MARLBOROUGH DISTRICT COUNCIL

MARLBOROUGH ENVIRONMENT PLAN

Section 32 Report

Chapter 19: Climate Change

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Overview

Background

Section 32 of the Resource Management Act 1991 (RMA) requires that in the process of reviewing its regional policy statement and resource management plans, the Marlborough District Council (the Council) must prepare and publish an evaluation report. The three documents being reviewed are the Marlborough Regional Policy Statement (MRPS), the Marlborough Sounds Resource Management Plan (MSRMP) and the Wairau/Awatere Resource Management Plan (WARMP). Each resource management plan is a combined regional, coastal and district plan.

Section 32[1] of the RMA requires that:

- reviewed regional policy statements and plans must be examined for their appropriateness in achieving the purpose of the RMA;
- the benefits, costs and risks of new policies and rules on the community, the economy and the environment be clearly identified and assessed; and
- the written evaluation must be made available for public inspection.

The Section 32 process is intended to ensure that the objectives, policies and methods the Council decides to include in the new resource management framework have been well-tested against the sustainable management purpose of the RMA. The Section 32 evaluation report for the proposed Marlborough Environment Plan[2] (MEP) has been prepared on a topic basis, centred on the policy chapters of Volume 1 of the MEP. Individual reports have been prepared on the following:

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1 See Appendix A.

2 The Marlborough Environment Plan is a combined regional policy statement, regional plan, regional coastal plan and district plan.

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Chapters 1 and 2 of the MEP are not included within the Section 32 evaluation as they provide an introduction and background to the proposed document. These chapters do not include provisions that must be evaluated in accordance with Section 32.

The Introduction report covers the scope of the review that the Council has undertaken, including consultation and the nature of information and analysis that has occurred. An overview of the Council's statutory obligations, the relationship of the MEP with other plans and strategies and working with Marlborough's tangata whenua iwi is described. A set of guiding principles the Council has used in the development of the objectives, policies and methods for the MEP is provided. The Council acknowledges that the principles have no statutory basis and do not in themselves have specific objectives, policies or methods. However, they have been included as the philosophy and values underlying the content of the MEP and consequently help to inform the Section 32 evaluation.

The policy provisions for climate change are included within Chapter 19 of Volume 1 of the MEP. This Section 32 evaluation report on the provisions for climate change is set out as follows:

- Chapter description – this provides an overview of the resource management issues for climate change.
- Statutory obligations – the extent to which there are direct links with Section 6 or 7 matters and whether the provisions are directed or influenced by national policy statements or national environmental standards.
- Information and analysis – whether specific projects or other information have influenced the inclusion of provisions or other responses to dealing with resource management issues.
- Consultation – an overview of the extent and nature of specific consultation undertaken on the proposed provisions.
- Evaluation – an assessment of the provisions under each of the identified issues. Where appropriate, reference is made to supporting material that has helped to inform why a particular option has been chosen. In some cases the evaluation is undertaken on an individual provision, while in others groups of policies or methods have been assessed together.

In some parts of this evaluation report there are references to provisions within other chapters of the MEP. This is due to those provisions assisting in implementing the management framework for the subject matter of this report or vice versa. A reader should consider the evaluation report for these other provisions where they are referred to in this report.

Key changes

The key changes in the MEP from the approach in the MRPS, WARMP and MSRMP are:

- The management response to dealing with climate change being included within one chapter of the MEP rather than through several, which is currently the case for the MSRMP and WARMP.
- Clarification of the role of central government regarding who is responsible for the control of greenhouse gas emissions and a change in the RMA in 2004 to include a new matter

in Section 7, in which the effects of climate change are to be had regard to in achieving the purpose of the RMA.

- Inclusion of a predicted rise in sea level to be taken into account when considering resource consent applications in close proximity to the coastal marine area.
- Updating provisions to give effect to direction included in the New Zealand Coastal Policy Statement 2010 (NZCPS) and National Policy Statement on Freshwater Management 2014 (NPSFM) in relation to climate change and sea level rise.

Summary of reasons for the proposed provisions

Section 32(1)(b)(iii) requires a summary of the reasons for deciding on the provisions included in the MEP. This summary of reasons for the provisions in relation to issues concerning climate change is set out below; however, a more detailed evaluation is set out in the remainder of this report.

- A change to the RMA in 2004 included a specific requirement in Section 7 to have particular regard to the effects of climate change in achieving the purpose of the RMA.
- Primary industries make a significant contribution to Marlborough's economy, although many of these industries rely on sufficient quantities of rainfall or freshwater in rivers and aquifers to supplement rainfall through irrigation. The predicted climate changes could have a significant impact on rural land users through increased risk of drought and decreased water availability. Policy has been included to respond specifically to this potential impact, taking a precautionary approach to further allocation of freshwater resources and setting up a framework to use freshwater more efficiently.
- Along with other provisions of the MEP that recognise the adaptable nature of resource users, policy has been included to ensure that primary industries can adapt to changing climate.
- Clarification has been included to recognise that although central government is responsible for regulating emissions for climate change purposes, the Council can still encourage and promote local responses to reduce emissions. This gives the local community the ability to play a role in responding to a global issue.
- Although there has been considerable research to predict long term climate change internationally and nationally, very few of the research findings have been applied directly to Marlborough's climate. This makes it difficult to establish the likely effects of climate change on natural and physical resources and the ability of people and communities to use these resources. The Council has therefore included a commitment (through policy and methods) to investigate the likely effects of climate change in a Marlborough context.
- Consistent with central government taking a lead role in climate change issues, the Ministry for the Environment has been providing guidance for local government in relation to planning for climate change and sea level rise. In the absence of any locally-based research on predicted levels of sea level rise, the Council has adopted the advice from the Ministry. That advice is to plan for a sea level rise of 0.5 metres relative to the 1980-1999 average as a base value, but that assessments be made of potential consequences from a sea level rise of up to 0.8 metres.
- The NZCPS and NPSFM both contain direction and guidance for local authorities in dealing with climate change issues.

