use, and

(b) the location of existing infrastructure and structures, and

(c) the need for **renewable energy generation activities** to locate where the renewable energy resources exist, and

(d) the **functional need** for port activities to be located within the coastal marine area, and

(e) **operational requirements** associated with developing, operating, maintaining and upgrading **regionally significant infrastructure** and **renewable energy generation activities**.

Policy P13: Existing regionally significant infrastructure and renewable electricity generation facilities

The use, operation, maintenance, and **upgrade** of existing **regionally significant infrastructure** and **renewable energy generation activities** are beneficial and generally appropriate.

Objective O3

Mauri is sustained and enhanced, particularly the **mauri** of fresh and coastal waters.

Policy P17: Mauri

The **mauri** of fresh and coastal waters shall be recognised as being important to Māori by:

(a) managing the individual and cumulative effects of activities that may impact on **mauri** in the manner set out in the rest of the Plan, and

(b) providing for activities that sustain and enhance **mauri**, and

(c) recognising the role of kaitiaki in sustaining **mauri**.

Objective O16

The relationship of **mana whenua** with **Ngā Taonga Nui a Kiwa** is recognised and provided for.

Policy P18: Mana whenua relationships with Ngā Taonga Nui a Kiwa

The relationships between **mana whenua** and Nga Huanga o Ngā Taonga Nui a Kiwa identified in Schedule B (Ngā Taonga Nui a Kiwa) will be recognised and provided for by:

(a) having particular regard to the values and **Ngā Taonga Nui a Kiwa huanga** identified in Schedule B (Ngā Taonga Nui a Kiwa), and

(b) supporting iwi-led **restoration** initiatives within **Ngā Taonga Nui a Kiwa**, and

(c) informing iwi authorities of relevant resource consents relating to **Ngā Taonga Nui a Kiwa**, and

(d) the Wellington Regional Council and iwi authorities implementing **kaupapa Māori** monitoring of **Ngā Taonga Nui a Kiwa**.

Objective O15

Kaitiakitanga is recognised and **mana whenua** actively participate in planning and decision-making.

Policy P20: Exercise of kaitiakitanga

Kaitiakitanga shall be recognised and provided for by:

(a) managing natural and physical resources in sites with significant **mana whenua** values listed in Schedule C (mana whenua) in accordance with **tikanga** and **kaupapa Māori** as exercised by **mana whenua**, and

(b) the identification and inclusion of **mana whenua** attributes and values in the kaitiaki information and monitoring strategy in accordance with Method M2, and

(c) identification of **mana whenua** values and attributes and their application through **tikanga** and **kaupapa Māori** in the maintenance and enhancement of **mana whenua** relationships with **Ngā Taonga Nui a Kiwa**.

Objective O14

Māori relationships with air, land and water are recognised, maintained and improved.

Policy P19: Māori values

The cultural relationship of Māori with air, land and water shall be recognised and the adverse effects on this relationship and their values shall be minimised.

Policy P21: Statutory acknowledgements

Wellington Regional Council will:

(a) include any relevant statutory acknowledgments in Schedule D (statutory acknowledgements) for public information, and

(b) have regard to any relevant statutory acknowledgment in Schedule D (statutory acknowledgements) when processing resource consent applications.

Objective O17

The natural character of the coastal marine area, rivers, lakes and their margins and **natural wetlands** is preserved and protected from inappropriate use and development.

Policy P25: Natural character

Use and development shall avoid significant adverse effects on natural character in the coastal marine area (including high natural character in the coastal marine area) and in the beds of lakes and rivers, and avoid, remedy or mitigate other adverse effects of activities, taking into account:

(a) the extent of human-made changes to landforms, vegetation, biophysical elements, **natural processes** and patterns, and the movement of water, and

(b) the presence or absence of structures and buildings, and

(c) the particular elements, features and experiential values that contribute significantly to the natural character value of the area, and the extent to which they are affected, and

(d) whether it is practicable to protect natural character from inappropriate use and development through:

    (i) using an alternative location, or form of development that would be more appropriate to that location, and

    (ii) considering the extent to which **functional need** or existing use limits location and development options.

