greater WELLINGTON
REGIONAL COUNCIL

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Committee	Te Upoko Taiao – Natural Resource Plan Committee
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Regional climate change response

1. Purpose

To update the Committee about Greater Wellington's (GW) response to climate change.

2. Significance of the decision

The matters for decision in this report do not trigger the significance policy of the Council or otherwise trigger section 76(3)(b) of the Local Government Act 2002.

3. Background

The Committee has requested a briefing on climate change and Greater Wellington's response to it.

4. Discussion

4.1 The case for action: what are we responding to?

We are now certain that the earth's climate is changing. The Intergovernmental Panel on Climate Change (IPCC) has stated that it is more than 90% likely that this change is being induced by human activities – what is known as anthropogenic global warming (AGW) caused by emissions of carbon dioxide and other greenhouse gases. The scientific evidence the IPCC uses to reach this conclusion is compelling and while there is a chance the conclusion is flawed, it is unlikely anyone will be able to provide cast-iron answers to the questions that remain any time soon. We cannot afford to wait for such answers – what is at risk is too valuable and the levels of uncertainty are too serious. As prudent risk managers, we must make plans to address climate change.

Since the IPCC made its last major report in 2007 emissions rates have been shown to be rising faster than projected in most of the models they used. This means that the warming, which triggers all the other effects, is making some of the worst-case scenarios the IPCC has developed more likely. This issue of global warming intersects with growing issues of resource depletion due to the exponential increase in the Earth's population – the high probability that we are running out of cheap oil, increasing water shortages and serious risks to food security later this century. These issues also impinge on the trajectory of greenhouse gas emissions.

The National Institute for Water and Atmospheric Research (NIWA) has produced some projections of what the likely climate change effects will be for the various regions in New Zealand and the potential effects in our region are summarised below.

4.1.1 Temperature changes

NIWA mid-range projection for the region by 2100: 2 degrees C warmer

Global temperatures will rise and cause changes in sea level, rainfall and in the intensity of storms. NIWA's mid-range projections for annual average temperatures in the Wellington region show rises of about 1 degree by 2040 and around 2 degrees by 2090. This closely tracks the mid-range projections for global averages.

However, time is running out to control emissions affordably and the commitments of world governments (including New Zealand's), as seen at Copenhagen in December 2009 and elsewhere, are inconsistent with containing global temperature rises at 2 degrees. This policy gap, coupled with the fact that emissions are rising faster than predicted, make it increasingly difficult to achieve the levels of CO2 concentrations in the atmosphere that will hold warming at under 2 degrees compared to pre-industrial averages.

Current expert advice[1] is that adaptation planning should allow for a global average of at least 3.5 degrees increase by 2100.

4.1.2 Sea level rise

NIWA mid-range projection for the region by 2100: 0.8 m – 0.9 m

While NIWA climate scientists are currently projecting a mid-range sea level rise for the region of about 0.8m to 0.9m by the end of this century, *the possibility of greater rises cannot be ruled out.* As a result of such rises, we are likely to see inundation of low-lying areas and increased coastal erosion. Such sea levels will also cause flood waters to back up, seeking an outlet other than the ocean.

[1] Andy Reisinger, Senior Research Fellow, NZ Climate Change Research Institute, personal communication

The effects of sea level rise will be compounded by the effects of storm surge and wave action. The total effects will have significant impacts on infrastructure such as roads, rail links and other vital community infrastructure, as well as low-lying farming land, coastal residential property, water tables along the coasts and fresh water aquifers.

Sea level rise beyond 2100 is uncertain, and to a large extent depends on what action is taken to reduce greenhouse gas emissions globally. A risk management approach would require provision for a range of levels from at least 1 m by 2100, and close monitoring of developments. Internationally, figures of 2 – 4 metres over the next few centuries are being used by planning authorities.

4.1.3 Changes in average rainfall

NIWA mid-range projection for the region by 2100: up to 8% drier in the east and up to 15% wetter in the north-west.

Over the coming century, changes to annual and seasonal rainfall will vary across the region. In very broad terms, the east will probably become at least 8% drier on average, while the north-west will become considerably wetter – at least 15%. Some models NIWA uses suggest more extreme changes than this in both positive and negative directions.

These changes will particularly impinge on water supply, the viability of agriculture as currently practised in the region and possibly forestry.

