

‘Ecosystem services’ in the proposed Waikato Regional Policy Statement

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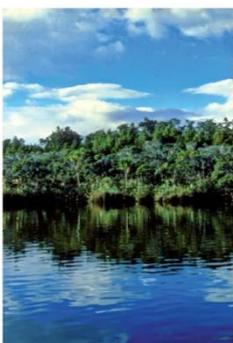
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Summary

Project and Client

This report has been prepared for Waikato Regional Council under Contract 308: Ecosystem Services. The report addresses the first component of the contract, which is to outline the uses of the term ‘ecosystem services’ in Council’s proposed Regional Policy Statement staff report strike-through version (‘RPS staff report’) and submissions. The next stage in this project is to prioritise ecosystem services for the Waikato Region, based on this review and with input from Waikato Regional Council staff.

The RPS staff report and submission summary documents Volumes 1, 2, and 3 were searched for all uses of the term ‘ecosystem services’. These are listed in Appendices 1 and 2. A process, and potential criteria by which to prioritise ecosystem services in the region, is outlined and key findings of use of the term ‘ecosystem services’ in the RPS staff report and submissions, and next steps, have been discussed.

Results

- The RPS staff report contains a total of 49 references to ‘ecosystem services’.
- *Issue 1: State of resources* refers to ecosystem services as being impacted adversely by human activities.
- Objective 3.7 is specifically about ecosystem services. It addresses five of the six key resource management issues and sets a broad, aspirational goal for ecosystem services as follows:

The range of ecosystem services associated with natural resources are recognised and maintained or enhanced to enable their on-going contribution to regional wellbeing.

- ‘Ecosystem services’ appears most often in lists of relevant objectives for proposed policies, with Objective 3.7 listed as relevant to 27 of the 62 proposed policies.
- ‘Ecosystem services’ appears three times in the main text of policies; five times in policy implementation methods; three times in policy explanations; and once in the policy statement’s design principles.
- The implementation methods set out in the proposed RPS that directly refer to ‘ecosystem services’ are:
 - Recognise and identify relevant ecosystem services and assess their role and value to the region;
 - Control activities to *avoid* adverse effects on ecosystem services;
 - Develop a marine strategy that enables maximisation of utilisation of marine ecosystem services;
 - Provide information on freshwater ecosystem services and the value of the region’s rivers;
 - Regional and district plans to recognise ecosystem services lost as a result of adverse effects on indigenous biodiversity; and

- Control activities to avoid adverse effects on soil ecosystem services.
- A broad definition of ecosystem services is outlined in the glossary.
- Ecosystem services appeared in the text of 35 submission statements as summarised in the Submission summary documents Volumes 1, 2, and 3. Of these, 17 directly supported ecosystem services being included and emphasised within the proposed RPS (6 of these requested amendments). Three directly criticised the inclusion of ecosystem services, requesting that it be removed from the document. Criticism of the term was focussed on the broadness of its definition and lack of clarity about what was to be achieved, where and by when, under Objective 3.7 and some related policies.

Conclusions

The RPS staff report recognises ecosystem services – their importance and value to the region, the need to maintain them to support social, cultural, and economic well-being and prosperity, and the threat human activities can pose to their provision. The proposed RPS sets out a goal of recognising and maintaining or enhancing the region's ecosystem services in *Objective 3.7 Ecosystem services*. Most of the Objectives in the proposed RPS address specific concerns (e.g. air quality, built environment, adapting to climate change). However, *Objective 3.7 Ecosystem services* is one of a few cross-cutting objectives. Others include *Objective 3.1 Integrated management* and *Objective 3.2 Decision making*. Because it is cross-cutting, many of the policies outlined are relevant to the achievement of Objective 3.7, whereas other single-issue Objectives have a comparatively small number of related policies.

Objective 3.7 outlines a high-level goal for ecosystem services, but provides little detail regarding ecosystem services, and their recognition, maintenance, and enhancement. The proposed RPS goes so far as identifying cross-linkages between policies and Objective 3.7 Ecosystem services; however, these are in name only and little or no detail is provided. The aim is that by implementing the many disparate policies in the proposed RPS that relate to Objective 3.7, the goal of recognising and maintaining or enhancing ecosystem services will be achieved. The risk exists that by not defining clearly the relationships between a given policy on a specific issue (such as water allocation) and ecosystem services, some ecosystem service trade-offs may go unnoticed or be overlooked – if a broad scope is not *required* by the policy. Further to this, it will be challenging to know if ecosystem services are being recognised, maintained or enhanced under the related policies if there is no specific requirement to identify, monitor, and report on ecosystem service state and trade-offs. If the requirement to identify, monitor, and report on ecosystem services has been made specifically (as it has in a small number of cases, discussed below) the proposed RPS does not identify best practice methods for achieving this.

Public submissions on the proposed RPS were largely supportive of its inclusion of ecosystem services; however, those that oppose the inclusion of ecosystem services within the proposed RPS were critical of a lack of clarity concerning the meaning of 'ecosystem services', and the actions that would be required to achieve Objective 3.7. Developing a clear definition and framework of and information about ecosystem services, as well as clear goals and methods to measure progress towards those goals would go a long way to overcoming most of the potential issues identified in critical responses to establishing an ecosystem services-based goal for the region.

In completion of the first stage of this project, we presented the findings of this RPS review to Waikato Regional Council staff on 12/03/2012, and began a discussion to identify the high priority ecosystem services in the Waikato region. The 12 March meeting with Waikato Regional Council staff began the development of a framework of the ecosystem services relevant in the Waikato region. The next stage of this project is to clarify and augment this framework, and to engage further with Waikato Regional Council staff to prioritise the ecosystem services identified. We have outlined a prioritisation process and criteria, with the intention that this be a starting point for discussion with Waikato Regional Council staff to collaboratively develop a prioritisation process.

1 Introduction

Waikato Regional Council (WRC) has recently reviewed and revised its draft Regional Policy Statement (RPS) in response to submissions received. WRC expects to finalise the new RPS by the end of 2012. 'Ecosystem services' will be a new component of the RPS that will require new work by the council. In particular, the proposed RPS introduces an 'Ecosystem services' objective (Objective 3.7) that sets out an aspirational goal for the region to 'recognise and maintain or enhance ecosystem services'. Landcare Research has been contracted to assist with new work around ecosystem services in the Waikato region.

The aim of this contract is to assist Waikato Regional Council with the development of an ecosystem services evidence base. This evidence base will a) characterise, classify, and map ecosystem types and their associated services in the Waikato region, and b) develop an ecosystem services model that explores the consequences of trade-offs of future development options and policies on ecosystem services, as well as providing information to potentially incorporate into the Waikato Integrated Scenario Explorer (WISE), which is an integrated spatial decision support system designed to help policy development, planning and resource management.

This report addresses the first stage of the project, which is to review use of the term 'ecosystem services' in the Waikato proposed RPS staff report and public submissions made on the proposed RPS. The next stage of this project is to prioritise ecosystem services based on the findings of this report and with input from Waikato Regional Council staff.

The RPS staff report and submission summary documents Volumes 1, 2, and 3 were searched for all uses of the term 'ecosystem services'. These were compiled into a list (Appendices 1 and 2) and key findings regarding use of the term have been summarised. We have not included analysis of terms 'relevant to ecosystem services' in this review because this would include much of the proposed RPS text.

The following sections outline some background information on the current RPS process and timeline; a detailed overview of references to 'ecosystem services' in the RPS staff report and submission summary documents; and a set of potential criteria by which to prioritise ecosystem services in the region. Lists of all uses of the term 'ecosystem services' and the context in which it appears are provided in Appendices 1 and 2.