Description of issues

Global temperatures are approximately 0.6 degrees Celsius higher now than they were in the early 1990s. While there is not unanimous agreement, there is now strong evidence that most of the warming observed is attributable to increased concentrations of greenhouse gases produced by human activities. As more gases accumulate in the atmosphere, the Earth gets warmer, resulting in rising sea temperatures and levels, the melting of glaciers and ice caps and greater extremes in weather patterns, such as more storms of greater intensity and longer droughts.

In Marlborough, the National Institute of Water and Atmosphere Research (NIWA) predicts that the mean temperature will increase by approximately 1 degree by 2040 and 2 degrees by 2090. The climate is likely to become drier and the frequency of droughts is expected to increase. There is also a predicted increase in westerly winds, especially in winter and spring.

Section 7 of the RMA requires the Council to have regard to the effects of these predicted climatic changes in exercising its functions under the RMA. Uncertainty about the nature of these effects at international, national and local levels makes this a difficult task. Most projections are also long-term and certainly beyond the ten year life of the MEP. Taking all of this into account, the provisions for climate contained within Chapter 19 of Volume 1 of the MEP focus on applying the best available information to enable people and communities to respond to the adverse and positive effects of climate change. The provisions for Chapter 19 are based on two issues:

Issue 19A – Climate change has the potential to affect Marlborough's natural and physical resources and the ability of people and communities to use these resources.

- Marlborough is vulnerable to long-term changes in climate, as it may affect the nature of many natural and physical resources and our ability to use them. Primary industries make a significant contribution to Marlborough's economy; however, many of these industries rely on sufficient quantities of rainfall or freshwater in rivers and aquifers to supplement rainfall through irrigation. The predicted climate changes could have a significant impact on rural land users through increased risk of drought and decreased water availability.
- Marlborough's natural ecosystems could be vulnerable to the effects of climate change. Some indigenous terrestrial, aquatic and marine species may no longer be able to survive here. Warmer temperatures may also have significant biosecurity implications. Sub-tropical diseases may become a problem if carrier insects become established and rising average temperatures could lead to the wider establishment and spread of new and/or existing pests.
- Climate change may create new opportunities, with Marlborough becoming more suited to growing other crops. Changes in climate may also create the opportunity to develop new ways to produce renewable energy.
- Climate change predictions anticipate positive and negative effects in terms of public health. Warmer winters may alleviate cold-related illnesses and reduce energy consumption during winter months. In contrast, hotter summers may cause heat stress while drier and windier conditions could create more dust and affect sufferers of respiratory disease.
- The predictions of climate change at a national level involve significant uncertainty and little work has been undertaken to apply these national predictions to Marlborough's climate. This makes the task of responding to the effects of climate change in Marlborough difficult. This situation is complicated further by the fact that New Zealand and Marlborough are subject to natural climate variations associated with La Nina/El Nino and the Interdecadal Pacific Oscillation. These natural variations will be superimposed on human-induced long-term climate changes.

Issue 19B – Climate change could affect natural hazards and create a coastal inundation hazard associated with sea level rise.

- The predictions of climate change include predictions of more extreme weather events. For the east coast of the South Island, including Marlborough, this means drier conditions and an increase in the incidence of drought. Drier conditions will subsequently increase the risk of fire. Climate change may also result in a change in the frequency of extreme rainfall events. To date, there is no indication that severe Marlborough rainfall events are increasing, though average global temperatures have clearly risen over the last ten years. However, any increase in frequency of such events could lead to more frequent and severe flooding. This would see an increase in costs associated with stock losses, increased soil erosion and damage and disruptions to farm operations.
- Global warming is expected to result in a sea level rise of around 0.18 to 0.59 metres by 2090. This rise potentially increases the risk of inundation at the coast. Coastal erosion could also become more prevalent, increasing the need for coastal protection measures. Along the south Marlborough coast the risks of coastal inundation are considered to be low. However, the risks are far greater in the Marlborough Sounds where settlements and associated jetties and access tracks tend to be near the water edge.
- More frequent extreme weather events would pose a significant risk to regionally-significant infrastructure such as buildings, roads, water, sewage, electricity transmission and communication systems.

Statutory obligations

Section 7(i) of the RMA requires that particular regard shall be had to *"the effects of climate change".* Two other Section 7 matters may also be relevant in the consideration of matters related to climate change. These are:

- "(ba) The efficiency of the end use of energy;… and
- (j) The benefits to be derived from the use and development of renewable energy."

The Ministry for the Environment is responsible for leading the development, coordination and implementation of whole-of-government climate change policy. Responsibilities for this include:

- leading the monitoring and development of emissions trading legislation and regulations;
- coordinating central government's adaptation work programme; and
- reporting on greenhouse gas emissions under both the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

Other government agencies also carry a range of climate change functions, especially in response to adapting to the effects of climate change.

