

# **Spotless Crake Survey**

## **Pauatahanui Inlet Reserves**

### **Baseline Data – 2016**



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**Completed by Shane Cotter  
for Greater Wellington Regional Council**

## 1 Executive Summary

Over ten weeks from mid-August to mid-October 2016, weekly counts were undertaken at 29 count sites throughout Pauatahanui Wildlife Management Reserve, Duck Creek Scenic Reserve, Horokiri Wildlife Management Reserve and Kakaho estuary all within Pauatahanui Inlet the eastern arm of Porirua Harbour, searching for spotless crane (*Porzana tabuensis*). At each count site, a seven minute 40 second recording of spotless crane calls was played. This survey was undertaken to obtain baseline data on the presence of spotless crane in these reserves to determine the impact of increased predator control on their numbers. A new round intensive trapping within these reserves and the surrounding area was to be carried out from July 2016.

Five spotless crane at four separate count sites were positively identified responding to played calls. Records for each confirmed spotless crane have been entered into [www.eBird.org](http://www.eBird.org)<sup>1</sup> at the specific count site location where it was heard. Three other possible spotless crane were also heard. These are not confirmed records and therefore were not entered into [www.eBird.org](http://www.eBird.org). Other bird species seen within the reserves were also recorded. Checklists for the bird species noted each week have also been entered into [www.eBird.org](http://www.eBird.org).

This report also includes an outline of historical records of spotless crane within Pauatahanui Inlet. Observations and comments for improving the habitat within these reserves for spotless crane is also made.

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## 2 Introduction

### 2.1 The Reserves

Pauatahanui Wildlife Management Reserve (PWMR) is at the eastern end of the Pauatahanui Inlet, the eastern arm of Porirua Harbour. It is an area of approximately 50 hectares that contains the most significant saltmarsh in the lower North Island. The reserve contains a succession of vegetation from tidal mudflats to coastal scrub. The area was designated a Wildlife Management Reserve in 1984 and is managed by a Forest & Bird Committee in partnership with the Department of Conservation<sup>2</sup>. Development of the reserve began in 1984. An extensive planting programme, along with weed and predator control, is carried out by Forest & Bird volunteers with community support and funding<sup>3</sup>.

Duck Creek Scenic Reserve (1ha) and Horokiri Wildlife Management Reserve (5 ha) contain areas of saltmarsh and marsh vegetation. Similar vegetation is found within Kakaho estuary (1ha) at the mouth of the Kakaho Stream, which is an esplanade reserve administered by Porirua City Council<sup>4</sup>.

### 2.2 The Vegetation

Rushes are the most common and important group of plants in these reserves because they will grow in boggy, salty soils where few other plants can survive. The three most important rushes in these reserves are sea rush (*Juncus kraussii* var. *australiensis*), jointed rush (*Apodasmia similis*) in the salt marsh, and knobby club rush (*Ficinia nodosa*) in the fresh water swamp. Sea rush grows along the shoreline around the high tide mark so it may be standing in sea water for up to four hours per day. Jointed rush is not as salt tolerant as sea rush and grows further inland where its roots are only occasionally covered by the tide. Knobby club rush grows around the edges of the freshwater swampy areas<sup>5</sup>. There are several small patches of raupo (*Typha orientalis*) growing in freshwater swamps as well as clumps of flax (*Linum usitatissimum*).

The most common shrubs in the reserves are saltmarsh ribbonwood (*Plagianthus divaricatus*), mingimingi (*Coprosma propinqua*), coastal tree daisy (*Olearia solandri*), and manuka (*Leptospermum scoparium*). They grow on the higher ground fringing the rushland or fresh water swamps<sup>6</sup>. They also grow along the stream and drainage ditch banks where soil has been raised into mounds. These mounds provide reasonable access out into the reserves.

### 2.3 Spotless crane

Spotless crane are predominantly a bird of freshwater wetlands dominated by dense emergent vegetation, particularly raupo. When found in tidal salt-marshes, they prefer the upper freshwater reaches rather than the lower tidal areas. They may forage on open mud near dense vegetation but quickly retreat when disturbed. This small, dark coloured rail (about half the size of a blackbird) is very secretive and infrequently seen. Their furtive nature and good dispersal ability mean that they could be present in areas of suitable habitat far from known populations. Introduced predators are likely to prey on cranes<sup>7</sup>.

Spotless cranes are monogamous and territorial. When nesting in wetlands, the nest of woven grass and sedge leaves is raised 30–50 cm above water level, often in a clump of *Carex*

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<sup>2</sup> DOC. 2010

<sup>3</sup> ibid

<sup>4</sup> Pauatahanui Inlet Advisory Group. 2000

<sup>5</sup> DOC. 2012

<sup>6</sup> ibid

<sup>7</sup> Fitzgerald, N. 2013

sedge. Eggs are laid from late August to January and are incubated by both parents. Pairs and some single birds defend territories<sup>8</sup>.

Though spotless crake are infrequently seen, they respond well to the playing of recorded calls in likely habitat. This has been used successfully to determine the presence of crakes and to identify the habitat they use in New Zealand. Though they respond to the playing of recorded calls throughout the year, there are certain stages of the breeding cycle when they are most responsive. Nesting pairs respond quickly, vigorously, and continuously to calls broadcast during the two weeks prior to egg laying. Once incubation begins they do not call. After their eggs hatch, they answer the calls sporadically, with soft or intermediate calls of short duration<sup>9</sup>.

## 2.4 Previous records of spotless crake at Pauatahanui

As part of this survey, I conducted a literature review as well as speaking to likely organisations and individuals to determine if and when spotless crake had previously been recorded within the Pauatahanui Inlet. I could only locate a few actual records of spotless crake previously being recorded within the inlet (all within the PWMR) and these were all from the 1970s and 80s. There are multiple references to the reserve being spotless crake habitat but these references did not include actual records of sightings or calls being heard<sup>10</sup>.