Objective O19

The interference from use and development on **natural processes** is minimised.

Policy P26: Natural processes

Use and development will be managed to minimise effects on the integrity and functioning of **natural processes**.

Objective O21

Inappropriate use and development in **high hazard areas** is avoided.

Policy P27: High hazard areas

Use and development, including hazard mitigation methods, in **high hazard areas** shall be avoided except where:

(a) they have a **functional need** or **operational requirement** or there is no practicable alternative to be so located, and

(b) the **risk** to the development and/or **residual risk** after hazard mitigation measures, assessed using a **risk-based approach**, is low, and

(c) the development does not cause or exacerbate natural hazards in other areas, and

(d) interference with **natural processes** (coastal, fluvial and lacustrine processes) is minimised, and

(e) natural cycles of erosion and accretion and the potential for natural features to fluctuate in position over time, including movements due to climate change and sea level rise, are taken into account.

Policy P29: Climate change

Particular regard shall be given to the potential for climate change to cause or exacerbate natural hazard events that could adversely affect use and development including:

(a) coastal erosion and inundation (**storm surge**), and

(b) river and lake flooding and erosion or aggradation, and

(c) **stormwater** ponding and impeded drainage, and

(d) sea level rise, using the best available guidance for the Wellington Region.

Objective O11

Opportunities for **Māori customary use** of the coastal marine area, rivers and lakes and their margins and **natural wetlands** for cultural purposes are recognised, maintained and improved.

Objective O5

Fresh water bodies and the coastal marine area, as a minimum, are managed to:

(a) safeguard **aquatic ecosystem health** and **mahinga kai**, and

(b) provide for contact recreation and **Māori customary use**, and

(c) in the case of fresh water, provide for the **health needs of people**.

Objective O24

Rivers, lakes, **natural wetlands** and coastal water are suitable for contact recreation and **Māori customary use**, including by:

(a) maintaining water quality, or

(b) improving water quality in:

(i) **significant contact recreation fresh water bodies** to meet, as a minimum, the primary contact recreation objectives in Table 3.1, and

(ii) coastal water to meet, as a minimum, the primary contact recreation objectives in Table 3.3, and

(iii) all other rivers and lakes and **natural wetlands** to meet, as a minimum, the secondary contact recreation objectives in Table 3.2.

Policy P10: Contact recreation and Māori customary use

The management of natural resources shall have particular regard to the actual and potential adverse effects on contact recreation and **Māori customary use** in fresh and coastal water, including by:

(a) providing water quality and, in rivers, flows suitable for the community's objectives for contact recreation and **Māori customary use**, and

(b) managing activities to maintain or enhance contact recreation values in the beds of lakes and rivers, including by retaining existing swimming holes and maintaining access to existing contact recreation locations, and

(c) encouraging improved access to suitable swimming locations, and

(d) providing for the passive recreation and amenity values of fresh water bodies and the coastal marine area.

Objective O25

To safeguard **aquatic ecosystem health** and **mahinga kai** in fresh water bodies and coastal marine area:

(a) water quality, flows, water levels and aquatic and coastal habitats are managed to maintain **aquatic ecosystem health** and **mahinga kai**, and

(b) **restoration** of **aquatic ecosystem health** and **mahinga kai** is encouraged, and

(c) where an objective in Tables 3.4, 3.5, 3.6, 3.7 or 3.8 is not met, a fresh water body or coastal marine area is improved over time to meet that objective.

Policy P31: Aquatic ecosystem health and mahinga kai

Aquatic ecosystem health and **mahinga kai** shall be maintained or restored by managing the effects of use and development on physical, chemical and biological processes to:

(a) minimise adverse effects on natural flow characteristics and hydrodynamic processes, and the natural pattern and range of water level fluctuations in rivers, lakes and **natural wetlands**, and

(b) minimise adverse effects on aquatic habitat diversity and quality, including the form, frequency and pattern of pools, runs, and riffles in rivers, and the natural form of rivers, lakes, **natural wetlands** and coastal habitats, and

(c) minimise adverse effects on habitats that are important to the life cycle and survival of aquatic species, and

(d) minimise adverse effects at times which will most affect the breeding, spawning, and dispersal or migration of aquatic species, and

(e) avoid creating barriers to the migration or movement of indigenous aquatic species, and restore the connections between fragmented aquatic habitats where appropriate, and

(f) minimise adverse effects on riparian habitats and restore them where practicable, and

(g) avoid the introduction, and restrict the spread, of aquatic pest plants and animals.