2 Background: The proposed Waikato Regional Policy Statement

The purpose of The Resource Management Act (1991) (RMA) is to achieve the sustainable management of New Zealand's natural and physical resources. Local authorities are charged with implementing the RMA and regional policy statements are a key statutory tool used by local authorities to achieve the purpose of the Act. The first Waikato Regional Policy Statement became operative in 2000, and, under the RMA is required to be reviewed every 10 years. The current RPS review process was initiated in 2007. The timeline and status of the review are documented below:

September 2007 Independent evaluation of the operative RPS

March 2009	Waikato RPS review discussion document released and discussions, hui, workshops and meetings were held to hear stakeholders' views
December 2009	RPS Working Draft released. 78 public submissions received
November 2010	The Proposed RPS was notified and 200 public submissions and 68 further public submissions were received
March/April 2011	Summary of public submissions released and submissions published online
Early 2012	Staff recommendations report responding to public submissions.

Next steps:

Mar–Sep 2012	Council hearing will consider public submissions on the proposed RPS
October 2012	Council consideration of the hearing committee's recommendations
November 2012	Public notification of decisions report and release of decisions version of RPS.

The proposed RPS is structured in a three-tiered hierarchical format. At the highest level the policy statement identifies the region's most significant resource management issues. Below this level, 25 objectives identify the natural and physical resource management goals of the region, which are aimed at addressing the six key resource management issues. At the next level down, more than 60 policies, and numerous specific implementation methods, are outlined. The implementation of the policies is intended to achieve the goals set in the 25 objectives. There is also a monitoring and evaluation section to assess the effectiveness of implementation of the RPS at achieving the stated objectives.

3 Results

We found 49 uses of the term 'ecosystem services' in the RPS staff report (Table 1). The following sections describe where ecosystem services are referred to in the RPS staff report and submission summary reports.

Table 1 Use of the term 'ecosystem services' in the proposed Waikato Regional Policy Statement staff report strike through version

	Category	No.	%
1	Contents	1	2.5
2	Issue text	1	2.5
3	Objective 3.7 will address an issue	5	10
4	Objective 3.7 text	2	4
5	Policy text (4.1, 7.1, 11.1)	3	6
6	Policy Implementation methods	5	10
7	A policy is relevant to the achievement of Objective 3.7	27	55
8	Policy explanation	3	6
9	Development principles	1	2.5
10	Glossary – definition	1	2.5
	Total	49	101*

* Percent values sum to 101 due to rounding.

3.1 Definition of ecosystem services (p.G-3):

The proposed RPS defines ecosystem services as:

the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth.

3.2 Issues

Six key regional resource management issues are identified in the proposed RPS. These are:

- State of resources
- Effects of climate change
- Providing for energy demand
- Managing the built environment
- Relationship of tangata whenua with the environment (te taiao)
- Health and well-being of the Waikato River catchment.

Ecosystem services are referred to directly in the text of one issue: *Issue 1.1: State of resources*:

*Declining quality and quantity of natural and physical resources impacts their life-supporting capacity, reduces intrinsic values and **ecosystem services** and in general reduces our ability to provide for our wellbeing. (WRC RPS, p.1-1)*

There are 25 Objectives set out to address these broad issues. *Objective 3.7: Ecosystem services* states that ecosystem services will be recognised and maintained or enhanced. It is expected that Objective 3.7 will address five of the six issues identified: *1.1 State of resources, 1.2 Effects of climate change, 1.3 Providing for energy demand, 1.5 Relationship of Tāngata whenua with the environment (te taiao), and 1.6 Health and well-being of the Waikato River catchment. Issue 1.4 Managing the built environment, is not listed as being addressed by Objective 3.7 Ecosystem services.*

3.3 Objectives

In the Objective section, the term 'ecosystem services' occurs *only* in *Objective 3.7: Ecosystem services*, and is not referred to in any of the other 24 Objectives. *Objective 3.7: Ecosystem services* states:

*The range of **ecosystem services** [82.14] associated with natural resources are recognised and maintained or enhanced to enable **their** [86.8] on-going contribution to regional wellbeing.*

Objective 3.7 addresses the following issues:	
1.1	State of resources
1.2	Effects of climate change
1.3	Providing for energy demand
1.5	Relationship of tāngata whenua with the environment (te taiao)
1.6	Health and wellbeing of the Waikato River
Objective 3.7 is achieved by the following policies:	
4.1	Integrated approach
4.2	Collaborative approach
4.3	Tāngata whenua
5.1	Improve degraded air quality
5.2	Manage discharges to air
6.1	Planned and co-ordinated development
6.2	Planning for development in the coastal Environment
7.1	Interests in the coastal marine area
7.2	Marine water quality
8.1	Approach to managing water bodies
8.2	High value water bodies
8.3	All water bodies
8.4	Catchment-based intervention
8.5	Waikato River catchment
8.6	Allocating fresh water
8.7	Efficient allocation and use of water
9.4	Development Geothermal Systems
9.5	Limited Development Geothermal Systems
9.6	Protected Geothermal Systems
9.7	Research Geothermal Systems
9.8	Small Geothermal Systems
11.1	Maintain or enhance indigenous biodiversity
14.1	Maintain or enhance the values of the soil Resource
14.2	High class soils
14.3	Soil contaminants
14.4	Contaminated land
14.5	Peat soils

The following policies are implied not to be relevant to achieving Objective 3.7 by being omitted from the list above. However, based on a review of ecosystem services literature, a number of these policies may be relevant to achieving Objective 3.7. We have highlighted in **bold** those policies that may be relevant to achieving Objective 3.7. For example, ecosystem services are specifically referred to in the Coromandel Peninsula Blueprint.

Policies not listed as addressing Objective 3.7			
5.3	Limit adverse effects on amenity	9.1	Geothermal characteristics valued by tāngata whenua
6.3	Co-ordinating growth and infrastructure	9.2	Sustainable management of the Regional Geothermal Resource
6.4	<i>Marae and papakāinga</i>	9.3	<i>Significant Geothermal Features</i>
6.5	Energy demand management	10.1	Managing historic and cultural heritage
6.6	<i>Significant infrastructure and energy resources</i>	10.2	Relationship of Māori to taonga
6.7	Access to minerals	10.3	Effects of development on historic and cultural heritage
6.8	<i>Information collection</i>	11.2	Protect significant indigenous biodiversity
6.9	Implementing the Coromandel Peninsula Blueprint	11.3	<i>Collaborative management</i>
6.10	<i>Implementing Taupo District 2050</i>	11.4	Safeguard coastal/marine ecosystems
6.11	<i>Implementing Franklin District Growth Strategy</i>	12.1	Outstanding natural features and landscapes
6.12	<i>Governance collaboration in the Future Proof area</i>	12.2	Preserve natural character
6.13	<i>Adopting Future Proof land use pattern</i>	12.3	Maintain and enhance areas of amenity value
6.14	<i>Density targets for Future proof area</i>	12.4	Appropriate restrictions on public access
6.15	Commercial development in the Future Proof area	12.5	Maintain or enhance public access
6.16	Rural-residential development in the Future Proof area	13.1	Natural hazard risk and management approach
6.17	Monitoring and development in Future Proof area	13.2	Manage activities to reduce the risks from natural hazards
6.18	<i>Review of Future proof map and tables</i>	13.3	<i>High impact, low probability natural hazard events</i>

3.4 Policies and implementation methods

The term 'ecosystem services' is used 39 times in the policy section of the RPS staff report. It is most often used in reference to Objective 3.7, where a policy, once implemented, will contribute to achieving Objective 3.7. The term appears 3 times in the main text of policies; 5 times in policy implementation methods; 3 times in policy explanation text; and once in the policy statement's design principles. The inclusion of ecosystem services in the above policies, implementation methods, and principles, etc., covers the following key areas:

- recognising the values of ecosystem services
- identifying ecosystem services and their role and value to the region

- avoiding adverse effects on ecosystem services
- developing a marine strategy that enables maximisation of utilisation of marine ecosystem services
- providing information on freshwater ecosystem services and the value of the region's rivers
- maintaining indigenous biodiversity with a focus on areas that are important to ecosystem services, and
- maintaining or enhance soil ecosystem services.