Between 1975 and 1977, a comprehensive environmental study of Pauatahanui Inlet was undertaken by a number of scientists looking at all environmental aspects affecting the inlet<sup>11</sup>. As part of this environmental study, Coker, from the New Zealand Wildlife Service completed a survey of bird species using the Inlet at that time<sup>12</sup>. Coker identified 36 species that were either resident there or an occasional visitor. He recorded spotless crake as being resident in the marsh at the eastern end of the inlet. His map of the Inlet<sup>13</sup> identifies spotless crake in an area more specifically around Pauatahanui Stream. This would be in the area of count sites (CS) CS15 and CS16. Coker states "Where the marsh becomes less saline in nature, the *Salicornia* gives way to rush species such as *Juncus*, the spotless crake is found. This small, dusky rail, very elusive rather than rare, is restricted to the reed-beds where it feeds and nests. Because of its secretive nature it is difficult to locate, although it is possible to get them to respond to a tape-recording of their call, as was done for this study. In this way they have been located near Pauatahanui village and it is probable that they exist elsewhere in the vicinity. Because little is known of their distribution, it is important to preserve the habitat where they are known to exist"<sup>14</sup>.

In a 1985 article, "Pauatahanui, The making of a reserve"<sup>15</sup> David Collingwood states "At the southern extremity of the reserve fronting onto Pauatahanui Inlet, the prevailing winds have formed a dune of shells and sand, behind which is a swamp of dense raupo and flaxes. The secretive spotless crake inhabits this swamp, and is more often heard than seen". This swamp is between CS19 and CS20. He continues "I have also heard its low purring note near the lower course of Ration Creek within the Reserve". This would be in the area of CS9.

Reg Cotter (pers comms) recalls hearing spotless crake responding to played recordings of their calls around Pauatahanui Stream in the early 1980s. This is the same area identified by Coker around CS15 and CS16.

In September 2016, a former long-time resident of Pauatahanui, Noel Hayes, contacted DOC and advised them he had found a dead crake on the side of the road on the 19<sup>th</sup> of January, 2014. Incredibly, he still had the body of the crake stored in his freezer. In correspondence

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<sup>8</sup> ibid

<sup>9</sup> Kaufmann, G. W. 1988

<sup>10</sup> McArthur, N. and Lawson, J. 2014, Kapiti-Mana News. 1986, Parrish, G. 1984, Forest and Bird. (undated)

<sup>11</sup> Healy WB (ed.). 1980

<sup>12</sup> Coker, P. M. in Healy WB (ed.). 1980

<sup>13</sup> Ibid (fig 62, p129)

<sup>14</sup> Ibid (p132)

<sup>15</sup> Collingwood, D. 1985

with him, he supplied me with two photographs of the bird, taken on the day it was found. It is a juvenile spotless crane. He stated the bird had recently died and had probably been hit by a car. It was on the side of Grays Road approximately 150 metres from the intersection with Paekakariki Hill Road near the old go cart track (CS11). He said he had lived in the area between 1955 and 1976 and did not know they were in the area. He had canoed the harbour for many hundreds of hours without ever seeing or hearing one (pers comms).



Photo A. Juvenile spotless crane found dead on Grays Road on 19 January 2014 by Noel Hayes.

These are the only confirmed records of spotless crane being present within Pauatahanui Inlet prior to this survey that I could locate.

The Ornithological Society of New Zealand (OSNZ) conducted a bird survey of Pauatahanui Inlet between 1982 and 2011 but did not record spotless crane being present (unpublished data)<sup>16</sup>. This survey was primarily a visual count of birds and those heard calling naturally. Spotless crane are often only heard calling in response to the playing of recorded calls.

Roy Slack, a life-long member of OSNZ and long-time resident of Pauatahanui village does not recall hearing or seeing spotless crane in the Pauatahanui Inlet (pers comms). He is also not aware of any first-hand accounts of spotless crane being there from other residents.

Robin Chesterfield (Forest & Bird contact for PWMR) says “There were spotless crane there in the early 1980's, but sometime around 1985 a fire was lit on the shell bank / beach and the embers blew into the raupo at the south end near State Highway 58. This burnt off a large section of the raupo. After that spotless crane has not been seen or heard again in the reserve” (pers comms). This fire was the subject of an article in the Kapiti-Mana News<sup>17</sup> on 25/03/1986. The article refers to the fire occurring 12 days earlier and states that about 1 hectare of swamp was destroyed. This area is the dense raupo and flax swamp referred to by Collingwood and is between CS19 and CS20.

Searching [www.eBird.org](http://www.eBird.org), there were no records of spotless crane at Pauatahanui Inlet prior to my records being entered. The nearest record is at Taupo swamp, Plimmerton Domain where two were recorded in March 2016 by Duncan Watson<sup>18</sup>.

A search of the Birding-NZ message board which began in 2001, did not reveal any records of spotless crane at Pauatahanui.

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<sup>16</sup> Ornithological Society of New Zealand (unpublished data) - OSNZ Bird Survey Pauatahanui Inlet

<sup>17</sup> Kapiti Mana News. 1986

<sup>18</sup> New Zealand eBird

A thorough search of OSNZ Wellington Branch records, including meeting minutes, newsletters and ad hoc bird sightings since their inaugural meeting in July 1971, reveal no records of spotless crane at Pauatahanui Inlet. Likewise there are no records of spotless crane at Pauatahanui Inlet in the OSNZ journals *Notornis*, *Southern Bird* or *Birds New Zealand* or their book, *Atlas of Bird Distribution in New Zealand 1999 -2004*<sup>19</sup>.

Neither the Greater Wellington Regional Council (Philippa Crisp, pers comms) nor the Department of Conservation (DOC) (Brent Tandy, pers comms) are aware of any records held by their organisations of employees seeing or hearing spotless crane at Pauatahanui Inlet. Brent Tandy went on to outline that there may be records in paper documents but without specific reference numbers, these records would be hard to find as manually searching would be required.

## **2.4 Objectives**

The objective of this survey was to carry out a census of spotless crane in the Pauatahanui Wildlife Management Reserve, Duck Creek, Horokiri and Kakaho Reserves to establish the number and locations of any spotless crane present.

## **3 Methodology**

### **3.1 The process**

The survey for spotless crane in these reserves was carried out in the following manner; Twenty-nine count sites for playing recorded spotless crane calls were selected approximately 150 metres apart. This was to avoid counting the same individuals at different count sites on the same day. Each count site was selected due to a number of factors including the suitability of habitat, the ability to see into the surrounding vegetation and ease of finding the count site in future years.