Central government has made it clear that control of the emissions that contribute to climate change is a matter for central government, rather than local government. This is reflected in Section 70A of the RMA, which states that in:

"…making a rule to control the discharge into air of greenhouse gases under its functions under section 30(1)(d)(iv) or (f), a regional council must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases, either—

(a) in absolute terms; or

(b) relative to the use and development of non-renewable energy."

However, there are situations where the actions of the Council to resolve another issue have beneficial effects in reducing emissions. For example, improved public transport systems and compact urban form should have the effect of limiting fossil fuel use. The Council has advocated compact urban form as a means to help reduce the use of fossil fuels (see Policy 17.6.3).

Sections 30 and 31 of the RMA also set out a range of statutory functions for the Council that enable it to establish management frameworks in response to the identified issues.

There are two national policy statements that have direction for councils in dealing with climate change issues.

New Zealand Coastal Policy Statement 2010

The New Zealand Coastal Policy Statement 2010 (NZCPS) recognises that one of the key issues facing the coastal environment is that of "*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."*

There is a risk-based approach to coastal hazard management in the NZCPS through Policies 24-27. This approach is reinforced in Policy 3 of the NZCPS by the requirement to apply a precautionary approach to address climate change and its uncertain, but potentially significant, adverse effects. All coastal hazard policies flow from Objective 5 in the NZCPS, which states:

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.

For climate change and corresponding sea level rise, the other objectives and policies of the NZPCS that contain direction to address these issues are as follows:

- Objective 4 aims (amongst other things) that the potential for coastal processes to restrict access to the coastal environment, including those likely to be affected by climate change, is recognised.
- Policy 4 (on the integrated management of natural and physical resources in the coastal environment) requires particular consideration of situations where 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.
- Policy 10 (on reclamation and declamation) for which particular regard is to be had to the potential effects on the site of climate change, including sea level rise.
- Policy 18 (in providing for public open space) requires consideration of 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.
- Policy 19 requires the identification of opportunities to enhance or restore public walking access, including where the long-term availability of public access is threatened by erosion or sea level rise.

National Policy Statement on Freshwater Management 2014

The National Policy Statement on Freshwater Management 2014 (NPSFM) states that New Zealand faces challenges in managing freshwater to provide for all of the values of freshwater (quality, health, availability and economic value) that are important to New Zealanders. These challenges are likely to increase over time due to the impacts of climate change.

The Council must set freshwater quality limits and environmental flows and/or levels for all freshwater management units in Marlborough in order to give effect to the objectives of the NPSFM. Amongst other things, in setting these limits and flows regard must be had to the reasonably foreseeable impacts of climate change. Guidance to assist in determining the reasonably foreseeable impacts of climate change and the matters to consider when setting limits is contained within guidance material prepared by the Ministry for the Environment.

Information and analysis

No specific investigations or research on climate change was undertaken by the Council to inform the provisions of Chapter 19. Information already held by the Council, along with best-practice guidance material prepared for councils by the Ministry for the Environment, was used to prepare the provisions. There was also specific guidance prepared by the Ministry with recommendations on projections of future sea level rise.

Consultation

Early consultation

In 2006, the first round of consultation was initially undertaken solely for the review of the MRPS and saw the distribution of a community flyer to all ratepayers advising of the review. The aim of this exercise was to find out the community's views on the most important resource management issues that Marlborough would face over the next ten years. Approximately 380 responses were received, although a very limited number of responses were made on climate change issues. Those who did respond stated that specific consideration needs to be given to the impacts of climate change now, including impacts of changing weather patterns, especially reduced rainfall on the east coast, extreme weather events and the potential impacts on ecosystems and land use.

Following this initial consultation, in late 2007 a series of discussion papers were prepared by the Council for public feedback to help focus on the issues to be included in the new regional policy statement. Two of these discussion papers are particularly relevant to this Section 32 evaluation report: *Discussion Paper 5: Water Allocation* and Use; and *Discussion Paper 12: Natural and Other Hazards*.

In total, 49 responses were received from individuals, iwi, industry groups and environmental groups on *Discussion Paper 5*, with a specific issue included on climate change. This issue highlighted that Marlborough frequently experiences extremes in climatic events (e.g. droughts) and that this is expected to increase significantly during this century. Comments received on this issue through the feedback included:

- A high level of concern was expressed on the potential effects of climate change on water availability in Marlborough.
- Further investigations are required before any provisions can be included in the regional policy statement. It was also suggested that care needs to be taken when reviewing flow records and identifying changes, as they may not be related to climate change.
- It was suggested that the effects of climate change on water availability should be tied to the duration of water permits, with those water takes likely to be affected given a significantly shorter duration.
- Several respondents suggested that it was important to have flexibility to adjust and respond to climate change effects. Others felt there was an obvious link to the need for water storage, as this would assist to counter the effects of climate change.
- Several respondents were concerned at the inference in the discussion paper that the Council was only looking 10 years ahead. The Council was encouraged to take a longer-term approach.

For *Discussion Paper 12*, a single issue on adapting to the implications of climate change identified that, in order to reduce the impact of climate change, society as a whole must reduce greenhouse gas emissions. At this level the discussion paper noted that there was little a regional policy statement could do other than support central government initiatives in reducing emissions. However, a second side to this issue was that the Council is legally required to manage the effects of climate change under the RMA. While projections had been made in terms of possible changes to Marlborough's climate, the exact nature of the effects of climate change is uncertain, making it challenging for the Council to respond.