These key references to ecosystem services are listed below.

3.4.1 Policy 4.1: Integrated approach

An integrated approach to resource management will be adopted that:

*b) recognises the multiple values of natural and physical resources including **ecosystem services**.*

3.4.2 Implementation method 4.1.15 Monitoring and information gathering

*d) identify relevant **ecosystem services** and assess their role and value to the region.*

3.4.3 Built environment: Development principles 6A

New development should:

*q) avoid adverse effects on **ecosystem services**.*

3.4.4 Policy 7.1: Interests in the marine area Implementation Method 7.1.4 Marine strategy

*Waikato Regional Council will develop a marine strategy for the coastal marine area. The purpose of the strategy is to optimise the opportunities provided by **ecosystem services**.*

3.4.5 Policy 7.1 Method 7.1.4 Marine strategy: Explanation

*The marine area is experiencing increasing use and competing interests for the same resource. The underpinning **ecosystem services** that provide for successful long-term use of the marine resource are also under increasing pressure. Method 7.1.4 signals the desire to see strategic and holistic management of the region's coastal marine area.*

3.4.6 Policy 8.3 All water bodies Implementation method 8.3.10 Advocacy and education

Waikato Regional council will:

*d) provide information on the value of water bodies and the **ecosystem services** they provide.*

3.4.7 Policy 11.1 Maintain or enhance indigenous biodiversity

Promote positive indigenous biodiversity outcomes to maintain or enhance (including through restoration of) indigenous biodiversity with particular focus on areas that are important for:

*c) providing **ecosystem services***

3.4.8 Policy 11.1 Maintain or enhance indigenous biodiversity Implementation method 11.1.2 Adverse effects

Regional and district plans shall recognise that adverse effects on indigenous biodiversity within terrestrial, freshwater and coastal environments are cumulative and include:

*g) loss of **ecosystem services**.*

3.4.9 Policy 14.1 Maintain or enhance the values of the soil resource Implementation method 14.1.1 Manage activities to maintain soil quality and reduce risk of erosion

Regional plans shall control activities to maintain soil quality and to reduce the risk of erosion, including:

*a) activities that negatively impact on soil quality and soil **ecosystem services**.*

3.4.10 Method 14.1.1 explanation

*The processes to form soil occur over hundreds to thousands of years, so keeping soil on site and in situ is the most natural and effective way for soil to continue to provide ecosystem services and maintain quality for a range of uses...Research into soil and land management practices may include consideration of carbon sequestration, green house gas emissions and the values of soils under native vegetation as a reservoir of biodiversity and of **ecosystem services**.*

3.5 Summary of submissions Volumes 1, 2, and 3

The term 'ecosystem services' appeared in 35 public submissions as summarised in the proposed Waikato Regional Policy Statement summary of submissions volumes 1, 2, and 3.

Of the 35 public submissions that reference ecosystem services:

- 4 made no substantial commentary on the term or its use in the proposed RPS
- 2 were in strong support of Issue 1.1 State of resources with no amendments
- 3 were in support of Issue 1.1. State of resources with amendments that did not include changes to the use of the term 'ecosystem services' in the Issue's text
- 4 were in strong support of Objective 3.7 Ecosystem services with no amendments
- 6 were in support of *Objective 3.7 Ecosystem services* with amendments that were focussed around either making small changes to the text or requesting that more detail be included such as making it clear what is to be achieved, where and by when, and ensuring that the achievement of the Objective is measurable
- 1 opposed Objective 3.7 arguing that the term ecosystem services is confusing
- 2 submission statements aimed to have Section 6A Development Principle *q) avoid adverse effects on ecosystem services* deleted
- 13 submissions were made in support of various Objectives, policies, and methods that included some comment on ecosystem services that most commonly focussed on emphasising ecosystem services provided to people.

4 Prioritising ecosystem services

The next stage of this project is to prioritise ecosystem services for the Waikato region. Here we outline some potential criteria that could be used to prioritise ecosystem services.

The proposed RPS does not outline a conceptual framework for ecosystem services as a starting point. A number of ecosystem services frameworks have been developed internationally. Our work at Landcare Research is based on the Millennium Ecosystem Services Assessment (MEA) framework. This could be adopted by WRC, or could serve as a starting point for discussion of the conceptual framework to be adopted.

Our proposed initial steps for prioritising ecosystem services are:

- 1) Select or develop a high-level ecosystem services framework
- 2) Identify what Waikato Regional Council policies relating to ecosystem services will take precedence as required actions
 - i.e. prioritise and cluster the list of uses of 'ecosystem service' in the RPS staff report (high/med/low) in Appendix 1 of this report

- 3) Identify organisational priorities that have been recently determined that may impact upon ecosystem service prioritisation (i.e. focus on water plan changes and the marine spatial plan)
- 4) Identify what understanding there is of the ecosystem service and what data are available.
 - i.e. tiers 1, 2, and 3 (explained below)

Landcare Research is conducting a 4-year research project, *Ecosystem services for multiple outcomes*, which has developed an approach for characterising and mapping ecosystem services. The first step in this process is to classify each ecosystem service based on available data and knowledge of ecosystem service relationships using a three-tiered system (See Table 2).

Tier 1: Ecosystem services in this tier can be assessed qualitatively using expert judgment to characterise condition and trends for which data, knowledge or both are limited or lacking. Under Tier 1 ecosystem services will be characterised based primarily on expert judgement of conditions (e.g. excellent/good/poor) and trends (e.g. increasing/stable/decreasing). For ecosystem services that fall under Tier 1 where relatively little is known, knowledge gaps can also be identified and prioritised.

Tier 2: Ecosystem services in this tier can be estimated and mapped quantitatively based on broad ecosystem conditions such as land cover.

Tier 3: Ecosystem services in this tier can be evaluated using biophysical process models. For example, existing New Zealand models can be used to characterise soil erosion and water supply.

Table 2 Preliminary list of ecosystem services in New Zealand illustrating the tiered approach to characterising ecosystem services based on existing data availability and knowledge of ecosystem service relationships

Service type	Tier 1 (least data and knowledge)	Tier 2 (intermediate data and knowledge)	Tier 3 (most data and knowledge)
Provisioning	Biochemical, medicines Genetic resources Ornamental resources	Wild foods	Food Fibre Fuel Freshwater
Regulating	Air quality maintenance Human disease regulation Pollination	Natural hazard regulation Waste treatment Storm protection	Biological control Climate regulation Erosion control Water purification Water regulation
Cultural	Aesthetic values Cultural heritage values Cultural diversity Spiritual and religious values Social relations Inspiration	Recreation & tourism Sense of place Knowledge systems Educational values	

Supporting	Primary production Production of atmospheric oxygen Nutrient & water cycling Soil formation & retention Habitat provision
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Further to the above we also propose the following questions as potential criteria by which to prioritise work on ecosystem services:

- 5) What ecosystem services are going to have greatest effect on the 6 key issues identified in the proposed RPS?
- 6) What ecosystem services are most relied upon for and most affected by the region's highly productive activities and land uses?

(i.e. Identify the activities that contribute the most to Waikato's GDP and land use and identify what ecosystem services are most relied upon and most affected by those activities)
- 7) How substitutable is the ecosystem service?
- 8) How reversible is change to the ecosystem service?
- 9) What sectors/stakeholder groups (and how much) depend on the ecosystem service?

We have not included analysis of terms 'relevant to ecosystem services' in this review because this would include much of the proposed RPS text. We note that many of the issues, objectives, and policies are related to ecosystem services. We suggest that each of the policies in the proposed RPS could be assessed to see if they relate to 'high priority' ecosystem services as defined through the prioritisation process we outline below, rather than focussing only on instances where 'ecosystem services' are directly mentioned in the proposed RPS.