The same count sites (CS) were used on each census day and they were visited in the same order. A map showing count sites CS1 through to CS26 is attached at figure 1. Larger scale maps showing the exact location of all count sites are attached in appendix 1. CS1 and CS2 are on either side of Duck Creek Reserve. CS3 to CS10 encircle PWMR on the north side of Grays Road while CS11 to CS21 cover PWMR, south of Grays Road through to State Highway 58. CS22 to CS26 are in Horokiri Reserve with CS27, CS28 and CS29 in the Kakaho Estuary. Each count site was approached carefully by walking on pathways, boardwalks or clear areas (roadways) wherever possible. However several count sites within the reserves required a short trek off formed pathways across the rush beds. A brief description of the habitat at each count site is set out in table 1.

The same recording of spotless crane calls was played at each count site. The recording lasted seven minutes 40 seconds. This included a 30 second period of silence at three minutes 40 seconds and another 30 seconds of silence at the end of the recording. The recording was played using slightly above-normal amplitude to project the calls further into the surrounding habitat. Recorded calls could be heard approximately 30–40 metres away from the speaker into the wind and 40-50 metres away downwind. The recording was contained and played on an iPhone 6 connected by a speaker wire to a "UE Boom 2" waterproof speaker. The UE Boom 2 speaker is a 360 degree speaker meaning the sound is projected in every direction. The speaker was placed approximately 800mm off the ground on a stand to assist in projecting the sound further into the surrounding area. I stood approximately 4-7 metres away from the speaker while listening for spotless crane to respond to the recording.

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<sup>19</sup>Robertson, C.J.R., Hyvonen, P., Fraser, M.J. and Pickard, C.R. 2007



Figure 1. Map showing count sites CS1 to CS26. The route around these count sites followed the number sequence.



Photo B. "UE Boom 2" speaker on stand. Iphone in white container connected by blue speaker wire.

**Table 1. Descriptions of count sites for spotless crane survey at Pauatahanui Inlet Reserves - 2016**

Count site	Lat (N)	Long (E)	Description
CS1	5447642.76	1759642.58	<b>Duck Creek Reserve.</b> This count site is on the east side on the grass verge. It was difficult to hear due to traffic noise. Habitat here is principally reeds.
CS2	5447676.11	1759562.01	<b>Duck Creek Reserve.</b> This count site is on the west side on the reserve. Habitat here is principally reeds.
CS3	5448259.26	1761002.81	<b>PWMR, north side of Grays Road.</b> 10 metres north of the first boardwalk (60 metres from roadway), turn left off track. 10 metres from track there is a large shallow pond. Count site is on edge of pond. This pond is quite large and is surrounded by reeds.
CS4	5448351.38	1761060.85	<b>PWMR, north side of Grays Road.</b> Count site is in front of the hide and offset to the right on the edge of the shallow pond. Again this pond is quite large and is surrounded mostly by reeds but some rushes and flax.
CS5	5448515.96	1760904.74	<b>PWMR, north side of Grays Road.</b> This count site is on the south bank of the creek edge approximately 90 metres from the track next to tracking tunnel N15. It is surrounded by low broken scrub with patches of reeds.
CS6	5448825.29	1760961.71	<b>PWMR, north side of Grays Road.</b> Count site was in front of the hide which has been removed. It is offset to the right on the edge of the pond. The pond appears relatively deep. It is circular with a grass island. It is surrounded mostly by rank grasses, scrub, trees and bushes.
CS7	5448724.34	1760821.46	<b>PWMR, north side of Grays Road.</b> Count site on the boundary with neighbouring lifestyle block at the point where the creek turns and heads into the reserve. The habitat here is low broken scrub and reeds.
CS8	5448606.81	1760689.87	<b>PWMR, north side of Grays Road.</b> Count site is 70 metres from Grays Road on the boundary with neighbouring lifestyle block at the point where a drainage ditch meets the boundary. This ditch stops at this point. The habitat here is principally reeds.
CS9	5448483.51	1760750.44	<b>PWMR, north side of Grays Road.</b> This count site is 30 metres from Grays Road at the junction of Ration Creek and a large drainage ditch. The habitat here is principally reeds.
CS10	5448393.30	1760893.93	<b>PWMR, north side of Grays Road.</b> This count site is 80 metres from Grays Road on the edge of an open area surrounded by reeds. Several shallow ponds are nearby. The habitat here is principally reeds.
CS11	5448213.47	1760818.58	<b>PWMR, south side of Grays Road.</b> This count site is in front of the hide and off to the right on the edge of the shallow pond. This pond is quite large and is surrounded mostly by reeds but some rushes and flax.
CS12	5448194.37	1760806.50	<b>PWMR, south side of Grays Road.</b> This count site is on the track behind the hide, 7 metres past the seat. There is a small shallow pond nearby. The habitat is mostly reeds.
CS13	5448153.27	1760918.08	<b>PWMR, south side of Grays Road.</b> This count site is on the boardwalk as it passes through a patch of Raupo. The habitat is mostly Raupo with flax and patches of low broken scrub.
CS14	5447989.95	1760875.90	<b>PWMR, south side of Grays Road.</b> This count site is in the southern corner of a very large deep pond. The habitat in the area is rank grass with patches of low broken scrub and trees.
CS15	5447875.84	1760751.52	<b>PWMR, south side of Grays Road.</b> This count site 10 metres off the track on the edge of an open area surrounded by reeds and low broken scrub.
CS16	5447907.57	1760631.11	<b>PWMR, south side of Grays Road.</b> This count site is on the boardwalk as it passes over a creek. The habitat here is mostly flax and patches of low broken scrub.
CS17	5447956.96	1760476.80	<b>PWMR, south side of Grays Road.</b> This count site is on the boardwalk 50 metres before the hide at the point where the low scrub ends. The habitat here is mostly reeds with patches of low broken scrub nearby.
CS18	5447826.99	1760579.91	<b>PWMR, south of Pauatahanui Stream.</b> This count site is under a large Manuka tree near a rough walkway leading onto State Highway 58. The habitat here is mostly patches of low broken scrub with reeds nearby.
CS19	5447896.30	1760294.65	<b>PWMR, south of Pauatahanui Stream.</b> This count site is beside State Highway 58 where a creek enters the reserve after going under the roadway. It was difficult to hear due to traffic noise. The habitat here is Raupo swamp.
CS20	5447922.80	1760232.64	<b>PWMR, south of Pauatahanui Stream.</b> This count site is 90 metres along the beach from State Highway 58. The habitat here is Raupo swamp.
CS21	5447681.97	1760651.93	<b>PWMR, south of Pauatahanui Stream.</b> This count site is beside State Highway 58 about half way along a patch of Raupo swamp. It was difficult to hear due to traffic noise. The habitat here is Raupo swamp with flax and other rank grasses.
CS22	5448824.75	1760306.18	<b>Horokiri Reserve.</b> The count site is at the junction of two drainage ditches 30 metres from the roadway. The habitat here is reeds.
CS23	5448991.22	1760181.98	<b>Horokiri Reserve.</b> The count site is 40 metres from the roadway behind patches of low scrub. The habitat here is mostly reeds with patches of low broken scrub.
CS24	5449117.85	1760156.92	<b>Horokiri Reserve.</b> The count site is on the stream bank, 25 metres north of the pathway where the stream bends right. Across the stream are patches of Raupo.
CS25	5449161.21	1760079.95	<b>Horokiri Reserve.</b> The count site is on the pathway at the edge of Grays Road beside a patch of Raupo. It was difficult to hear due to traffic noise. The habitat here is patches of Raupo and low broken scrub.
CS26	5449125.33	1759964.13	<b>Horokiri Reserve.</b> The count site is on the pathway where several tracks lead out into the reserve. The habitat here is reeds.
CS27	5449953.44	1759077.78	<b>Kakaho Reserve.</b> This count site is on the western side of the stream, 40 metres from the roadway. The habitat here is reeds.
CS28	5449913.15	1758988.01	<b>Kakaho Reserve.</b> This count site is on the banks of a drainage ditch 15 metres from the roadway. The habitat here is reeds with a small patch of low scrub nearby.
CS29	5449895.85	1758870.48	<b>Kakaho Reserve.</b> This count site is beside a patch of low broken scrub 25 metres from the roadway. The habitat here mostly reeds with a small patch of low scrub.