In all, 35 responses from individuals, iwi, industry groups and environmental groups were received on the discussion paper and overview document on natural and other hazard issues. The issue on climate change received the greatest response of any of the issues included in the discussion paper. Comments received on this issue included:

- Several respondents suggested that the discussion paper had understated the significance of climate change. One response stated that climate change is the most profound resource management issue facing humankind and that it should have a section in the regional policy statement in its own right. Another stated that "Global warming will be the one single issue that will dominate world, national and local politics for at least a couple of generations."
- Some respondents expressed concerns that the climate change issue appeared to be isolated from other issues in this and other discussion papers. They argued that climate change affects many factors that it is important the responses on other issues take into account the impact of climate change. For example, a link between climate change and energy management was highlighted. Some considered the regional policy statement should underline the need to develop and promote renewable energy generation, especially Marlborough's considerable solar energy potential.
- Others made the link between climate change and the frequency and severity of natural hazards, especially flooding. It was suggested that upgrading and strengthening flood defences should be enabled through the regional policy statement so that the Council can deal with flood events caused by climate change. Another respondent suggested there could be more severe flood events in the smaller catchments that flow through urban areas due to higher intensity storms.
- It was also suggested that local actions were making the effects of climate change worse. For example, the loss of shelterbelt trees was said to lead to an increase in wind speed resulting in increased evaporation.
- The Marlborough Regional Development Trust suggested that the Council should model the local effects (including economic effects) of climate change to reduce the level of uncertainty. Several others argued that the Council should not simply plan to deal with the implications of climate change, but should be acting locally to reduce Marlborough's carbon footprint by reducing emissions. It was suggested that Marlborough could be a leader in this regard. One example was a suggestion to establish a working group to explore opportunities for emissions reduction and carbon sequestration locally.

Later consultation

Early in the review process, the Council decided on an iterative approach in developing provisions for the MEP. This sought to test as many of the provisions as possible before the new resource management documents were formally notified under the First Schedule of the RMA. The rationale for this was that the greatest flexibility for change to provisions exists prior to notification of a proposed document; once notified, only those provisions submitted on can be changed and then only within the scope of those submissions. The Council therefore established a number of focus groups with the task of reviewing the provisions to discuss their likely effectiveness or otherwise. The aim was to have as much community participation as possible in developing the provisions to reflect the community's views and to resolve any substantive issues prior to notification.

For the climate change provisions specifically, initial drafting saw both the energy and climate change issues grouped within the one chapter. The only group that considered the early draft was the Energy Focus Group. A later decision was made to separate the two sets of issues, with each having its own chapter in the MEP. The climate change chapter was amongst the last to be drafted for the review and benefitted from having the management approaches refined as a consequence of consultation undertaken for water allocation and natural hazard issues. Section 32 evaluation reports have been prepared on each of these issues and the reader should refer to those reports for more detail.

Evaluation for Issue 19A

Issue 19A – Climate change has the potential to affect Marlborough's natural and physical resources and the ability of people and communities to use these resources.

Appropriateness of Objective 19.1

Objective 19.1 – Mitigation of and adaptation to the adverse effects on the environment arising from climate change.

Relevance
Section 7(i) of the RMA requires that particular regard shall be had to *"the effects of climate change."* Two other Section 7 matters may also be relevant in the consideration of matters related to climate change. These are:

- "(ba) The efficiency of the end use of energy;… and
- (j) The benefits to be derived from the use and development of renewable energy."

The NZCPS and NPSFM both contain direction in relation to climate change, including in response to sea level rise, so the objective is clearly within the scope of higher level documents. The objective is also clearly directed towards addressing the resource management issue in which it is recognised that Marlborough is vulnerable to any long-term changes in climate, particularly as the use of Marlborough's natural and physical resources, especially land and freshwater resources, is dependent on climate.

Feasibility
The predictions of climate change at a national level involve significant uncertainty and little work has been undertaken to apply these national predictions to Marlborough's climate. This makes the task of responding to the effects of climate change in Marlborough difficult. However, it is generally accepted that temperatures will be higher, weather events will be more extreme, rainfall levels will decrease and sea levels will rise.

Guidance prepared by the Department of Conservation for implementing the NZCPS highlights that the drivers and impacts of climate change are uncertain and complex. When combined, these factors create a high degree of uncertainty about the likely effects of climate change on the environment and people. This is why Policy 3 in the NZCPS promotes a precautionary approach to managing activities in the coastal environment; the effects of those activities are uncertain, but potentially significantly adverse. Adopting such an approach is considered better to assist the establishment of more durable adaptation responses over time.

The Council does not hold all the powers, skills and resources necessary to achieve the objective. Some of the powers and resources will come from central government, especially in relation to reducing greenhouse gas emissions. Additionally, the Ministry for the Environment's website states that central government is spending approximately $100 million over 10 years on research and projects relating to adapting to climate change. This will assist local councils in identifying impacts and implementing effective adaptation solutions.

The Council has a range of powers to implement management of the effects of climate change, including direction provided within the NZCPS and the NPSFM. The Council also has extensive information of and experience in monitoring river flows, aquifer levels, climate and flood flows. This includes a reasonably long record, which assists in establishing long-term climate trends. This information will help to establish strategies for the allocation of freshwater and in response to more prolonged periods of drought.