5 Discussion and conclusion

The proposed RPS recognises ecosystem services – their importance and value to the region, and the threat human activities can pose to the provision of such services. Issue 1.1 recognises that human well-being relies on the provision of ecosystem services by nature and that people's ability to provide for their well-being is threatened by the declining quality and quantity of natural resources. It is expected that *Issue 1.1: State of resources* will be addressed by *all 25* of the Objectives set out in The Plan. Ecosystem services are not referred to in the five other 'Issues' outlined in the proposed RPS.

The proposed RPS sets out the goal of recognising and maintaining or enhancing the region's ecosystem services in *Objective 3.7 Ecosystem services*. Most of the Objectives in the proposed RPS address specific concerns (e.g. air quality, built environment, adapting to climate change). Objective 3.7 is one of a few cross-cutting objectives. Others include *Objective 3.1 Integrated management* and *Objective 3.2 Decision making*. Because it is cross-cutting, many of the policies outlined are relevant to the achievement of Objective 3.7, whereas other single issue Objectives have a comparatively small number of related policies.

However, ecosystem services appear on very few occasions in the text of RPS policies that are designed to achieve the region's high-level objectives.

The goal of recognising and maintaining or enhancing ecosystem services is meant to be achieved by the many disparate policies in the proposed RPS that relate to Objective 3.7. Although the policies aimed at achieving Objective 3.7 do not often refer to ecosystem services directly, they are relevant to the maintenance or enhancement of ecosystem services. The risk exists that by not defining clearly the relationships between a given policy on a specific issue (such as water allocation) and ecosystem services, some ecosystem service trade-offs may go unnoticed or be overlooked – if a broad scope is not specifically *required* by the policy. It will be challenging to know if ecosystem services are being recognised, maintained or enhanced under the related policies if there is no specific requirement to identify, monitor and report on ecosystem services. Further to this, if that requirement *has* been made specifically (as it has in a small number of cases, discussed below) the proposed RPS does not identify best practice methods for achieving this. The identification and valuation of ecosystem services is not well-established with best practice internationally, but is an approach in its infancy with monitoring and valuation methods still being developed, tested and contested.

It may be that a number of policies that will contribute to the maintenance or enhancement of ecosystem services are not recognised as such in the proposed RPS, such as Policy 11.2 Protect significant indigenous biodiversity, and Policy 13.2 Manage activities to reduce the risks from natural hazards. Natural hazard protection is an important ecosystem service provided to people by many natural systems.

The proposed RPS does provide guidance in relation to ecosystem services under several policies and their implementation methods. The proposed RPS states that:

- 1) *Ecosystem services will be recognised* (Policy 4.1 Integrated approach, p. 4-1).

To achieve this, Policy 4.1 Implementation methods outlines the following actions:

Promote understanding of the values and benefits of resources in contributing to wellbeing through providing ecosystem services (Implementation method 4.1.6 Advocacy and education, p. 4-2)

Identify relevant ecosystem services and assess their role and value to the region (Implementation method 4.1.15 Monitoring and information gathering, p. 4-5)

Through Policy 4.1, the proposed RPS acknowledges that establishing an underlying framework, base-level information, and comprehension of ecosystem services, as well as public education and outreach about these services, need to occur as first steps towards achieving Objective 3.7 Ecosystem services.

- 2) *New development should avoid adverse effects on ecosystem services* (6A Development principles, p. 6-25).

Inclusion of this principle implies that an understanding of the effects of development on ecosystem services and how to avoid them will be integrated into the resource consents process. However, the proposed RPS does not provide further guidance on how this might be achieved.

- 3) *A marine strategy will be developed that optimises opportunities provided by ecosystem services (Method 7.1 Interests in the coastal marine area, Implementation method 7.1.4 Marine Strategy, p. 7-2).*

This method stands out from all other references to ecosystem services in the proposed RPS. No other reference to ecosystem services in the plan is framed around optimising human use of ecosystem services. Achieving this directive implies that an understanding of the state of ecosystem services and trade-offs between services under different activities and management approaches will be developed and used for broad-scale, holistic decision making about marine area management.

- 4) *The council will provide information on the value of water bodies and the ecosystem services they provide (Policy 8.3 All water bodies: Implementation method 8.3.10 Advocacy and education, p. 8-7).*

This method indicates that the regional council will be undertaking valuation activities and tracking the condition of ecosystem services overtime. It is unclear whether valuation will be monetary or biophysical quantification of impacts. It is also unclear how the council wants to use this information, and care should be taken that it will provide the information they need for decision making.

- 5) *Regional and district plans will recognise the loss of ecosystem services that results from adverse effects on indigenous biodiversity (Policy 11.1 Maintain or enhance indigenous biodiversity: Implementation method 11.1.2 Adverse effects, p. 11-2).*

It is unclear in this method what will be achieved if the loss of ecosystem services is being recognised. Further clarification is needed on how this will impact on decision making where there are adverse effects. Recognising loss does not require actions to be taken.

- 6) *Regional plans will control activities that negatively impact soil ecosystem services (Policy 14.1 Maintain or enhance the values of the soil resource: Implementation method 14.1.1 Manage activities to maintain soil quality and reduce risk of erosion, p. 14-1).*

This implementation method provides a useful example of a specific implementation method in terms of ecosystem services. This method requires a statutory response from Waikato Regional Council in its regional plans. Achieving this method implies that an understanding of the impact of activities on soil ecosystem services will be developed.

Ecosystem services are defined broadly as *the benefits people obtain from ecosystems*. The proposed RPS does not further define which ecosystem services are most relevant or outline specific guidance to achieve *Objective 3.7 Ecosystem services*.

In completion of the first stage of this project, we presented the findings of this RPS review to Waikato Regional Council staff on 12/03/2012, and began a discussion to identify the high priority ecosystem services in the Waikato region. The meeting with Waikato Regional Council staff began to identify the ecosystem services relevant in the Waikato region. The next stage of this project is to clarify and augment this initial identification process, and to engage further with Waikato Regional Council staff to prioritise the ecosystem services identified. Waikato Regional Council staff discussed and commented on the prioritisation process outlined above, and the prioritisation section of this report has been updated to reflect

their comments and suggestions. We have outlined a prioritisation process and criteria above, with the intention that this be a starting point for discussion with Waikato Regional Council staff to collaboratively develop a prioritisation process.

Appendix 1 – List of all references to ‘ecosystem services’ in the proposed Waikato Regional Policy Statement staff report strike through version

#	Section	Page	Reference text
1	Contents	iii	Objectives 3.7 Ecosystem Services
	Part A: 1 Issues		
2	Issue 1.1 State of resources	1-1	<p>Issue 1.1 State of resources</p> <p>Declining quality and quantity of natural and physical resources impacts their life-supporting capacity, reduces intrinsic values and ecosystem services and in general reduces our ability to provide for our wellbeing.</p> <p>While addressing this issue generally, specific focus should be directed to addressing the following matters:</p> <ul style="list-style-type: none"> a) <u>Unacceptable [168.2]</u> risk to human health from poor air quality caused by fine particulate matter; b) effects of <u>intensive [44.2]</u> agriculture including accumulation of contaminants in soils and effects on water quality; c) effects of <u>accelerated [168.2]</u> sedimentation and nutrients in estuaries and harbours; d) indigenous biodiversity decline; e) increasing potential for conflicts between activities in the coastal marine area; and f) increasing demand for fresh water <u>and the interrelationship between the amount of water abstracted and the quality of the water remaining in the water body. [177.3]</u>
3	Issue 1.1 State of resources Relevant objectives	1-1	<p>Issue 1.1 is addressed by the following objectives:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources

#	Section	Page	Reference text
			3.10 Air quality
			3.11 Built environment
			3.12 Marine water quality
			3.13 Mauri and health of fresh water bodies
			3.14 Allocation and use of fresh water
			3.15 Riparian areas and wetlands
			3.16 Geothermal
			3.17 Historic and cultural heritage
			3.18 Ecological integrity and indigenous biodiversity
			3.19 Outstanding natural features and landscapes
			3.20 Amenity
			3.21 Natural character
			3.22 Public access
			3.23 Natural hazards
			3.24 Values of soil
			3.25 High class soils
4	Issue 1.2 Effects of climate change Relevant objectives	1-2	<p>Issue 1.2 Effects of climate change</p> <p>The effects of climate change (including climate variability) [190.2] may impact our ability to provide for our wellbeing, including health and safety. While addressing this issue generally, specific focus should be directed to the following matters:</p> <ul style="list-style-type: none"> a) increased potential for storm damage and weather-related natural hazards; and b) long-term risks of sea level rise to settlements and infrastructure such as through increased coastal flooding and erosion. <p>Issue 1.2 is addressed by the following objectives:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services

#	Section	Page	Reference text
			3.11 Built environment
			3.14 Allocation and use of fresh water
			3.23 Natural hazards
5	Issue 1.3 Providing for energy demand Relevant objectives	1-3	<p>Issue 1.3 Providing for energy demand</p> <p>With increasing energy demand, there is increasing need for <u>improvements in the way we use energy, and for [131.5]</u> new energy projects and associated infrastructure, and increasing <u>need to manage</u> potential for <u>[131.5]</u> adverse effects on natural <u>and physical [113.2]</u> resources.</p> <p>While addressing this issue generally, specific focus should be directed to addressing the following matters: <u>how the increasing demand for energy is to be met; and [141.3]</u></p> <p>a) potential for conflicts between energy generation and transmission <u>activities to meet energy demand [133.3]</u> and other land or water uses, <u>including natural values; and [162.5]</u></p> <p>b) the need to find sites for generation where such conflicts can be minimised [141.3]</p> <p>c) the need to locate renewable energy generation infrastructure where the resource exists. [131.5]</p> <p>d) security of supply. [131.5]</p> <p>Issue 1.3 is addressed by the following objectives:</p> <p>3.1 Integrated management</p> <p>3.2 Decision making</p> <p>3.4 Energy</p> <p>3.6 Coastal environment</p> <p>3.7 Ecosystem services</p> <p>3.9 Efficient use of resources</p> <p>3.11 Built environment</p> <p>3.14 Allocation and use of fresh water</p> <p>3.16 Geothermal</p>
6	Issue 1.5 Relationship of tāngata whenua		<p>Issue 1.5 Relationship of tāngata whenua with the environment (te taiao)</p> <p>The relationship tāngata whenua have with the domains of Ranginui and Papatūānuku is of paramount importance and this</p>

#	Section	Page	Reference text
	with the environment (te taiao) Relevant objectives		<p>relationship is being damaged through:</p> <ul style="list-style-type: none"> a) activities which degrade the mauri of the environment, including through cumulative effects; b) loss of access to, and use and enjoyment of, resources and places; c) loss or diminishment of the ability of tāngata whenua to be involved in or influence management decisions; and d) loss of ability to exercise and provide for kaitiakitanga. <p>Issue 1.5 is addressed by the following objectives:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources 3.11 Built environment 3.12 Marine water quality 3.13 Mauri and health of fresh water bodies 3.14 Allocation and use of fresh water 3.15 Riparian areas and wetlands 3.17 Historic and cultural heritage 3.18 Ecological integrity and indigenous biodiversity 3.19 Outstanding natural features and landscapes 3.20 Amenity 3.21 Natural character 3.22 Public access 3.24 Values of soil
7	Issue 1.6	1-6	Issue 1.6 Health and wellbeing of the Waikato River catchment [46.1]

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	Health and wellbeing of Waikato River catchment		The health and wellbeing of the Waikato River, its major tributary the Waipa River , and their its [46.1] catchments has been and continues to be degraded. Of particular concern is:
	Relevant objectives		<ul style="list-style-type: none"> a) adverse effects on the mauri of the Waikato and Waipa rivers; [46.1] b) the ability of the Waikato and Waipa Rivers [46.1] to sustainably and safely provide food and cultural, economic and recreation opportunities; and c) the effect this has on the relationship of Waikato-Tainui, Ngāti Tūwharetoa, Te Arawa River Iwi, Maniapoto and Raukawa and the regional community with the rivers. [46.1]
			Issue 1.6 is addressed by the following objectives:
		3.1	Integrated management
		3.2	Decision making
		3.3	Health and wellbeing of the Waikato River
		3.4	Energy
		3.7	Ecosystem services
		3.8	Relationship of tāngata whenua with the environment
		3.9	Efficient use of resources
		3.11	Built environment
		3.13	Mauri and health of fresh water bodies
		3.14	Allocation and use of fresh water
		3.15	Riparian areas and wetlands
		3.16	Geothermal
		3.17	Historic and cultural heritage
		3.18	Ecological integrity and indigenous biodiversity
		3.19	Outstanding natural features and landscapes
		3.20	Amenity
		3.21	Natural character
		3.22	Public access
	3 Objectives		

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8,9	Objective 3.7	3-5	<p>3.7 Ecosystem services</p> <p>The range of ecosystem services [82.14] associated with natural resources are recognised and maintained or enhanced to enable their [86.8] on-going contribution to regional wellbeing.</p> <div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">Objective 3.7 addresses the following issues:</p> <p>1.1 <i>State of resources</i></p> <p>1.2 <i>Effects of climate change</i></p> <p>1.3 <i>Providing for energy demand</i></p> <p>1.5 <i>Relationship of tāngata whenua with the environment (te taiao)</i></p> <p>1.6 <i>Health and wellbeing of the Waikato River</i></p> <p style="text-align: center;">Objective 3.7 is achieved by the following policies:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">4.1 <i>Integrated approach</i></td> <td style="width: 50%;">8.6 <i>Allocating fresh water</i></td> </tr> <tr> <td>4.2 <i>Collaborative approach</i></td> <td>8.7 <i>Efficient allocation and use of water</i></td> </tr> <tr> <td>4.3 <i>Tāngata whenua</i></td> <td>9.4 <i>Development Geothermal Systems</i></td> </tr> <tr> <td>5.1 <i>Improve degraded air quality</i></td> <td>9.5 <i>Limited Development Geothermal Systems</i></td> </tr> <tr> <td>5.2 <i>Manage discharges to air</i></td> <td>9.6 <i>Protected Geothermal Systems</i></td> </tr> <tr> <td>6.1 <i>Planned and co-ordinated development</i></td> <td>9.7 <i>Research Geothermal Systems</i></td> </tr> <tr> <td>6.2 <i>Planning for development in the coastal environment</i></td> <td>9.8 <i>Small Geothermal Systems</i></td> </tr> <tr> <td>7.1 <i>Interests in the coastal marine area</i></td> <td>11.1 <i>Maintain or enhance indigenous biodiversity</i></td> </tr> <tr> <td>7.2 <i>Marine water quality</i></td> <td>14.1 <i>Maintain or enhance the values of the soil resource</i></td> </tr> <tr> <td>8.1 <i>Approach to managing water bodies</i></td> <td>14.2 <i>High class soils</i></td> </tr> <tr> <td>8.2 <i>High value water bodies</i></td> <td>14.3 <i>Soil contaminants</i></td> </tr> <tr> <td>8.3 <i>All water bodies</i></td> <td>14.4 <i>Contaminated land</i></td> </tr> <tr> <td>8.4 <i>Catchment-based intervention</i></td> <td>14.5 <i>Peat soils</i></td> </tr> <tr> <td>8.5 <i>Waikato River catchment</i></td> <td></td> </tr> </table> </div>	4.1 <i>Integrated approach</i>	8.6 <i>Allocating fresh water</i>	4.2 <i>Collaborative approach</i>	8.7 <i>Efficient allocation and use of water</i>	4.3 <i>Tāngata whenua</i>	9.4 <i>Development Geothermal Systems</i>	5.1 <i>Improve degraded air quality</i>	9.5 <i>Limited Development Geothermal Systems</i>	5.2 <i>Manage discharges to air</i>	9.6 <i>Protected Geothermal Systems</i>	6.1 <i>Planned and co-ordinated development</i>	9.7 <i>Research Geothermal Systems</i>	6.2 <i>Planning for development in the coastal environment</i>	9.8 <i>Small Geothermal Systems</i>	7.1 <i>Interests in the coastal marine area</i>	11.1 <i>Maintain or enhance indigenous biodiversity</i>	7.2 <i>Marine water quality</i>	14.1 <i>Maintain or enhance the values of the soil resource</i>	8.1 <i>Approach to managing water bodies</i>	14.2 <i>High class soils</i>	8.2 <i>High value water bodies</i>	14.3 <i>Soil contaminants</i>	8.3 <i>All water bodies</i>	14.4 <i>Contaminated land</i>	8.4 <i>Catchment-based intervention</i>	14.5 <i>Peat soils</i>	8.5 <i>Waikato River catchment</i>	
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10	4 Integrated management Policy 4.1 Integrated approach	4-1	<p>4 Integrated management</p> <p>Policy 4.1 Integrated approach</p> <p>An integrated approach to resource management will be adopted that:</p> <ul style="list-style-type: none"> a) recognises the inter-connected nature of natural and physical resources (including spatially and temporally) <u>and the benefits of aligning the decisions of relevant management agencies across boundaries; [198.17]</u> b) recognises the multiple values of natural and physical resources including ecosystem services; c) responds to the nature and values of the resource and the diversity of effects (including cumulative effects) that can occur; d) seeks to maximise benefits by considering opportunities to align interventions (including regulatory and non-regulatory) and/or to achieve multiple objectives <u>maximises opportunities to achieve multiple objectives; [76.4]</u> e) takes a long-term strategic approach which recognises the changing environment and changing resource use pressures and trends; and f) applies consistent and best practice standards and processes to decision making.
11	4 Integrated management Relevant objectives	4-1	<p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources 3.10 Air quality 3.11 Built environment 3.12 Marine water quality 3.13 Mauri and health of fresh water bodies 3.14 Allocation and use of fresh water 3.15 Riparian areas and wetlands