The survey took place on a weekly basis over a two month period at the beginning of the breeding season from the 8th of August through until the 11th of October 2016. Each census day count took place on a weekday to minimise noise from traffic and disturbance from people moving around within the reserve. Each count was to begin as close to sunrise as possible. Census day, each week was determined by weather conditions. These days were as calm as possible and without rain. This was to improve listening conditions.

The survey was carried out by the author working alone. While walking between count sites, I listened for spotless crane calls not made in response to recorded calls but made naturally. Working alone meant there were no conversations to distract me from hearing spotless crane calls and disturbance to the reserves was kept to a minimum when walking off track.

### **3.2 What Happened**

Date, weather and timing details relating to each census day are set out in table 2. A reliable and accurate weather information website could not be located on the internet for Pauatahanui Inlet. While several websites provided this information, it frequently did not match actual conditions. Therefore wind strength, wind direction and cloud cover are the opinion of the author. Wind strength ranges from calm, to light, medium, moderate up to strong. For ease, wind direction was determined by the direction of wind over the inlet if the north side of the inlet is Grays Road, south side being State Highway 58, and the east side being Pauatahanui Village.

After the first two census days, two new count sites were established. These were CS3 and CS17. It was felt without these new count sites being added an opportunity to encounter spotless crane may be missed. This later proved correct with spotless crane responding to the playing of recorded calls at CS3.

Some count sites were difficult to use due to traffic noise potentially blocking out the recorded calls that were being broadcast to the surrounding area and also blocking out any spotless crane calls made in response. These were CS1, CS19, CS21 and CS25. Other count sites were deliberately located a short distance into the reserves to reduce traffic noise as much as possible.

Most census day counts began within an hour of sunrise. Daylight saving began on the weekend prior to census day eight. All counts were conducted on either a Tuesday or Wednesday. A range of wind direction and wind strengths were encountered throughout the survey. Passing light drizzle was experienced on census day five and six. No rain was encountered on any day.

As each census day count took between six and seven hours, the tide completed a change during each count. It also changed on a weekly basis between low and high tide at the start of each census day. Due to these changes each count site was able to be visited at a variety of tidal heights over the survey period.

Due to workmen drilling and trampling around within Kakaho Estuary, from census day six onwards, counts at CS27, CS28 and CS29 were either difficult or pointless. I persevered for several weeks but did not count at these sites on census day nine and did not count at CS27 on census day ten. Also prior to census day ten, a bulldozer had refurbished a rough track running alongside Duck Creek's western boundary creating a smooth roadway. A shipping container as well as heavy machinery had been moved onto the flat land at the southern end of the reserve. Visiting this area again recently, large areas of vegetation have been cleared exposing the reserve. Major earthworks are now occurring there, possibly establishing a new subdivision for more housing. This would correspond with the beginning of the "Brookside" subdivision<sup>20</sup>.

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<sup>20</sup> Land Matters Ltd. 2015

