greater WELLINGTON
REGIONAL COUNCIL

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Committee **Environment**
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Findings from the Energy, Waste, Built Environment and Transportation work for the State of the Environment Report

1. Purpose

To inform the Committee of the main points emerging from technical reports prepared as part of the development of the State of the Environment Report.

2. Background

Over the last year, officers have been working on technical reports for the State of the Environment Report (SER) which will be published by the end of 2005. Technical reports are being written reporting on the objectives of each of the chapters in the Regional Policy Statement (RPS).

This report covers the findings of works done for three chapters of the SER – Energy, Waste Management and Hazardous Substances, and the Built Environment and Transportation.

3. Energy

The type of energy we use, where we get it from, how we use it and the effects of what we use it for have all become higher profile issues recently. Energy management is at the heart of sustainable development, vital for the economy, comfort, transport and life styles.

The Regional Policy Statement (RPS) recognised the fundamental role of energy, but also some critical characteristics of energy use. The heavy dependence on finite fossil fuels, the associated release of greenhouse gases from using these fuels, and the need to be more efficient in the use of energy from either renewable or finite sources underpinned the objectives for energy management in the RPS.

The objectives sought to:

- Moderate energy demand;
- Be efficient in the production, conversion, transmission and end use of energy;
- Increase the proportion of energy provided by renewable resources; and
- Manage the adverse effects of energy production, conversion, transmission, transportation and end use on local (and global) environmental systems.

These aims were mirrored almost exactly in the National Energy Efficiency and Conservation Strategy, launched by the Government in 2001.

One of the biggest problems foreseen in the RPS was the likely lack of data on the energy system that would allow us to assess whether or not the objectives and associated policies were being achieved. In preparing the technical report on energy for the SER, the absence of useful information has again proved to be a significant issue.

It is an issue at the national scale too. The New Zealand Government needs to have information on energy use to monitor the National Energy Efficiency and Conservation Strategy, and also to track progress on a range of other strategies and agreements such as the National Transport Strategy, the Sustainable Development Programme of Action, and the Kyoto Protocol.

For the Region, there is no consistent, time series data on energy use that can usefully inform us on how we are doing in relation to the RPS objectives and policies. There are one-off data sources (e.g. electricity use, by power companies, for 1993), and there is information that covers an area that approximates to the Region (e.g. the vehicle fuel sales data). Consequently, much of the work that has been used for the SER report on energy has drawn on a very patchy combination of data drawn from diverse sources.

Notwithstanding this basic problem, the data shows some fairly clear trends at national level which are almost certainly replicated in the region. Conclusions and comments from the work are summarised as follows:

1. Total primary energy supply has grown steadily from under 400 petajoules in 1974 to 750 petajoules in 2003.

2. Fossil fuels as a component of primary energy supply, especially oil, have increased significantly over the last 20-30 years, from around 150 petajoules a year in the mid 1980s to 270 petajoules in 2003.

3. Hydro supply has been steady, but other renewable sources still represent the smallest type of supply, and are decreasing both absolutely (slightly) and proportionately (substantially).

4. Energy transformation (converting primary energy to energy "delivered" to consumers) and transmission causes a 33% loss of energy, such that the 750 petajoules of primary energy becomes 500 petajoules of consumer energy. A further major loss occurs when consumer energy is actually used – for New Zealand, 500 PJ of consumer energy becomes approximately 200 PJ of "end use" energy because of the way that technology uses energy and how efficient it is (the loss varies depending on which energy type is being used, and for what purpose, or end use – vehicles, for example, use only 15% of consumer energy).

5. The sector with the worst energy performance is the transport sector, where, for New Zealand, 196 petajoules of delivered consumer energy becomes under 30 petajoules of end use (or effective) energy. Transport fuel is predominantly finite fossil fuel, also contributing significantly to greenhouse gas emissions accounting for 46% of total emissions in 2003, an increase from 40% in 1990. Transport is also the only sector showing significant growth in energy demand, with, for example, an 8% growth in fuel sales in the Region between 1998 and 2004.

6. It is almost impossible to measure improvements in energy efficiency other than at a broad national cross-economy scale and, even here, there are assumptions that make any figure produced little better than a "guesstimate". The National Energy Efficiency and Conservation Strategy is seeking a 20% improvement in efficiency by 2012 and, after 3 years, the figure is between 1% and 2%.

7. Wind turbines are slowly contributing to the renewable energy supply targets in the National Strategy, and are supported by at least one of the objectives in the RPS. The National Strategy target for an extra 30 petajoules of renewable energy per year by 2012 is, nonetheless, not likely to be achieved.

Over the decade since the RPS became operative, there has been a growing awareness of the importance of energy management, reflected in the international, national and local strategies and policies that have been developed. Translating good intention into useful action, and being able to measure the results should be the focus for the next decade.