Acceptability
Feedback on *Discussion Papers 5* and *12* showed support for the Council to include a management response within the regional policy statement to deal with the effects of and adaptation to climate change. Lately the community has raised concerns over the effects of climate change, including through the processing of resource consent applications.

The objective is one of mitigation and adaptation and in itself is not likely to result in unjustifiably high costs to the community. The aim is to have flexibility in approaches, which should mean costs are minimised. Ultimately however there could still be high costs for the community if climate change effects do significantly impact on primary production for example.

Assessment of provisions to achieve Objective 19.1

Policy 19.1.1

Policy 19.1.1 – Promote actions within Marlborough to reduce or offset carbon emissions.

Benefits
The benefit of Policy 19.1.1 is that is recognises there are limitations in what the Council can do in regulating emissions for climate change purposes (Sections 70A and 104E of the RMA). The policy advocates for the Council to explore opportunities for supporting central government policies and (where appropriate) to promote methods that address climate change problems within New Zealand's national policy framework for climate change. Some of these opportunities have been set out in the methods of implementation.

Costs
As Policy 19.1.1 is one of promotion rather than regulation, no significant costs should arise from its implementation. Some of the methods that can be used are already in place, such as the Marlborough Regional Land Transport Plan and the Marlborough Walking and Cycling Strategy.

Efficiency
The policy is efficient as it focusses on non-regulatory responses to help in reducing carbon emissions at a relatively low cost.

Effectiveness
The policy is as far as the Council can go in formally expressing a desire to assist in reducing carbon emissions without being inconsistent with the provisions of Section 70A of the RMA. It could be argued that this policy will not be particularly effective in helping to achieve Objective 19.1 as it does not directly addresses matters concerning mitigation of or adaptation to adverse effects of climate change. However, it has been included as a means to enable Marlborough's people and communities to play their part in responding to this global issue.

Policy 19.1.2

Policy 19.1.2 – Improve the community's understanding of the potential effects of climate change on the Marlborough environment.

Benefits
Although there has been considerable research to predict long-term climate change internationally and nationally, very few of the research findings have been applied directly to Marlborough's climate. This makes it difficult to establish the likely effects of climate change on natural and physical resource and the ability of people and communities to use these resources. It is therefore desirable to investigate local climate change, especially as Marlborough contains two distinct climate zones: a wetter climate north of and including the Richmond Range and a drier climate south of the Richmond Range. The findings gained from research initiated through Policy 19.1.2 can be applied to better understand the potential implications of climate change in a Marlborough context.

Costs
There will be costs associated with any Marlborough specific research. However, given the direction at a national level through the NPSFM and NZCPS to address climate change and related sea level rise, this is considered a necessary whole-of-community cost. Increasing knowledge of the implications of climate change for Marlborough should result in a whole-of-community benefit.

Efficiency and Effectiveness
The policy is considered efficient and effective because if the wider community has a better understanding of the implications of climate change and how it may affect them, they can be more

responsive to making changes. For this reason the policy will be important in helping to achieve the objective. It is not considered likely that the issue will be solved, given that it is a global issue; however, it is possible to address it in part by responding to changes in how Marlborough's natural and physical resources are used.

Policy 19.1.3

Policy 19.1.3 – Enable primary industries to adapt to the effects of climate change.

Benefits

Farmers and foresters are inherently adaptable resource users and it is likely that their adaptability will need to continue into the future as changes in climate begin to affect their ability to use land and freshwater resources. Responses to increased temperatures and reduced water availability may require modifications to farming practices or diversification of crops or stock types. Increased temperatures and reduced frost risk may also create opportunities to produce crops not previously grown in Marlborough. Similar opportunities could exist for the aquaculture industry as a result of increasing sea water temperatures. As Marlborough's economy is based on these primary industries, it is important that such adaptations can be made. The policy provides for this to occur.

Costs

It is not considered that Policy 19.1.3 will result in high costs, as it is intended to provide flexibility for resource users to be able to adapt to changes in climate. There could well be a higher cost, both environmental and economic, if a flexible approach was not adopted.

Efficiency and Effectiveness

The Council has kept a reasonably flexible approach to primary industries through the frameworks of the MSRMP and WARMP in respect to land-based industries associated with farming and forestry. This has proven to be an efficient and effective management response to a range of issues. Regarding the challenges posed by climate change, the Council has continued with an enabling approach to most forms of farming and forestry. (There are some exceptions to this, where other resource management issues have necessitated a more regulatory response such as that for dairy farming or forestry in the Marlborough Sounds.)

Policies 19.1.4 and 19.1.5

Policy 19.1.4 – Take a precautionary approach to the allocation of additional freshwater resources and where freshwater has already been allocated, ensure that the allocation reflects the status of the resource.
Policy 19.1.5 – Ensure that the freshwater that is available for out-of-stream use is allocated and used efficiently, by: (a) requiring that the rate of water use authorised by water permit be no more than that required for the intended use, having regard to the local conditions; (b) enabling the transfer of water permits between users within the same Freshwater Management Unit; and (c) enabling the storage of water for subsequent use during low flow and low level periods.

Benefits

One of the significant risks of climate change locally is that Marlborough's climate may become drier, with droughts becoming more frequent and longer in duration. If this happens, it is essential that available freshwater resources are allocated and used efficiently to ensure that the social and economic benefits that can be derived from the available freshwater are maximised. Policy 19.1.4 highlights it is important that an element of precaution is applied to allocation of additional freshwater resources, especially if climate change reduces sustainable yield in the future. Access to freshwater may become unreliable to the extent that people cannot make a return on the investments made.