Policy P32: Adverse effects on aquatic ecosystem health and mahinga kai

Significant adverse effects on **aquatic ecosystem health** and **mahinga kai** shall be managed by:

(a) avoiding significant adverse effects, and

(b) where significant adverse effects cannot be avoided, remedying them and

(c) where significant adverse effects cannot be remedied, mitigating them, and

(d) where **residual adverse effects** remain, it is appropriate to consider the use of **biodiversity offsets**.

Proposals for mitigation and **biodiversity offsetting** will be assessed against the principles listed in Schedule G (biodiversity offsetting).

Policy P70: Managing point source discharges for aquatic ecosystem health and mahinga kai

Where an objective in Table 3.4, Table 3.5, Table 3.6 or Table 3.8 of Objective O25 is not met, **point source discharges** to water shall be managed in the following way:

(a) for an existing activity that contributes to the objective not being met, the discharge is only appropriate if:

  (i) the application for resource consent includes a defined programme of work for upgrading the activity, in accordance with **good management practice**, within the term of the resource consent, and

  (ii) conditions on the resource consent require the reduction of adverse effects of the activity in order to improve water quality in relation to the objective within the term of the consent, and

(b) for a new activity, the discharge is only appropriate if the activity would not cause the affected fresh water body or area of coastal water to become any worse in relation to the objective.

  In assessing the appropriateness of a new or existing discharge, the ability to **offset residual adverse effects** may be considered.

Objective O35

Ecosystems and habitats with significant indigenous biodiversity values are protected and restored.

Policy P36: Effects on indigenous bird habitat

The adverse effects of use and development on the habitats of indigenous birds in the coastal marine area, wetlands and beds of lakes and rivers and their margins for breeding, roosting, feeding, and migration shall be minimised.

Policy P40: Ecosystems and habitats with significant indigenous biodiversity values

Protect and restore the following ecosystems and habitats with significant indigenous biodiversity values:

(a) the rivers and lakes with significant indigenous ecosystems identified in Schedule F1 (rivers/lakes), and

(b) the habitats for indigenous birds identified in Schedule F2 (bird habitats), and

(c) **significant natural wetlands**, including the **significant natural wetlands** identified in Schedule F3 (significant wetlands), and

(d) the ecosystems and habitat-types with significant indigenous biodiversity values in the coastal marine area identified in Schedule F4 (coastal sites) and Schedule F5 (coastal habitats).

Policy P41: Managing adverse effects on ecosystems and habitats with significant indigenous biodiversity values

In order to protect the ecosystems and habitats with significant indigenous biodiversity values identified in Policy P40, in the first instance activities, other than activities carried out in accordance with a **restoration management plan**, shall avoid these ecosystems and habitats.

If the ecosystem or habitat cannot be avoided, the adverse effects of activities shall be managed by:

(a) avoiding more than minor adverse effects, and

(b) where more than minor adverse effects cannot be avoided, remedying them, and

(c) where more than minor adverse effects cannot be remedied, mitigating them, and

(d) where **residual adverse effects** remain it is appropriate to consider the use of **biodiversity offsets**.

Proposals for mitigation and **biodiversity offsets** will be assessed against the principles listed in Schedule G (biodiversity offsetting). A precautionary approach shall be used when assessing the potential for adverse effects on ecosystems and habitats with significant indigenous biodiversity values.

Where more than minor adverse effects on ecosystems and habitats with significant indigenous biodiversity values identified in Policy P40 cannot be avoided, remedied, mitigated or redressed through **biodiversity offsets**, the activity is inappropriate.