**Table 2. Details of each census day for spotless crane survey at Pauatahanui Inlet Reserves - 2016**

	One	Two	Three	Four	Five
Date	10/08/2016	16/08/2016	23/08/2016	30/08/2016	6/09/2016
Day of week	Wednesday	Tuesday	Tuesday	Tuesday	Tuesday
Wind strength	Calm - Light by end	Light through-out	Calm - moderate by end	very light - light medium	Calm - medium by end
Wind direction	Easterly	Southerly	North-westerly	South-westerly	Southerly
Cloud cover	Fine	Fine	Fine	Fine	Overcast with patchy drizzle
Tide (Web)	Low - 07:46hrs 0.7m	High - 08:36hrs 1.4m	Low - 06:38hrs 0.5m	High - 08:20hrs 1.4m	Low - 06:12hrs 0.5m
Tide (Web)	High - 14:04hrs 1.5m	Low - 14:55hrs 0.7m	High - 13:13hrs 1.7m	Low - 15:10hrs 0.8m	High - 12:32hrs 1.7m
Sunrise	07:18hrs	07:10hrs	07:00hrs	06:49hrs	06:35hrs
Time at beginning of first count	0750hrs	0858hrs	0846hrs	0736hrs	0738hrs
Time at end of last count	1416hrs	1537hrs	1545hrs	1412hrs	1405hrs
Length of count	6hrs 26min	6hrs 39mins	6hrs 59mins	6hrs 36mins	6hrs 27mins
Comments on count sites (CS)	27 count sites	27 count sites	29 count sites	29 count sites	29 count sites
Other birds noted?	No CS3 or CS17	No CS3 or CS17	CS3 and CS17 established		Full noting of other birds
	No other birds noted	Partial noting of other birds	Partial noting of other birds	Full noting of other birds	Full noting of other birds
	Six	Seven	Eight	Nine	Ten
Date	14/09/2016	20/09/2016	28/09/2016	5/10/2016	11/10/2016
Day of week	Wednesday	Tuesday	Wednesday	Wednesday	Tuesday
Wind strength	Light through-out	Light - moderate by end	Light through-out	Strong through-out	Light - medium by end
Wind direction	Northerly	Southerly	Easterly	Northerly	Northerly
Cloud cover	Overcast with patchy drizzle	Overcast	Overcast	Overcast	Fine
Tide (Web)	High - 07:37hrs 1.3m	Low - 05:44hrs 0.3m	High - 08:55hrs 1.4m	Low - 06:47hrs 0.5m	High - 05:59hrs 1.3m
Tide (Web)	Low - 13:37hrs 0.5m	High - 12:05hrs 1.7m	Low - 14:52hrs 0.5m	High - 13:02hrs 1.5m	Low - 12:00hrs 0.7m
Sunrise	06:22hrs	06:14hrs	06:58hrs	06:48hrs	06:36hrs
Time at beginning of first count	0704hrs	0653hrs	0658hrs	0701hrs	0654hrs
Time at end of last count	1318hrs	1312hrs	1310hrs	1238hrs	1301hrs
Length of count	6hrs 14mins	6hrs 19mins	6hrs 12 mins	5hrs 37mins	6hrs 7mins
Comments on count sites (CS)	29 count sites	29 count sites	29 count sites	26 count sites	28 count sites
Other birds noted?	Workman drilling near CS27. Noise and 5 men walking around disturbing the area.	Workman drilling near CS27 and CS29. Hut and toilet now in place. Noise and 5 men walking around disturbing the whole reserve area.	Workman drilling near CS27 and CS29. Hut and toilet now in place. Noise and 5 men walking around disturbing the whole reserve area.	Due to workman everywhere there was no counts at CS27, CS28 and CS29.	No count at CS27 due to workman everywhere. New track bulldozed along western side of Duck Creek. Container and machinery at south end of reserve.
	Full noting of other birds	Full noting of other birds	Full noting of other birds	Full noting of other birds	Full noting of other birds

Other bird species that use the reserves were not part of this survey therefore they were not noted on the first census day. However as various bird species were observed over the next two census days, it was decided to record all species observed there during the remaining census days. Full bird species counts were completed from census day four onwards. Individual bird numbers were not noted for all species as the focus was on locating spotless crane and I did not want to be distracted from this purpose. However full counts of some species were made when this involved very few birds i.e. two godwits, one bellbird or three eastern rosellas.

## 4 Results

### 4.1 Confirmed records

Five spotless crane were positively identified responding to played calls on 4 separate occasions, each at a different count site. Not surprisingly none of these birds were seen, even when one bird approached to within three metres of the speaker playing the recorded calls.

On the 23rd of August 2016, a spotless crane was heard responding at CS12. The recorded calls began playing at this count site at 11.37am. It first responded towards the end of the recording giving the trill call twice. It was in rushes on the eastern side of the small pond (see photo C below) approximately 10 metres from the speaker. After moving to the next count site (CS13) and playing the recorded calls there, a spotless crane was heard calling in the distance from the general direction of where the previous bird had called from. This was probably the same bird as these count sites are only 120 metres apart. These responses were about 10 minutes apart giving the crane sufficient time to move towards CS13 before calling again.



Photo C. CS12. Spotless crane heard calling from the far side of the pond shown in the centre of the photograph.

On the 30th of August 2016, a spotless crane responded to played calls at CS8. The recorded calls began playing at this count site at 9.12am. This bird was some distance away from the speaker in the direction of CS9. Again this area is principally rushes (see photo D below). This crane, when it called was between the closest lamppost on the right and the drainage ditch (the dark line) on the left of the photo.



Photo D. CS8. Spotless crane heard calling from rushes between first lamppost on right and the drainage ditch on left.

On the same day, 30 August, multiple calls by a spotless crane were heard at CS25, within Horokiri Reserve. The recorded calls began playing at this count site at 1.08pm. This count site is immediately next to Grays Road beside a patch of raupo (see photo E below). The bird called frequently as it moved closer and closer to the speaker eventually coming within three metres of it. It remained there calling for several minutes. While it was there calling, a second spotless crane began calling from scrub approximately 20 metres away further into the swamp (see photo F).



Photo E. CS25. Spotless crane ended up calling from under the bush in centre of photograph. Note how close this is to the location of speaker.



Photo F. CS25. With the first spotless crane calling from under the bush on the left of the photograph, a second spotless crane called from further away behind the flax in the centre of the photograph.

On the 6th of September 2016, a spotless crane responded to played calls at CS3. The recorded calls began playing at this count site at 8.39am. This bird was some distance away from the speaker across the pond in a south westerly direction towards the lamp post on the left which has a wire brace. Again this area is principally rushes (see photo G). The bird responded quickly calling after only 90 seconds of recorded calls being played.



Photo G. CS 3. The spotless crane called from across the pond in the direction of the lamppost on the left.

Each confirmed record of spotless crane has been entered as an individual record in [www.eBird.org](http://www.eBird.org) to show the exact location of each confirmed record.

## 4.2 Unconfirmed records

Unconfirmed calls which may have been from spotless crane were also heard on three other occasions. These are unconfirmed records as they only involved a single call that sounded similar to a spotless crane but positive identification was not possible from this single call.

On the 16th of August 2016, a single call from what may have been a spotless crane was heard at CS22. This is at the eastern end of Horokiri Reserve and the habitat here is predominantly rushes.

On the 23rd of August 2016, a single call was heard from what may have been a spotless crane at CS13. This call was from the north side of the boardwalk towards Grays Road in an area that is a mix of raupo, flax and low scrub. This occurred on the same day, a spotless crane was positively identified at the neighbouring count site CS12. It could still be heard calling in the distance from that general direction. As this single call was from the opposite direction, this suggests that there may have been a second spotless crane in this general location.

On the 30th of August 2016, a single call from what may have been a spotless crane was heard at CS12, from a similar position to where a spotless crane was positively identified the previous week.