4.1.4 Storms

NIWA mid-range projection for the region by 2100: more intense storms

Climate models predict more extreme storms as sea temperatures rise, implying higher wind and more rain, although it is presently unclear whether or not storms will become more frequent. In the Wellington region, the risk of extreme rainfalls during single events is likely to increase in general, especially in the Tararuas during north-westerly storms and in the Wellington city area and south Wairarapa during southerly events.

Resulting erosion and stress on built structures will have significant implications for land use, for the design and location of infrastructure and for flood protection in both rural and urban areas.

4.2 Greater Wellington's community response to climate change

Responses to climate change fall into two distinct areas: mitigation and adaptation, i.e. initiatives to limit global warming through greenhouse gas emissions reductions, and changes to cope with the unavoidable effects of climate change. Some responses fall into both camps, e.g. conversion of

marginal pastoral land to forestry, and there are many links between both aspects.

As the Committee is well aware, regional councils in NZ have responsibilities, mandated by legislation, for water and flood, soil, coastal and biodiversity management. These responsibilities mean that they will become key agencies in *adapting* to the physical effects of climate change likely to have most impact in New Zealand – sea level rise, increased storm intensity and changed rainfall patterns - and key partners in limiting potential native species extinctions.

Regional councils' abilities to influence *emissions reductions* are less direct than in the area of adaptation. Their shared responsibility for the planning and provision of public transport can assist with reducing transport-related greenhouse gas emissions although the work commute (which public transport is designed to address) contributes only about 30% of transport-related emissions in the Wellington region. GW also has some channels which can indirectly influence farming practices to reduce agriculture-related greenhouse gas emissions.

Given this greater direct influence in the area of adaptation, the major focus of GW's response to climate change will be on assisting the region's communities to adapt, although it will also continue to do what it can to bring about reductions in emissions.

A strategic response document is currently being developed. It will articulate a strategy for the region on climate change and contain summaries of action plans from each council as they are developed.

Underpinning GW's actions are likely to be the results of a suite of projects investigating the following:

- Areas physically at risk of coastal inundation from rising mean sea levels
- Impacts of intensifying sea storms – higher surges and greater wave heights – on different stretches of coast
- Changed inundation patterns resulting from increasing return rates of serious floods and the interaction with increasing sea levels
- Erosion resulting from increasing storm intensity
- Implications of increasing wind speeds during storms for both built and natural environments
- Increasing drought and rural fire risk resulting from temperature rises and changed seasonal rainfall patterns, particularly in Wairarapa

- Changes to the numbers and distribution of pest species
- Changes to vulnerable ecosystems – wetlands and alpine, in particular
- Changing health risks from elevated temperatures and new disease vectors.

4.3 Underpinning principles

The following set of principles to guide regional actions and decision-making on climate change matters has been approved by GW and will be included in the draft strategy document:

- The region's response to climate change will be a collaborative effort led by local government.
- Different councils may give effect to shared decisions in different ways, as climate change effects will be felt differently in different parts of the region.
- Up-to-date, agreed, regionally specific scientific information will be sought, to serve as a basis for our decision-making and to be shared with local communities.
- As far as possible, existing policy and planning structures will be used as vehicles to give effect to our climate change response.
- Decisions will be proactive and will avoid locking future generations into unaffordable or intolerable choices in their adaptation to climate change.
- Communities will be involved in finding and prioritising creative solutions to problems.
- Climate change response actions will identify and utilise opportunities to improve the environmental, economic, cultural and social well-being of our communities.
- Local authorities will act as strong advocates for our communities with central government, and for climate change action with our communities.
- International experience will inform our decision-making on climate change actions.

5. Conclusion

A great many core business activities of local authorities are related to climate change, whether or not they carry that label. For many years, councils have been charged with ensuring that our environment is managed sustainably and

many of their daily activities are designed to do just that. Councils around New Zealand, and our region is no exception, are already engaged every day in programmes and initiatives which will have positive impacts on greenhouse gas emissions levels and will assist their communities to adapt to climate change.

Our region already has characteristics or systems in place which will make it easier to manage our way through the challenges ahead than for some other regions in New Zealand or, indeed, the world. It is very likely that many of our responses to the challenges posed by climate change will be built on the foundation of systems, mechanisms and characteristics already present in our communities.

6. Recommendations

That the Committee:

1. ***Receives*** *the report.*

2. ***Notes*** *the content of the report.*

Report prepared by:	Report approved by:	Report approved by:
		
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