Policy P42: Protecting and restoring ecosystems and habitats with significant indigenous biodiversity values

In order to protect the ecosystems and habitats with significant indigenous biodiversity values identified in Policy P40, particular regard shall be given to managing the adverse effects of use and development in surrounding areas on physical, chemical and biological processes to:

(a) maintain ecological connections within and between these habitats, or

(b) provide for the enhancement of ecological connectivity between fragmented habitats through **biodiversity offsets**, and

(c) provide adequate buffers around ecosystems and habitats with significant indigenous biodiversity values, and

(d) avoid cumulative adverse effects on, and the incremental loss of the values of these ecosystems and habitats.

Objective O37

Significant surf breaks are protected from inappropriate use and development.

Policy P51: Significant surf breaks

Use and development in and adjacent to the significant surf breaks identified in Schedule K (surf breaks) shall be managed by minimising the adverse effects on:

(a) natural processes, currents, seabed morphology and swell corridors that contribute to significant surf breaks, and

(b) access to significant surf breaks within the coastal marine area, on a permanent or ongoing basis.

Objective O39

Ambient air quality is maintained or improved to the acceptable category or better in Schedule L1 (ambient air).

Policy P52: Managing ambient air quality

Ambient air quality shall be managed to protect human health and safety by:

(a) maintaining the acceptable category or better identified in Schedule L1 (ambient air) for the specific contaminants, and

(b) improving unacceptable or poor ambient air quality to at least the acceptable category or better identified in Schedule L1 (ambient air), and

(c) managing the discharge of other contaminants so that the adverse effects on human health, including cumulative adverse effects, are minimised.

Objective O41

The adverse effects of odour, smoke and dust on amenity values and people's well-being are reduced.

Policy P55: Managing air amenity

Air quality amenity in urban, rural and the coastal marine areas shall be managed to minimise offensive or objectionable odour, smoke and particulate matter, fumes, ash and visible emissions.

Objective O23

The quality of water in the region's rivers, lakes, **natural wetlands**, groundwater and the coastal marine area is maintained or improved.

Objective O44

The adverse effects on soil and water from land use activities are minimised.

Policy P67: Minimising effects of discharges

The adverse effects of discharges of contaminants to land and water will be minimised by:

(a) avoiding the production of the contaminant, and/or

(b) reusing, recovering or recycling the contaminant, and/or

(c) minimising the volume or amount of the discharge, and/or

(d) using land-based treatment, constructed wetlands or other systems to treat contaminants prior to discharge where appropriate, and

(e) irrespective of actions taken in accordance (a) to (d) above, where a discharge is a **point source discharge** to a river or stream, the discharge achieves the water quality standards in Policy P71 after reasonable mixing.

Policy P72: Zone of reasonable mixing

Where not otherwise permitted by a rule, the **zone of reasonable mixing** shall be minimised and will be determined on a case-by-case basis. In determining the **zone of reasonable mixing**, particular regard shall be given to:

(a) acute and chronic toxicity effects, and

(b) adverse effects on aquatic species migration, and

(c) efficient mixing of the discharge with the receiving waters, and

(d) avoiding a site with significant **mana whenua** values identified in Schedule C (mana whenua), and

(e) the identified values of that area of water, and

(f) avoiding significant adverse effects within the **zone of reasonable mixing**.

Policy P97: Managing sediment discharges

The discharge of sediment to **surface water bodies** and coastal water from **earthworks** activities shall be minimised by using a source control approach.

Good management practices shall be used in site management, erosion and sediment control design operation and maintenance in order to minimise the adverse effects of sediment-laden **stormwater** discharges.

Effects that cannot be minimised may be appropriately **offset**.

Objective O48

Stormwater networks and urban land uses are managed so that the adverse quality and quantity effects of discharges from the networks are improved over time.

Policy P73: Minimising adverse effects of stormwater discharges

The adverse effects of **stormwater** discharges shall be minimised, including by:

(a) using good management practice, and

(b) taking a **source control** and treatment train approach to new activities and land uses, and

(c) implementing **water sensitive urban design** in new subdivision and development, and

(d) progressively improving existing **stormwater**, **wastewater**, road and other public infrastructure, including during routine maintenance and upgrade.