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12	4 Integrated Management Implementation methods 4.1.6 Advocacy and education	4-2	<p>Policy 4.1 Integrated approach</p> <p>4.1.6 Advocacy and education</p> <p>Waikato Regional Council will promote an integrated approach to resource management, including by:</p> <ul style="list-style-type: none"> a) promoting sustainable land management practices; b) educating landowners/managers about the adverse effects of land use practices, including off-site and cumulative effects; c) promoting understanding of the values and benefits of resources in contributing to community wellbeing through providing ecosystem services; d) promoting understanding of the different ways in which resources are valued by people and communities; e) advocating for consistent application of best practices standards and processes, including best practice tikanga and matauranga Maori; [87.6] f) encouraging research to increase understanding of the effects of climate change on the Waikato region; [190.4] g) making submissions on the long-term plans and annual plans of territorial authorities to seek the appropriate allocation of resources to give effect to the Regional Policy Statement; and h) advocating to central government agencies, tāngata whenua, and other stakeholders to assist implementation of the Regional Policy Statement.
13	4 Integrated management Policy 4.1 integrated approach	4-5	<p>Policy 4.1 Integrated approach</p> <p>4.1.15 Monitoring and information gathering</p> <p>Waikato Regional Council will:</p>

#	Section	Page	Reference text
	Implementation method 4.1.15		<ul style="list-style-type: none"> a) track changes in use of natural and physical resources to ensure early identification of new[55.10] land use and resource use trends that may result in adverse effects on the environment; b) develop and maintain processes and resources to enable the effects of activities, including cumulative effects, to be monitored; c) monitor the state of resources and ensure that an appropriate level of understanding is available and maintained to assist policy and management initiatives; d) identify relevant ecosystem services and assess their role and value to the region; e) consider <u>identify</u> [198.22] and integrate mātauranga Māori indicators and measures as part of the information and monitoring regime; f) consider opportunities for communities to be involved in local monitoring programmes; and g) investigate the use of integrated spatial planning tools including to explore alternative long-term development options and associated trade-offs.
14	4 Integrated management Relevant objectives	4-7	<p>Policy 4.2 Collaborative approach</p> <p>Relevant Objectives (text box)</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources 3.10 Air quality 3.11 Built environment 3.12 Marine water quality 3.13 Mauri and health of fresh water bodies 3.14 Allocation and use of fresh water 3.15 Riparian areas and wetlands

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			3.25 High class soils
15	4 Integrated management Relevant objectives	4-10	<p>Policy 4.3 Tāngata whenua</p> <p>Tāngata whenua are provided appropriate [177.35] opportunities to express, maintain and enhance their special [177.35] relationship with taonga in [177.35] their rohe through resource management and other local authority processes.</p> <p>The relevant objectives are (text box):</p> <p>3.1 Integrated management</p> <p>3.2 Decision making</p> <p>3.3 Health and wellbeing of the Waikato River</p> <p>3.4 Energy</p> <p>3.5 Adapting to climate change</p> <p>3.6 Coastal environment</p> <p>3.7 Ecosystem services</p> <p>3.8 Relationship of tāngata whenua with the environment</p> <p>3.9 Efficient use of resources</p> <p>3.10 Air quality</p> <p>3.11 Built environment</p> <p>3.12 Marine water quality</p> <p>3.13 Mauri and health of fresh water bodies</p>

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			3.21 Natural character
			3.22 Public access
			3.23 Natural hazards
			3.24 Values of soil
			3.25 High class soils
16	5 Air Relevant objectives	5-1	<p>Policy 5.1 Improve degraded air quality</p> <p>Reduce the adverse effects on air quality caused by cumulative [168.33] diffuse, broad scale or multiple discharges to air [95.18] from home heating appliances and transport, with particular emphasis on:</p> <p>a) discharges of fine particulate matter; and</p> <p>b) areas where there are unacceptable risks to human health and ecosystems.</p> <p>The relevant objectives are:</p> <p>3.4 Energy</p> <p>3.7 Ecosystem services</p> <p>3.9 Efficient use of resources</p> <p>3.10 Air quality</p> <p>3.20 Amenity</p>
17	5 Air Policy 5.2 Relevant objectives	5-2	<p>Policy 5.2 Manage discharges to air</p> <p>Manage discharges to air (other than from home heating or transport) to ensure any resulting degradation avoids unacceptable risks to human health, and is as low as reasonably achievable. In determining whether any degradation is as low as reasonably</p>

#	Section	Page	Reference text
			<p>achievable, the following will be taken into account:</p> <ul style="list-style-type: none"> a) existing air quality; b) the age of and ability to upgrade existing infrastructure c) alternative modes/methods of discharge; d) applicable emission control techniques; e) the extent to which it is possible to apply the best available technique <u>practicable option</u>; [43.54] f) the relative effects on the environment of the options; and g) economic and social factors. <p>The relevant objectives are (text box):</p> <ul style="list-style-type: none"> 3.7 Ecosystem services 3.9 Efficient use of resources 3.10 Air quality 3.20 Amenity
18	6 Built environment Policy 6.1 Relevant objectives		<p>Policy 6.1 Planned and co-ordinated development</p> <p>Development of the <u>built environment</u> [95.22], including transport and other infrastructure [181.77], occurs in a planned and co-ordinated manner which:</p> <ul style="list-style-type: none"> a) is guided by the principles in section 6A; b) recognises and addresses potential cumulative effects of development; and c) is based on sufficient information to allow assessment of the potential long-term effects of development. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.5 Adapting to climate change