No other possibly spotless crane calls were heard, either in response to played calls or while walking between count sites.

## 4.3 Other bird species

A total of 47 different birds species were recorded over the period of the survey. Some species were recorded regularly while several species were recorded only once. Single records of a species are as follows; a single bellbird, two godwits together, a single gannet and a single redpoll. Many bird species were beginning to breed within the reserves. A Canada goose / graylag goose nest with 7 eggs was located. Pied stilts were observed on nests and several grey teal pairs with chicks were recorded. A complete list of the 47 species recorded during the survey is included in table 3.

Checklists for bird species recorded on each census day (with the exception of census day one) have been completed and entered into [www.eBird.org](http://www.eBird.org).

Total Species List Recorded During Survey		
Graylag goose	Pukeho	Magpie
Canada goose	Pied stilt	Fantail
Black swan	South Island pied oystercatcher	Skylark
Paradise duck	Variable oystercatcher	Welcome swallow
Mallard duck	Spur winged plover	Silvereye
Shoveller duck	Godwit	Blackbird
Grey teal	Red billed gull	Thrush
Gannet	Black backed gull	Starling
Little shag	Caspian tern	Dunnock
Black shag	Feral pigeon	Yellowhammer
Little black shag	New Zealand pigeon	Chaffinch
Pied shag	Kingfisher	Greenfinch
White faced heron	Eastern rosella	Red poll
Spoonbill	Tui	Goldfinch
Harrier hawk	Bellbird	House sparrow
Spotless crane	Grey warbler	

Table 3. A complete list of the 47 species recorded during the survey.

## 5 Discussion

### 5.1 General

Of the five confirmed records of spotless crane obtained during this survey, there is a strong suggestion that the two spotless crane at Horokiri Reserve are a pair. Both birds called in response to played calls and were less than 20 metres apart. One bird was repeatedly calling and approached to within 3 metres of the speaker maybe to locate the intruder in its territory while the second bird remained close but remained slightly further away. These birds were not heard calling again during the survey. A study of spotless crane responding to played calls at Pukepuke Reserve, discovered that neither bird will respond to played calls once incubation of eggs has commenced<sup>21</sup>.

One spotless crane and possibly a second were heard in the area around CS12 and CS13 on the same day. This may indicate a second pair residing in this general area. A week later a possibly spotless crane was heard again at CS12. The following week, a spotless crane was heard calling at CS3. Though CS3 is across Grays Road from CS13, they are only 150 metres apart. The juvenile spotless crane that was found dead on the side of Grays Road by Noel Hayes in January 2014 was only 50 metres from where a line between these two count sites intersect Grays Road. If a pair of spotless crane are resident in this general area, they may have been there for some time.

Traditional mainland spotless crane habitat is raupo swamp. On some offshore islands they are commonly found wandering on the dry forest floor under the canopy<sup>22</sup>. In mainland estuaries, their traditional habitat is in the less saline areas of vegetation away from tidal flows<sup>23</sup>. Therefore it was a surprise to positively identify them at CS3, CS8 and CS12 and possibly hear another at CS22. However, due to the limited traditional habitat available at PWMR and Horokiri Reserve, spotless crane here may utilise all available habitat. Further, these areas may be far enough away from the actual foreshore to be less effected by the rise and fall of the tides and therefore the full concentration of salt water.

There are only small patches of raupo swamp in these reserves. Spotless crane were heard in one of these (CS25) and were possibly heard near another (CS13). Efforts should be made to expand the existing raupo swamps present within PWMR and Horokiri Reserve to increase the amount of traditional spotless crane habitat available to enhance opportunities for population growth within these reserves. There are three specific raupo swamps within PWMR where this could be considered. These are the areas between CS19 and CS20, beside CS21 and around CS13. Within Horokiri Reserve, the area around CS24 and CS25 is suitable for expansion. This may mean removing other plant species and planting raupo cuttings in their place.

Horokiri Reserve has suitable habitat for spotless crane including a small raupo swamp. A pair of spotless crane were found there (CS25). As well as expanding this raupo swamp, I would also recommend removing the planted pohutukawa trees from along the stream banks. This includes the stream banks heading out towards the inlet downstream from the bridge (see 5.2 Observations and Comments – Pohutukawa trees below).

I do not believe there is sufficient habitat in Duck Creek or Kakaho Estuary to sustain spotless crane for longer than a fleeting visit. Duck Creek is too small, is subject to flooding particularly during king tides and now has significant earthworks on its southern boundary reducing this greenspace even further. Likewise Kakaho Estuary is too small and does not have sufficient habitat to sustain spotless crane. The drilling and disruption from workman wading through the reserve on a daily basis, will scare any birds away for a considerable period of time.

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<sup>21</sup> Kaufmann, G. W. 1988

<sup>22</sup> Fitzgerald, N. 2013

<sup>23</sup> Davidson, R.J. and Kerr, V.C. 2001, Ogle, C.C. 1981.

This survey may have commenced a month too late with all confirmed and possible records of spotless crane being in the period of census day two to census day five. If spotless crane do not call when incubating eggs, incubation may have commenced for all breeding pairs by mid-September. Non-breeding birds would still be expected to respond to the playing of recorded calls. Not recording any responses after early September may suggest that the population is very small, comprising of only breeding pairs. Does this indicate poor breeding success or poor chick survival or is the population at peak capacity for the habitat available and any juveniles raised must move elsewhere to establish a territory?

## 5.2 Observations and Comments

The focus of this survey was to carry out a census of spotless crane in the Pauatahanui Wildlife Management Reserve, Duck Creek and Horokiri Reserve and Kakaho Estuary. While carrying out this task over a 10 week period, a number of observations were made that I believe are important to record here to inform future discussion about this area.

### Raupo

Efforts should be undertaken to maintain and expand the size of the few remaining small patches of raupo swamp within the survey area. Expanding raupo swamps would also add to the diversity of habitat available within PWMR not only for spotless crane but for other flora and fauna.

The shell embankment and beach at the south western end of PWMR, either side of CS20, has been significantly eroded by wave action and higher sea levels. With the embankment and beach gravels disappearing, the raupo directly behind it has been affected by waves breaking onto it. Already the root system of raupo growing closest to the inlet has been exposed and foliage destroyed. Leaves from plants a little further back have also been flattened. Some shoots appear to be growing back from the exposed root system. This patch of raupo is where David Collingwood reported hearing and seeing spotless crane in 1985<sup>24</sup>.