As part of the efficient approach to the use of freshwater resources, the matters specified in Policy 19.1.5(a) and (b) target efficient allocation and use. The intent is to ensure that freshwater is not unnecessarily "locked up" in paper allocation when it could benefit existing or potential users. If water availability declines over time due to reduced river flows or aquifer levels brought about by decreased

rainfall, then storing freshwater would be an effective means of retaining reliability of supply. As set out in (c), this policy enables the taking of freshwater during periods of higher river flow. Stored water can then be used during periods of low river flow when access might otherwise be restricted. The matters set out in (b) and (c) will result in more resilient communities as they reduce the vulnerability of resource users to decreased freshwater availability brought about by climate change.

Costs
There may be costs associated with the precautionary approach of Policy 19.1.4. Decreased freshwater availability through climate change could see a reduction in existing allocations, which could have significant effects on the social and economic wellbeing of the community. There will be costs associated with setting up the transfer system proposed through Policy 19.1.5(b) to enhance water use. However, this is considered justified in aiming for more efficient use of freshwater resources and should make it simpler for resource users to transfer water to where it is needed most.

Efficiency and Effectiveness
Policy 19.1.5 particularly focusses on efficient use of available freshwater resources and the framework for that to occur is set out in (a) to (c) of the policy. Systems are being developed (such as the transfer of water permits), which will mean that freshwater can be moved to where it may be needed most. This approach is efficient and effective as it removes barriers to enable resource users to more efficiently use available freshwater. It is important that readers of this Section 32 evaluation report also consider the provisions for allocation of freshwater resources that are set out in Chapter 5 of Volume 1 of the MEP, as Chapter 5 provides more detail on the policy responses for efficient use of freshwater resources. The relevant Section 32 report should also be considered.

Methods of implementation

The most significant changes in the methods of implementation from the current MRPS and the two resource management plans are: the inclusion of a method for the Council to investigate its own operations to establish a carbon footprint; consideration of (in the review of the Marlborough Regional Land Transport Plan) provisions to reduce emissions of greenhouse gases; and, in reviewing the Marlborough Walking and Cycling Strategy, the promotion of modes of transport that do not rely upon fossil fuels. These are all non-regulatory responses that will help in the mitigation of and adaptation to the adverse effects on the environment arising from climate change, as set out in Objective 19.1. Other methods such as research, information and rules are similar to those already in the MSRMP and WARMP, but have been reviewed to reflect changes in approach to dealing with climate change issues.

Evaluation for Issue 19B

Issue 19B – Climate change could affect natural hazards and create a coastal inundation hazard associated with sea level rise.

Appropriateness of Objective 19.2

Objective 19.2 – Avoid and mitigate the adverse effects of natural hazards influenced by climate change.

Relevance
Section 7(i) of the RMA requires that particular regard shall be had to *"the effects of climate change."* The NZCPS and NPSFM also both contain direction in relation to climate change, including responses to sea level rise, so Objective 19.2 is clearly within the scope of higher level documents. The objective is also clearly directed to addressing the resource management issue, where it is recognised that climate change could affect natural hazards and create a coastal inundation hazard associated with sea level rise.

The objective has a close association with the provisions in Chapter 11 - Natural Hazards (Volume 1 of the MEP), as these provisions also seek to avoid and mitigate the adverse effects of natural hazards. Objective 19.2 recognises that the severity and/or frequency of those natural hazards could potentially increase as a result of climate change. In these circumstances, any additional adverse effect should likewise be avoided or sufficiently mitigated.

The Council has specific regional functions in Section 30(1)(c)(iv) for the control of the use of land for '*the purpose of the avoidance or mitigation of natural hazards*' and, in Section 30(1)(g)(iv) in relation to any bed of a water body, the control of the introduction or planting of any plant in, on, or under that land, for '*the purpose of the avoidance or mitigation of natural hazards.*' The Council also has a district function related to natural hazards in Section 31(1)(b)(i) for the control of any actual or potential effects of the use, development or protection of land, including for the purpose of '*the avoidance or mitigation of natural hazards.'*

Feasibility
The evaluation for feasibility is the same as for Objective 19.1 and is repeated here.

The predictions of climate change at a national level involve significant uncertainty and little work has been undertaken to apply these national predictions to Marlborough's climate. This makes the task of responding to the effects of climate change in Marlborough difficult. However, it is generally accepted that temperatures will be higher and more extreme, rainfall levels will decrease and sea levels will rise.

Guidance prepared by the Department of Conservation for implementing the NZCPS highlights that the drivers and impacts of climate change are uncertain and complex. When combined, these factors create a high degree of uncertainty about the likely effects of climate change on the environment and people. This is why Policy 3 in the NZCPS promotes a precautionary approach to managing activities in the coastal environment; the effects of those activities are uncertain, but potentially significantly adverse. Adopting such an approach is considered better to assist the establishment of more durable adaptation responses over time.

The Council does not hold all the powers, skills and resources necessary to achieve the objective. Some of the powers and resources will come from central government, especially in relation to reducing greenhouse gas emissions. Additionally, the Ministry for the Environment's website states that central government is spending approximately $100 million over 10 years on research and projects relating to adapting to climate change. This will assist local councils in identifying impacts and implementing effective adaptation solutions.