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			3.7 Ecosystem services
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			3.25 High class soils
19	6 Built Environment Policy 6.2 Relevant objectives	6-4	<p>Policy 6.2 Planning for development in the coastal environment</p> <p>New [101.11] Development of the built environment in the coastal environment occurs in a way that:</p> <ul style="list-style-type: none"> a) ensures sufficient development setbacks to protect coastal natural character, public access, indigenous biodiversity, natural physical processes, amenity and natural hazard mitigation functions of the coast; b) protects hydrological processes and natural functions of back dune areas; c) is in keeping with has regard to [131.29] local coastal character; d) allows for the potential effects of sea level rise, including allowing for sufficient coastal habitat inland migration opportunities; e) protects the valued characteristics of remaining undeveloped, or largely undeveloped coastal environments; f) ensures adequate water, stormwater [198.31] and wastewater services will be provided for the development; g) avoids increasing natural hazard risk associated with coastal erosion and inundation; h) has regard to the potential effects of a tsunami event, and takes appropriate steps to avoid, remedy or mitigate that risk;

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			<ul style="list-style-type: none"> i) avoids ribbon development along coastal margins; j) does not compromise the function <u>or operation</u> of <u>current existing</u> or <u>anticipated planned</u> coastal infrastructure; and [65.18] k) provides for safe and efficient connectivity between <u>activities occurring in the coastal marine area and associated</u> land-based infrastructure <u>required to service activities occurring within the coastal marine area</u>. [181.78] <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.4 Energy 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services 3.11 Built environment 3.12 Marine water quality 3.15 Riparian areas and wetlands 3.18 Ecological integrity and indigenous biodiversity 3.20 Amenity 3.21 Natural character 3.22 Public access 3.23 Natural hazards 3.24 Values of soil
20	6A Development Principles General Development Principles	6-25	<p>6A Development principles</p> <p>New development should:</p> <ul style="list-style-type: none"> a) <u>support existing urban areas and development nodes in preference to creating new ones, focus on existing urban areas and areas where there is already a concentration of rural-residential development, in preference to less developed areas</u>, [189.4] and occur in a manner that provides clear delineation between urban areas and rural areas; b) make use of opportunities for urban intensification and redevelopment to minimise the need for urban development in greenfield areas; c) not compromise the safe, efficient and effective operation and use of existing <u>and planned</u> [95.45] infrastructure, including

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			transport infrastructure, and should allow for future infrastructure needs, including maintenance and upgrading, where these can be anticipated;
			d) connect well with existing development and infrastructure [65.31] ;
			e) be directed away from identified significant mineral resources and their access routes, natural hazard areas, energy transmission corridors, locations identified as likely renewable energy generation sites, and high class soils;
			f) minimise energy and carbon use such as by compact urban form, and design and location which minimises the need for private motor vehicle use, encourages [181.89] multi-modal transport connections [65.31] , walking, cycling and use of public transport and maximises [181.89] opportunities for people to live, work and play within their local area;
			g) maintain or enhance landscape values and provide for the protection of historic and cultural heritage from inappropriate subdivision, use and development [181.89] ;
			h) promote positive indigenous biodiversity outcomes and protect significant indigenous vegetation and significant habitats of indigenous fauna. Development which can enhance ecological integrity, such as by improving the maintenance, enhancement or development of ecological corridors, should be encouraged;
			i) maintain or enhance public access to and along the coastal marine area, lakes and rivers;
			j) avoid as far as practicable adverse effects on natural hydrological characteristics and processes (including aquifer recharge and flooding patterns), soil stability, water quality and aquatic ecosystems, including through low impact design methods where appropriate;
			k) adopt, where appropriate, sustainable design technologies such as the incorporation of energy-efficient (including passive solar) design, low-energy street lighting, rain gardens, renewable energy technologies, rainwater harvesting and grey water recycling techniques;
			l) not result in incompatible adjacent land uses, such as with respect to industry, rural activities and existing or planned infrastructure;
			m) be appropriate with respect to expected predicted [94.85] effects of climate change and be designed to allow adaptation to these changes;
			n) consider effects on the unique tāngata whenua relationships, values, aspirations, roles and responsibilities with respect to an area. Where appropriate, opportunities to visually recognise tāngata whenua connections within an area should be considered promoted [174.22] ;
			o) support the Vision and Strategy for the Waikato River in the Waikato River catchment;
			p) encourage waste minimisation and efficient use of resources (such as through resource-efficient design and construction methods); and
			q) avoid adverse effects on ecosystem services .

#	Section	Page	Reference text
21	7 Coastal Marine Area Relevant objectives	7-1	<p>Policy 7.1 Interests in the coastal marine area</p> <p>The coastal marine area is recognised as generally being public space and its efficient use is ensured by allocating space to activities in a way that:</p> <ul style="list-style-type: none"> a) recognises the Crown’s interest in the coastal marine area; b) recognises conflicting uses; c) provides for recognised customary activities; and d) provides for ecosystem values as well as people’s social, economic and cultural aspirations. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.4 Energy 3.5 Adapting to climate change 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources 3.11 Built environment 3.12 Marine water quality 3.17 Historic and cultural heritage 3.18 Ecological integrity and indigenous biodiversity 3.19 Outstanding natural features and landscapes 3.20 Amenity 3.21 Natural character 3.22 Public access 3.23 Natural hazards
22	7 Coastal Marine	7-2	Policy 7.1 Implementation methods

#	Section	Page	Reference text
	Area Policy 7.1 Interests in the coastal marine area Implementation methods		<p><u>7.1.4 Marine Strategy</u></p> <p><u>Waikato Regional Council will develop a marine strategy for the coastal marine area. The purpose of the strategy is to optimise the opportunities provided by ecosystem services for regional economic, social and cultural wellbeing and help direct appropriate infrastructure needs and growth opportunities.</u></p> <p><u>The marine strategy will:</u></p> <ul style="list-style-type: none"> a) <u>build on existing information;</u> b) <u>be developed in collaboration with territorial authorities, iwi, industry, and other key stakeholders;</u> c) <u>identify key economic and environmental opportunities and steps to assist those opportunities;</u> d) <u>identify areas for economic use, including aquaculture, infrastructure (including environmental), biodiversity protection and amenity.</u> e) <u>identify marine pressures resulting from marine or land based activities; and</u> f) <u>identify mechanisms and actions for implementation of the marine strategy including recommendations for changes to regional plans. [77.52]</u>
23	7 Coastal marine area Policy 7.1 Interests in the coastal marine area Explanation	7-3	<p>Policy 7.1 Interests in the coastal marine area Explanation</p> <p>Policy 7.1 recognises that the coastal marine area is largely public space but supports a wide range of public and private uses that may result in conflict. Methods 7.1.1 and 7.1.2 provide a framework for making decisions on how and where activities may establish or be carried out. This will allow all interests, values, uses, and costs and benefits from development of the coastal marine area to be taken into account when determining appropriate and inappropriate locations for and types of activities. Adverse effects to be considered include those on specific uses of the coastal marine area, as well as effects on enjoyment that people derive from the landscape and effects on values to tāngata whenua, for example on lines of sight to sites of significance. The framework also allows the management of this area to achieve other policies, for example identification of marine habitats as significant natural areas.</p> <p>Method 7.1.3 makes it clear that Waikato Regional Council intends to implement a charging regime for occupation of space within the coastal marine area (excluding transitory uses such as swimming or boating). Such charging recognises that there is private gain and public loss incurred by private occupation, but also that there may be public gains from some activities and that this would be recognised by an appropriate scale of charges.</p> <p><u>The marine area is experiencing increasing use and competing interests for the same resource. The underpinning ecosystem services that provide for successful long-term use of the marine resource are also under increasing pressure. Method 7.1.4 signals the desire to see strategic and holistic management of the region's coastal marine Area. [77.52].</u></p> <p><u>Aquaculture is expected to be a growth industry nationally and within the region, and Method 7.1.4 signals the desire that growth</u></p>