4. Waste management and hazardous substances

The RPS promotes a waste management framework that focuses on managing waste as a resource rather than as a problem. The objectives are to follow the "waste management hierarchy" – **reduce** quantities of waste generated, **reuse** unwanted materials, **recycle** materials from waste, **recover** resources such as energy from waste, and finally dispose of **residual** waste safely.

The responsibility for waste management lies chiefly with territorial authorities. In accordance with the Local Government Act 2002, they have all prepared waste management plans that set out how waste is managed in their district. The territorial authorities have given us information about the volumes and kinds of solid waste arriving at their landfills and volumes of liquid waste treated and discharged from their sewage treatment plants.

4.1 Solid waste

Annual figures for waste accepted at landfills show that amounts of landfilled waste began decreasing in 2000-01. Most of the overall decrease can be attributed to the separation and composting of green waste, rather than the diversion of materials for recycling. Surveys of the kinds of waste landfilled regionally show that only about a fifth of the kind of materials that can be recycled – glass, plastic and paper – are actually sent for recycling, so more gains in decreasing volumes of waste sent to landfills are possible.

Population trends and the local economy typically drive waste generation, with growing populations and economies generally meaning growing waste production. The good news is that the decrease in solid waste sent to landfills has occurred alongside an increase in the region's population and a Gross Domestic Product (GDP) growth rate of 3.9%. It seems then that we can expect total waste volumes to continue to decrease, as long as territorial authorities continue to compost green waste and divert paper, plastic and glass for recycling. This in turn is dependent on markets existing for the composted and recycled products produced.

4.2 Liquid waste

Sewage effluent is by far the biggest proportion of the liquid waste produced in the region, with almost 200,000 cubic metres produced daily. Almost all of this, 94%, is discharged to water (coastal or freshwater). Of the six municipal sewage treatment plants that discharge to freshwater, four discharge to the Ruamahanga River or one of its tributaries. The nitrogen load on the river from these discharges adds up to about 74 tonnes per year, with most of this coming from the Masterton plant.

Dairy farm effluent accounts for around 3,000 cubic metres per day, almost all of which is now discharged to land. This is a shift from 1995 when around two-thirds of dairy farm effluent was discharged to land. It translates into about 5 tonnes of nitrogen discharged to the rivers annually in 2004, compared with over 75 tonnes of nitrogen in dairy effluent discharged to rivers in 1995.

4.3 Hazardous substances

The direction in the RPS for hazardous substances management is to minimise the potential for adverse effects to arise from their use, storage, transportation and disposal. The territorial authorities and Greater Wellington have made efforts towards achieving this by collecting unwanted hazardous materials at landfills and organising specific collections. The collected hazardous waste is then sent for reuse, treatment or disposal.

Greater Wellington administers a database of sites with a history of using, storing or manufacturing hazardous substances and territorial authority staff have direct access to information on the database. This is to help them make decisions about applications to subdivide or change the land use of land that may be contaminated from historical use. Our records show that they access the database between 300 and 400 times a week.

5. Built environment and transportation

The built environment and transportation chapter of the RPS seeks that urban areas, the built environment and transportation systems are developed so that they use resources efficiently, moderate demand for finite resources and avoid, remedy or mitigate adverse environmental effects. It also seeks that the environmental quality in urban areas is maintained and enhanced. Some of the key findings in this chapter are:

- The pattern of development over the last 5 years shows intensification of central Wellington, "filling in of gaps" in areas of the Kapiti Coast (such as Paraparaumu), urban fringe development, particularly in north Wellington, Whitby and the western hills of Lower Hutt; greenfield development in rural areas around Upper Hutt and in the Wairarapa, and coastal development along the Kapiti Coast and parts of the Wairarapa. (See Attachment).

- Between 1996 and 2001, vehicle ownership has increased at almost three times the rate of population (6% compared with 2.3%).

- A small increase in walking, cycling and public transport use, particularly in Wellington city, and more people working from home. Two-thirds of the population however still travels to work by private vehicle.

- Regional fuel use has increased by 8% between 1998 and 2004. This compares to 21% in Canterbury and 18 % in Auckland.

- The quantity of waste material sent to landfills in the region has decreased (see above).

- Water supply to Upper Hutt, Lower Hutt, Porirua and Wellington cities is gradually increasing. However, per person supply has decreased over the last 10 years. No data is available for other locations in the region.

- Perceived state of the natural environment in the towns and cities in the region is similar to the rest of the country. A higher proportion of Wellington residents, however, perceive that the state is better than five years ago. See Figures 1 and 2 below.