There is another small patch of raupo swamp beside State Highway 58 towards the south eastern corner of PWMR (at CS21). This patch of raupo swamp is bordered on one side by the highway and within the reserve by flax and rank grasses of various varieties. When walking along the south bank of Pauatahanui Stream (continuing west past the last seat) I came across drainage channels draining water into the stream from areas south of the stream. These channels appeared manmade but did not appear freshly dug. Draining water away from an area of raupo swamp will limit the suitability of habitat for raupo to expand its area of coverage. This is one of the very limited places within PWMR where a raupo swamp can be expanded. I suggest efforts be made to do this here. With no large patches of raupo swamp still present in the PWMR, each patch is vital habitat for spotless crane.

### Pohutukawa trees

Pohutukawa trees' natural habitat is north of a line from New Plymouth across to Gisborne. Vigorous and easy to grow, the tree flourishes well south of its natural range, and has naturalised in the Wellington area<sup>25</sup>. Pohutukawa trees would not have been present within the Pauatahanui Inlet area at the time Europeans first arrived in the mid-19th century. I observed many young pohutukawa trees obviously planted along creek banks and within the reserves possibly as part of the restoration plantings of these reserves. These trees currently range between one and three metres high. There are many of these planted trees within the Horokiri Reserve along the two stream banks and on the banks of the stream leading out into the inlet itself. These trees grow up to 25 metres tall and have a significant root system. They alter the vegetation surrounding them as well as directly under their branches. The trees will compete for water drying out patches of land. They will create clear areas of ground unsuitable for spotless crane. Large trees also effect what other plants can grow nearby. As they get taller, they will shade out other plants. If these trees are left to grow, they will significantly

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<sup>24</sup> Collingwood, D. 1985

<sup>25</sup> Simpson, P.G. 1994



change the natural environment of these reserves and create habitat unsuitable for many of the native inhabitants. I recommend removing these trees before they have a significant impact.

### **Fernbird**

I understand fernbird (*Bowdleria punctata*) is being considered for possible translocation to PWMR. Fernbird is absent from the lower North Island with the exception of a population that exists at Waikanae Estuary. They are poor flyers but on occasion, individual birds have been located many kilometres from known populations<sup>26</sup>. During the literature review, I located several references to fernbird and spotless crane sharing the same habitat<sup>27</sup> and even dueting in calls together<sup>28</sup>. There is a healthy population of Dunnock (*Prunella modularis*) within the PWMR which share a similar diet to fernbird. Once predator numbers are reduced and maintained at low levels, I would suggest considering fernbird for possible translocation to PWMR is a viable option.

### **Rubbish**

During the literature review, I came across articles referring to a community wide annual clean-up of rubbish from around the entire area covered by the Pauatahanui Inlet that took place in the 1980s and 90s. Walking between count sites, I noticed a considerable amount of rubbish in the reserves. This included car tyres well upstream in Ration Creek, orange road cones in Horokiri Stream and bottles, cans and plastic rubbish along the roadsides that had either been thrown or blown into the reserves. I suggest a community clean-up maybe led by Porirua City Council during conservation week or another suitable event, (sea-week) covering the entire inlet with individuals or groups being assigned various areas to ensure thorough coverage. Most of the locations where rubbish is accumulating are within easy access along roadsides.

## **6 Acknowledgements**

Many thanks to Robin Chesterfield (F&B), Reg Cotter (OSNZ), Noel Hayes and Roy Slack (OSNZ) for sharing their personal knowledge and experiences of spotless crane within the Pauatahanui Inlet with me. Their information has added considerably to the completeness of spotless cranes records at this location. I would also like to thank Philippa Crisp and Roger Uys of GWRC and Brent Tandy (DOC) for their assistance in the preparation of this report.

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<sup>26</sup> Fitzgerald, N. 2013.