The Council has a range of powers to implement management of the effects of climate change, including direction provided within the NZCPS and the NPSFM. The Council also has extensive information of and experience in monitoring river flows, aquifer levels, climate and flood flows. This includes a reasonably long record, which assists in establishing long-term climate trends. This information will help to establish strategies for a) the allocation of freshwater and b) in response to more prolonged periods of drought.

Acceptability
Feedback on *Discussion Papers 5* and *12* showed support for the Council to include a management response within the regional policy statement to deal with the effects of and adaptation to climate change. Lately the community has raised concerns over the effects of climate change, including through the processing of resource consent applications.

There could well be costs to individuals within the community, however the extent of these costs will largely be determined by the location of the activity and its susceptibility to existing natural hazards and, potentially, sea level rise. This may mean in some cases that consent is refused for an activity or that additional costs may be incurred through mitigation. However, community costs such as property damage and loss of human life could be widespread if the issue is not adequately dealt with.

Assessment of provisions to achieve Objective 19.2

Policy 19.2.1

Policy 19.2.1 – Monitor flood hazard on an ongoing basis.

Benefits
The magnitude and incidence of flooding may increase in response to climate change, particularly as predictions of more severe rainfall events are likely. Policies in Chapter 11 - Natural Hazards establish a framework for reducing the risk of flooding adversely affecting communities. This is achieved by mapping the known and predicted flood risk areas and applying appropriate management to activities

within those areas. Policy 11.1.16 provides more detail on this matter. One of the main benefits of including Policy 19.2.1 is that it reinforces the integrated nature of the MEP and it signals a commitment to ongoing monitoring that may ultimately result in changes being made to the MEP in the future to deal with flood hazard issues, as flood risk may change over time in response to climate change.

Costs
There is no additional cost from including this policy in the MEP as a response to dealing with climate change issues. The costs have already been assessed in relation to the Chapter 11 policy approach for monitoring flood hazards. In addition, the Council has a long history of monitoring for flood hazards and has- committed considerable resources to this activity through the Long Term Plan.

Efficiency and Effectiveness
Policy 19.2.1 is considered both efficient and effective. Chapter 11 has already set out the Council's approach in response to flood hazard issues and therefore using the same response to deal with climate change issues is considered efficient. No additional costs will be incurred from including this policy in Chapter 19 than already exists within the provisions of Chapter 11. The policy is effective in that having adequate information through monitoring means that appropriate management can be applied to areas with known flood hazard and predicted flood risk. This is also efficient in that management is not being applied to areas that do not have a flood hazard risk.

Policy 19.2.2

Policy 19.2.2 - Avoid any inundation of new buildings and where appropriate infrastructure within the coastal environment by ensuring that adequate allowance is made for the following factors when locating, designing and/or constructing any building or infrastructure:

(a) rising sea levels as a result of climate change of at least 0.5 metres relative to the 1980-1999 average; and

(b) storm surge.

Benefits
In 2013, the International Panel on Climate Change determined that it is very likely that the rate of global mean sea level rise during the twenty-first century will exceed the rate observed during 1971–2010 due to increases in ocean warming and loss of mass from glaciers and ice sheets. The Ministry for the Environment advises local government (for planning and decision timeframes out to 2090-2099) to plan for a sea level rise of 0.5 metres relative to the 1980-1999 average as a base value, but suggests that assessments be made of potential consequences from a sea level rise of up to 0.8 metres.

The Council has opted to use the 0.5 metre measurement as a minimum, particularly as buildings have a minimum design life of 50 years and property titles have an indefinite life. It is therefore important that any new building is located, designed and/or constructed having regard to the long-term risk of inundation as a result of sea level rise. This approach is also appropriate for infrastructure located in the coastal environment that is not intended by design to be subject to inundation, including through storm surges.

It is important to note that this policy will only be applied to the determination of resource consent applications. Rules elsewhere in the MEP require buildings to be set back from the coastal marine area for other reasons. This in itself will act to protect buildings from the adverse effects of sea level rise and/or storm surge. However, when applications are made to establish a building within this setback, then the policy will be able to be applied.

Costs
As indicated above, the policy is only to be applied in the determination of resource consent applications, where costs are already being incurred. However, there could be additional costs for an applicant in having to mitigate the effects of natural hazards influenced by climate change, or even the possibility that the consent will be refused if the effects are considered too significant.

Efficiency and Effectiveness
The Council currently has setbacks in place for activities and buildings in close proximity to the coastal marine area so there is already some measure of protection to deal with the impacts of sea level rise and storm surge. However, whether the policy is efficient or effective will only become known when there is recorded sea level rise and monitoring shows that buildings and infrastructure are not inundated.

Methods of implementation

The methods of implementation included to respond to these policies are similar to that of the current resource management plans. Research, monitoring and the use of district rules are all appropriate responses to dealing with the issue. Very little specific, Marlborough-based research has been undertaken to date to determine areas along the Marlborough coast likely to be susceptible to inundation. However, the Council is intending to undertake investigations using the International Panel on Climate Change's most recent projections of sea level rise.

Other options considered to achieve Objectives 19.1 and 19.2

Only one other reasonably practicable option was considered by the Council to achieve Objectives 19.1 and 19.2. This was the status quo in terms of the existing provisions of the MRSP, MSRMP and WARMP.

There are some similarities between the current framework of the MRPS, MSRMP and WARMP when compared with the provisions included in the MEP. However, a major difference is that the policy framework for climate change is scattered across a number of chapters of the MSRMP and WARMP, whereas the MEP sets out the management framework in a single, consolidated chapter. This provides a clearer focus for readers and a more coherent response to managing climate change issues.