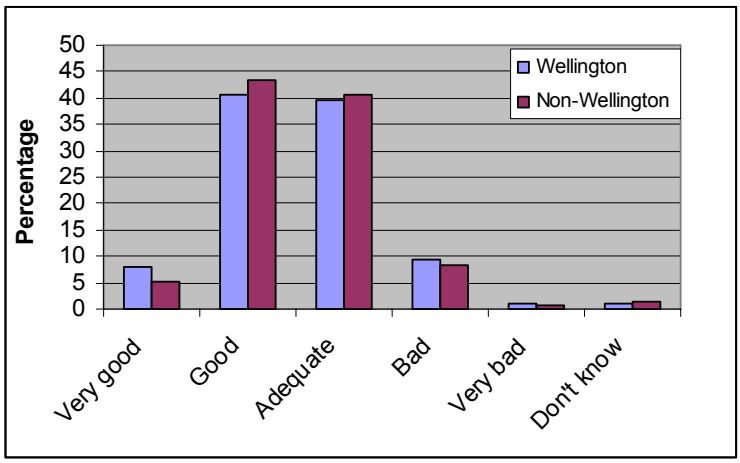

Figure 1: Perceived state of the natural environment in towns and cities, 2004

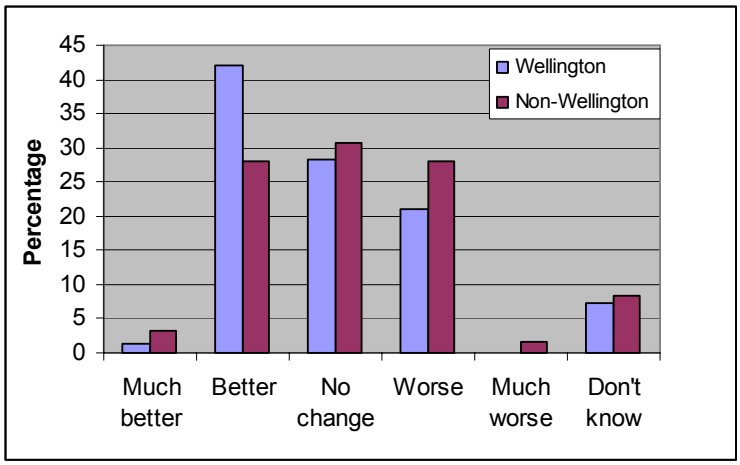

Figure 2: Perceived state of the natural environment in towns and cities compared to five years ago.

- Locations such as Wainuiomata and Masterton experience poor air quality during cold calm conditions when contaminants (principally from domestic solid fuel fires) are not dispersed. The levels are such that they may pose health risks to communities.

- There are a number of coastal recreational water quality sites within, or in close proximity to urban areas, particularly around Porirua City, where the quality is poor or very poor. Stormwater, including sewer overflows during heavy rainfall, and cross connections are considered to be the main contributors.

- Some of the poorest quality streams in the region are in our urban areas. Stormwater runoff, earthworks, and filling in of natural gullies and removal of associated vegetation contribute to the poor quality.

- Urban character in the region has generally strengthened, particularly in central Wellington City, Jackson Street in Petone, Greytown and Martinborough in the Wairarapa.

- The region's linear compact urban form (along the three transport corridors) delivers efficiencies around transport use and connectivity. However, movement along the corridors can be easily disrupted when blockages occur. At a local level, developments are being undertaken that work against local connectivity, due to cul-de-sacs and a lack of pedestrian access.

- No information was available on public amenity of the region's urban areas. The information we do have, however, shows that Wellington City residents have the strongest sense of pride in their city's look and feel compared to other cities in New Zealand.

In the last few years, there has been a number of activities undertaken to better manage transport, energy use, urban design and impacts on the natural environment. At a national level, these include new standards on sustainable subdivision design, guidelines and a protocol on urban design, changes to the transport sector to create more integrated decision making, a New Zealand Transport Strategy and a number of complementary strategies to moderate private vehicle use and reduce effects (principally from air quality), programmes to encourage efficient energy use by the Energy Efficiency and Conservation Authority and new national environmental standards on air quality.

At a regional level, the Wellington Regional Strategy has provided an integrated forum where regional form and systems have been discussed and are looking to be progressed. The Regional Land Transport Strategy review has also been delayed so that it can progress alongside the Regional Strategy. This alignment will provide greater opportunity to better integrate land use and transport issues.

At a local level, district plans generally seek that natural and physical resources are used efficiently and adverse effects are avoided, remedied or mitigated through land use controls. District plans also include provisions that focus on maintaining and enhancing the environmental quality of urban areas. The management of the cumulative effects from a concentration of activities, and quality urban design has, however, been recognised as difficult to achieve through case by case assessment of resource consents in accordance with district plans. As a consequence, territorial authorities have prepared a number of non-regulatory integrated documents to provide guidance and direction on infrastructure, urban design, and/or management of effects. Examples include Wellington City's Northern Growth Management Framework, Porirua City's Aotea Block Development Plan and Kapiti Coast's Paraparaumu Town and Beach Town Centre Urban Development Projects.

6. Communication

A communications plan is being developed for the State of the Environment Report, which will be published in December of this year.

7. Recommendations

That the Committee:

1. ***Receives** the report; and*

2. ***Notes** the content.*

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