Policy P78: Managing stormwater from large sites

The adverse effects of the discharge of **stormwater** from a port, airport or state highway, where the discharge will enter water shall be minimised by:

(a) managing the discharge in order to minimise the adverse effects of **stormwater** discharges on **aquatic ecosystem health** and **mahinga kai**, contact recreation and **Māori customary use**, and

(b) identifying priorities for improvement, including methods and timeframes for improvement, in accordance with any relevant objectives identified in the Plan, and

(c) progressively implementing methods identified in (b), and

(d) having particular regard to protecting sites with identified significant or outstanding values, and

(e) implementing **good management practice**, including in accordance with Policy P73, and progressive improvement of discharge quality over time.

Objective O53

Use and development in the coastal marine area has a **functional need** or **operational requirement** to be located there.

Policy P132: Functional need and efficient use

Use and development in the coastal marine area shall:

(a) have a **functional need**, or

(b) have an **operational requirement** to locate within the coastal marine area, and no reasonable or practicable alternative to locating in the coastal marine area, or

(c) for any other activity, it shall have no reasonable or practicable alternative to locating in the coastal marine area,

(d) and in respect of (a), (b) and (c):

(e) only use the minimum area necessary, and

(f) be made available for public or multiple use where appropriate, and

(g) result in the removal of structures once redundant, and

concentrate in locations where similar use and development already exists where practicable.

Objective O55

The need for public open space in the coastal marine area is recognised.

Policy P134: Public open space values and visual amenity

The adverse effects of new use and development on public open space and visual amenity viewed within, to and from the coastal marine area shall be minimised by:

(a) having particular regard to any relevant provisions contained in any bordering territorial authorities' proposed and/or operative district plan, and

(b) managing use and development to be of a scale, location, density and design which is compatible with the natural character, natural features and landscapes and amenity values of the coastal environment, and

(c) taking account of the future need for public open space in the coastal marine area.

Objective O58

Noise, including underwater noise, from activities in the coastal marine area is managed to maintain the health and well-being of marine fauna, and the health and amenity value of users of the coastal marine area.

Policy P150: Noise and lighting

Noise in the coastal marine area shall be managed by applying the general conditions as set out in section 5.7.2 of the Plan or by adopting the best practicable option to ensure that the emission of noise does not exceed a reasonable level. Exterior lighting on structures shall avoid being directed at **sensitive activities**, streets, roads and navigation tracks and shall minimise effects on other users and wildlife, unless it is for operational health and safety reasons.

Policy P151: Underwater noise

Use and development in the coastal marine area shall be managed to minimise the adverse effects of underwater noise on the health and well-being of marine fauna and the health and amenity values of users of the coastal marine area.

Objective O59

The efficient and safe passage of vessels and aircraft that support the movement of people, goods and services is provided for in the coastal marine area.

Policy P135: Safe passage

The efficient and safe passage of vessels and aircraft in the coastal marine area shall be provided for by avoiding inappropriate use and development in **navigation protection areas.**

Policy P145: Reclamation, drainage and destruction

Reclamation, drainage or destruction in the coastal marine area shall be avoided except where:

(a) the **reclamation**, drainage or destruction is associated with the development, operation, maintenance and **upgrade** of **regionally significant infrastructure**, and

(b) there are no other locations outside the coastal marine area for the activity associated with the **reclamation**, drainage or destruction, and

(c) there are no practicable alternative methods of providing for the associated activity.

Policy P2: Cross-boundary matters

The effects of use and development across jurisdictional boundaries shall be managed by having particular regard to any relevant provisions contained in any bordering territorial authorities' proposed and/or operative district plan when assessing a resource consent for an activity and/or the effects of an activity that spans mean high water springs or other jurisdictional boundaries, including the beds of lakes and rivers.

Objective O56

New development in the coastal marine area is of a scale, density and design that is compatible with its location in the coastal environment.

Objective O38?

Identified special amenity landscape values are maintained or enhanced.