The current framework provides no guidance as to potential sea level rise to be factored into managing climate change issues. This was because at the time of writing Marlborough's first resource management plans and policies, the same level of information was not available. Since that time, a considerable amount of information has been gathered and guidance prepared for local government to address sea level rise and climate change generally. Advice from the Ministry for the Environment for local government in relation to planning and decision timeframes out to 2090-2099 is to plan for a sea level rise of 0.5 metres relative to the 1980-1999 average as a base value, with assessments to be made of potential consequences from a sea level rise of up to 0.8 metres. The Council has opted to include the 0.5 metres as a minimum in policy to guide decision making in resource consent applications.

Both the MSRMP and WARMP contain general policy on considering the effects of sea level rise. For example, Policy 17.4.2.1.2 of the WARMP states:

The ability of natural features and systems to provide a natural defence to coastal hazards, including erosion, inundation and sea level rise, should be recognised and the integrity of such features or systems be protected where appropriate.

In relation to subdivision and development, no policies specifically refer to sea level rise; however, there are some general statements that reference sea level rise in the explanation to an objective that requires subdivision proposals to be carefully assessed in areas where there are significant natural hazards. One of these states that "*subdivision of land within areas subject to likely sea level rise will be discouraged should they contain proposals for intensive subdivision and associated investment in structures.*" However this has not been translated into policy or rules.

The MSRMP includes Policy 16.3.1.3, which states that areas at risk from natural hazards, including sea level rise, will be identified within a Natural Hazards Register. However, this has never eventuated.

Another reason why the current provisions of the MRPS, MSRMP and WARMP are not preferred is in relation to central government having clarified that it is not the Council's role to make rules to control the emissions that contribute to climate change. This is reflected in Section 70A of the RMA, which states that when:

"making a rule to control the discharge into air of greenhouse gases under its functions under section 30(1)(d)(iv) or (f), a regional council must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases, either -

(a) in absolute terms; or

(b) relative to the use and development of non-renewable energy."

These documents do not contain rules of this nature; however, this clarification of central government's role is not apparent as the inclusion of Section 70A in the RMA occurred well after the current resource management documents were prepared.

Finally, the Council does not consider the status quo to be the preferred option as there is more guidance provided in the 2010 NZCPS for climate change, including taking a precautionary approach to addressing climate change and its uncertain but potentially significant adverse effects. The NPSFM also provides some direction for water quality and water quantity reasons that climate change needs to be factored into the management of freshwater. This NSPFM was not in existence at the time the MRPS, MSRMP or WARMP were prepared.

Risk of acting or not acting

In terms of Section 32(2)(c) of the RMA, an assessment of the "*risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions*" is required. There is some inevitable uncertainty about the timing and exact nature of climate change impacts and the Council has little Marlborough-specific information. However, it is known that climate change is likely to increase the likelihood of more extreme weather events in Marlborough, including prolonged drought. Taking action now means that we can be more resilient to our current climate and less susceptible to the impacts of future climate change. This is particularly important in Marlborough, where the use of natural and physical resources is relied upon for the District's social and economic wellbeing and health and safety.

Appendix A – Section 32 of the RMA

32 Requirements for preparing and publishing evaluation reports

(1) An evaluation report required under this Act must—

(a) examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of this Act; and

(b) examine whether the provisions in the proposal are the most appropriate way to achieve the objectives by—

(i) identifying other reasonably practicable options for achieving the objectives; and

(ii) assessing the efficiency and effectiveness of the provisions in achieving the objectives; and

(iii) summarising the reasons for deciding on the provisions; and

(c) contain a level of detail that corresponds to the scale and significance of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the proposal.

(2) An assessment under subsection (1)(b)(ii) must—

(a) identify and assess the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions, including the opportunities for—

(i) economic growth that are anticipated to be provided or reduced; and

(ii) employment that are anticipated to be provided or reduced; and

(b) if practicable, quantify the benefits and costs referred to in paragraph (a); and

(c) assess the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.

(3) If the proposal (an **amending proposal**) will amend a standard, statement, regulation, plan, or change that is already proposed or that already exists (an **existing proposal**), the examination under subsection (1)(b) must relate to—

(a) the provisions and objectives of the amending proposal; and

(b) the objectives of the existing proposal to the extent that those objectives—

(i) are relevant to the objectives of the amending proposal; and

(ii) would remain if the amending proposal were to take effect.

(4) If the proposal will impose a greater prohibition or restriction on an activity to which a national environmental standard applies than the existing prohibitions or restrictions in that standard, the evaluation report must examine whether the prohibition or restriction is justified in the circumstances of each region or district in which the prohibition or restriction would have effect.

(5) The person who must have particular regard to the evaluation report must make the report available for public inspection—

(a) as soon as practicable after the proposal is made (in the case of a standard or regulation); or

(b) at the same time as the proposal is publicly notified.

(6) In this section,—

objectives means,—

(a) for a proposal that contains or states objectives, those objectives:

(b) for all other proposals, the purpose of the proposal

proposal means a proposed standard, statement, regulation, plan, or change for which an evaluation report must be prepared under this Act

provisions means,—

(a) for a proposed plan or change, the policies, rules, or other methods that implement, or give effect to, the objectives of the proposed plan or change:

(b) for all other proposals, the policies or provisions of the proposal that implement, or give effect to, the objectives of the proposal.

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