<sup>27</sup> Parker, K.A. 2004, Bevan, L. 2016

<sup>28</sup> Skinner, J.F. 1979,

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# Appendix 1

Maps of survey area showing locations of each count site

# Greater Wellington



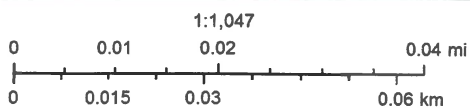
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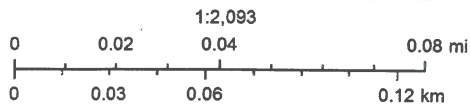
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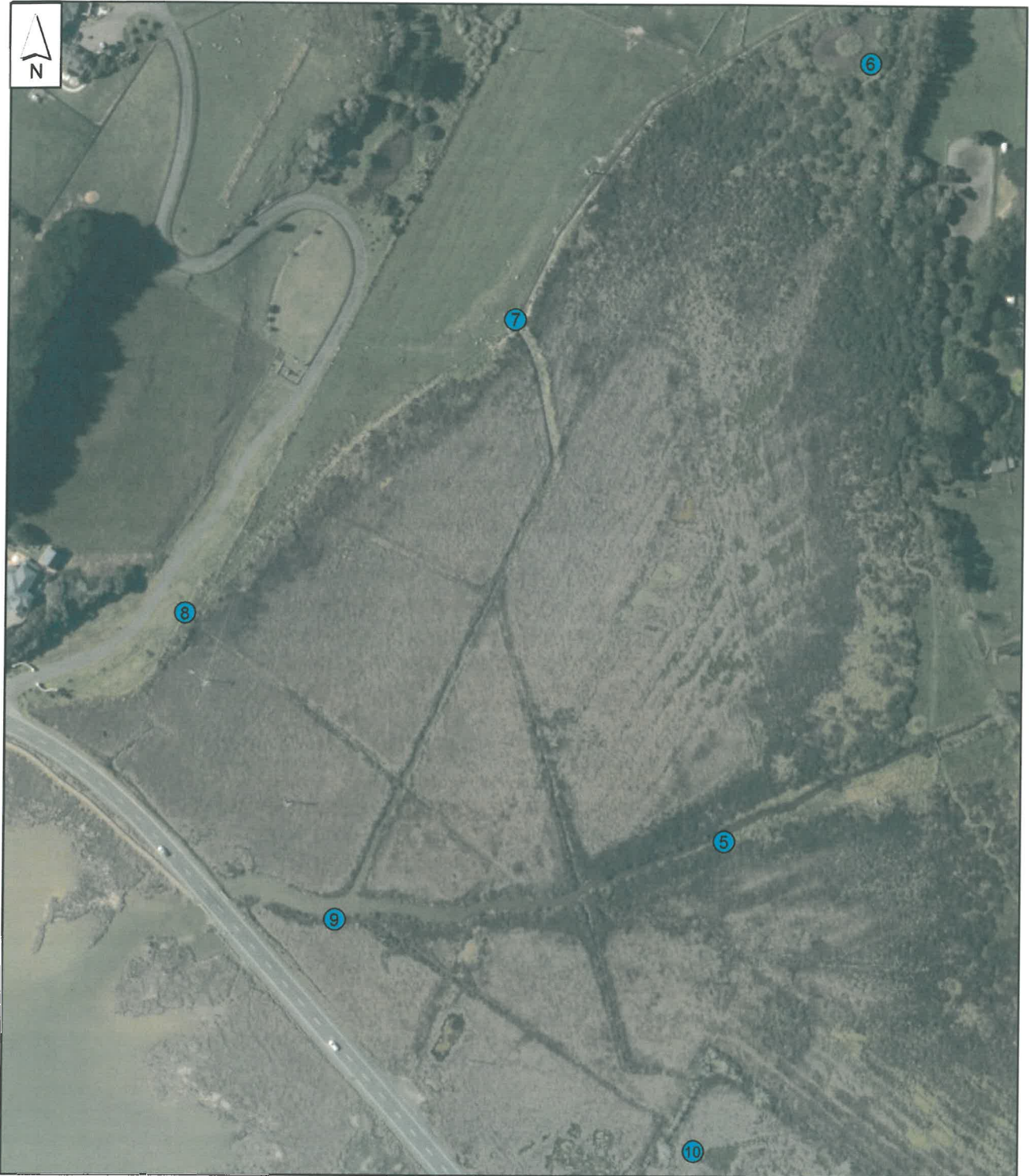
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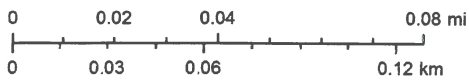
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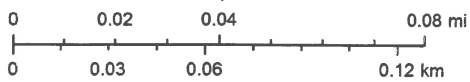
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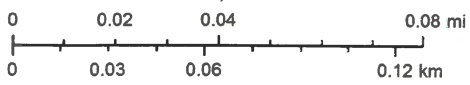
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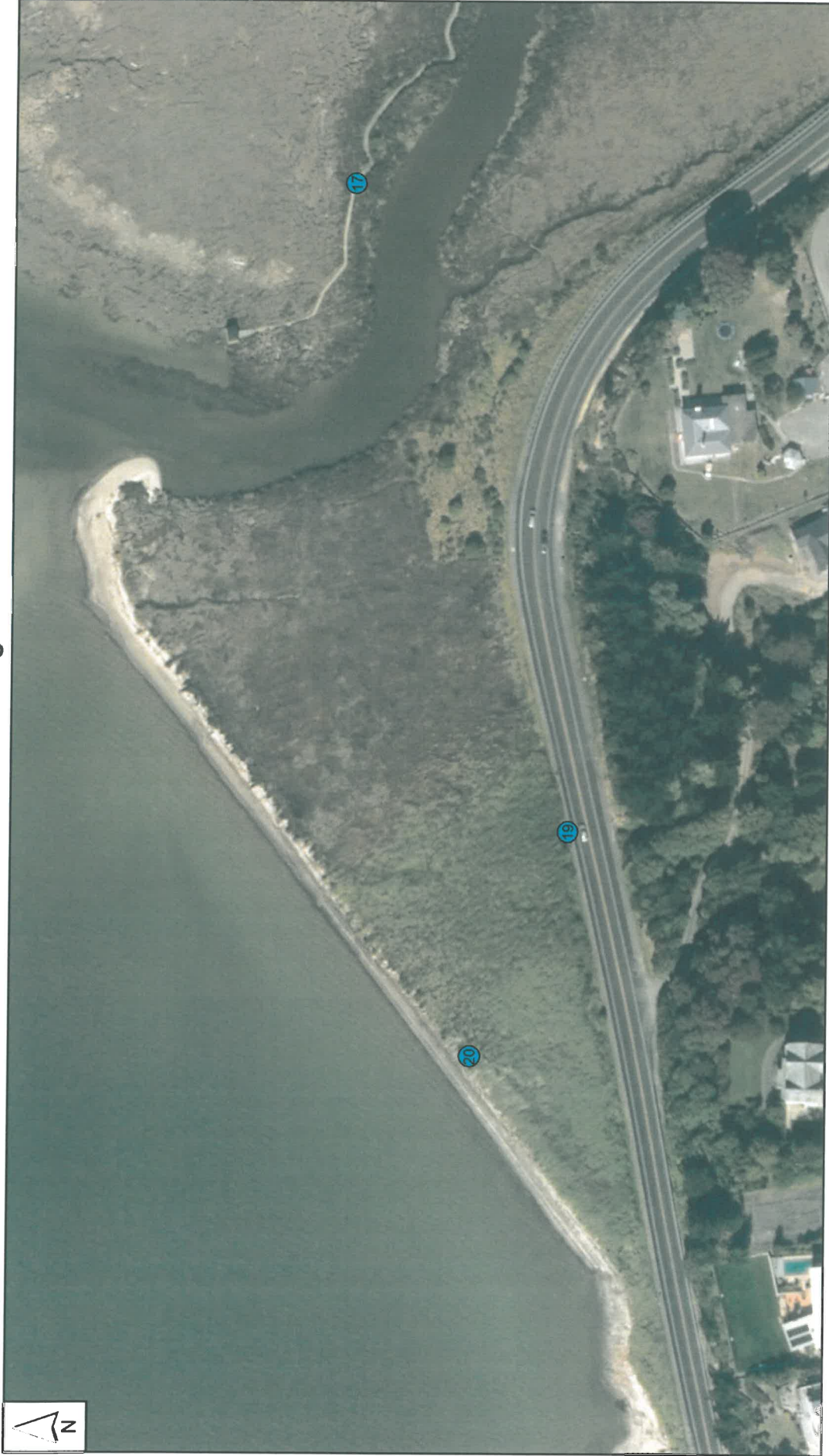
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