#	Section	Page	Reference text
			should be strategic rather than ad hoc.
24	7 Coastal marine area Policy 7.2 Marine water quality	7-3	<p>Policy 7.2 Marine water quality</p> <p>Discharges to marine waters shall be managed to maintain or enhance the mauri and health of marine water and to protect ecosystem, amenity, and tāngata whenua values.</p> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.6 Coastal environment 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.12 Marine water quality 3.18 Ecological integrity and indigenous biodiversity 3.20 Amenity 3.21 Natural character
25	8 Fresh water bodies Policy 8.1 Approach to managing fresh water bodies Relevant Objectives	8-1	<p>Policy 8.1 Approach to managing fresh [43.21] water bodies</p> <p>Establish measurable limits and targets [18.8] The current and desired values of water bodies for each fresh water body and manage activities that adversely affect fresh water bodies [34.19] will be identified and activities will be managed to ensure that water bodies achieve the desired values</p> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.9 Efficient use of resources 3.12 Marine water quality

#	Section	Page	Reference text
			3.13 Mauri and health of fresh water bodies
			3.14 Allocation and use of fresh water
			3.15 Riparian areas and wetlands
			3.18 Ecological integrity and indigenous biodiversity
			3.20 Amenity
			3.21 Natural character
			3.22 Public access
26	8 Fresh water bodies Policy 8.2 High value fresh water bodies and wetlands Relevant objectives		<p>Policy 8.2 High value <u>fresh</u> water bodies [43.21] and wetlands [1.5]</p> <p>Ensure that the values of [133.30] high value <u>fresh</u> [43.21] water bodies <u>and wetlands [1.5]</u> are protected and where appropriate enhanced, with priority given to <i>intrinsic values</i> where there is any conflict.</p> <p>The relevant objectives are:</p> <p>3.1 Integrated management</p> <p>3.2 Decision making</p> <p>3.3 Health and wellbeing of the Waikato River</p> <p>3.7 Ecosystem services</p> <p>3.8 Relationship of tāngata whenua with the environment</p> <p>3.13 Mauri and health of fresh water bodies</p> <p>3.14 Allocation and use of fresh water</p> <p>3.15 Riparian areas and wetlands</p> <p>3.18 Ecological integrity and indigenous biodiversity</p> <p>3.20 Amenity</p> <p>3.21 Natural character</p> <p>3.22 Public access</p>
27	8 Fresh water bodies Policy 8.3 All water bodies Relevant objectives	8-5	<p>Policy 8.3 All water bodies</p> <p>Manage activities to maintain or enhance the values of [77.61] water bodies <u>and coastal waters [162.39], and to improve those degraded as a result of human activities [73.12]</u> by:</p> <p>a) reducing:</p>

#	Section	Page	Reference text
			<ul style="list-style-type: none"> i) sediment in fresh water bodies (including bank instability); ii) accelerated sedimentation of estuaries; iii) microbial and nutrient contamination; iv) other contaminants; and
			<ul style="list-style-type: none"> b) protecting and restoring <u>improving</u> [77.61]: <ul style="list-style-type: none"> i) riparian and wetland habitat; ii) instream habitat diversity; iii) natural flow regimes; and [86.54] iv) indigenous biodiversity; and [162.47]
			<ul style="list-style-type: none"> c) providing for where practicable, migratory patterns of indigenous freshwater species up and down rivers and streams and to the coastal marine area; and
			<ul style="list-style-type: none"> d) avoiding: <ul style="list-style-type: none"> i) physical modification of water bodies where practicable; and ii) inappropriate development in flood plains; and
			<ul style="list-style-type: none"> e) managing: <ul style="list-style-type: none"> i) groundwater and surface water flow/level regimes, <u>including flow regime variability</u> [86.54]; and ii) linkages between groundwater and surface water; <u>and</u> iii) <u>pest and weed species where they contribute to water body degradation.</u> [168.56]
			<p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.12 Marine water quality 3.13 Mauri and health of fresh water bodies

#	Section	Page	Reference text
			3.14 Allocation and use of fresh water
			3.15 Riparian areas and wetlands
			3.18 Ecological integrity and indigenous biodiversity
			3.20 Amenity
			3.21 Natural character
			3.22 Public access
28	8 Fresh water bodies Policy 8.3 All water bodies Implementation methods 8.3.10 Advocacy and education	8-7	<p>8.3.10 Advocacy and education</p> <p>Waikato Regional Council will:</p> <ul style="list-style-type: none"> a) encourage adoption of land-based mitigation of stormwater, including the use of wetlands; b) promote awareness of the effects of stormwater <u>systems and</u> discharges on water quality <u>habitat quality and connectivity [198.57]</u>; c) promote low-impact design options; d) provide information on the value of water bodies and the ecosystem services they provide; e) encourage the replacement of onsite wastewater disposal with reticulated wastewater systems where applicable; f) promote the benefits of retaining, enhancing or recreating areas <u>encourage retention, enhancement and extension [1.5]</u> of riparian vegetation and wetlands; g) promote awareness of relevant regional and district plan provisions; h) promote awareness of soil erosion issues; i) encourage adoption of sustainable land management practices; and j) provide information to territorial authorities to assist in managing land use activities which may adversely affect flow regimes and the availability of water <u>and</u> k) <u>promote awareness of the effects of introduction and potential spread of plant and animal pests that affect water resources [198.57]</u>. <p>Consideration will be given to collaborating with territorial authorities, tāngata whenua, industry and other stakeholders to undertake the above where it is assessed that this may provide a more effective or efficient outcome.</p>
29	8 Fresh water bodies Policy 8.4 Catchment-based	8-9	<p>Policy 8.4 Catchment-based intervention</p> <p>Maintain or improve the values of water bodies by i <u>identifying</u> catchments, <u>including Waikato River and Lake Taupō that require specific intervention [77.65]</u> to address the adverse effects of activities and land use changes <u>on the mauri and health of water</u></p>

#	Section	Page	Reference text
	intervention Relevant objectives		<p><u>bodies</u> [77.65]. Demonstrable progress in maintaining or improving the values of the relevant water bodies will be achieved by 2030. In identifying catchments that require intervention, the following will be considered:</p> <p>a) Information about the existing state current and desired values of the water bodies <u>and the risk of not maintaining, improving or protecting the mauri and health of fresh water bodies</u> [42.27]</p> <p>b) national or legislative direction;</p> <p><u>degree of improvement in habitat quality and [198.58] water quality able to be influenced by human action attained by changes to land use practices and discharge practices [86.60];</u></p> <p>c) potential to address more than one environmental issue through the intervention;</p> <p>d) timing, intensity and scale of change to land use and activities required to maintain or improve the values of the water bodies; [168.66]</p> <p>e) vulnerability and values of the <u>whole catchment and its</u> [47.25] receiving environment (including the coastal marine area);</p> <p>f) tāngata whenua values; and</p> <p>g) <u>social and economic benefits and costs</u> net benefit to the community [168.66].</p> <p>The relevant objectives are:</p> <p>3.1 Integrated management</p> <p>3.2 Decision making</p> <p>3.3 Health and wellbeing of the Waikato River</p> <p>3.7 Ecosystem services</p> <p>3.8 Relationship of tāngata whenua with the environment</p> <p>3.12 Marine water quality</p> <p>3.13 Mauri and health of fresh water bodies</p> <p>3.14 Allocation and use of fresh water</p> <p>3.15 Riparian areas and wetlands</p> <p>3.18 Ecological integrity and indigenous biodiversity</p> <p>3.20 Amenity</p> <p>3.21 Natural character</p> <p>3.22 Public access</p>

#	Section	Page	Reference text
30	8 Fresh water bodies Policy 8.5 Waikato River Catchment Relevant objectives	8-11	<p>Policy 8.5 Waikato River catchment</p> <p>Recognise Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River – as the primary direction-setting document for the Waikato River and ensure that the health and wellbeing of the Waikato River is restored and protected for future generations. <u>develop an integrated, holistic and co-ordinated approach to implementation.</u> [86.62]</p> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.12 Marine water quality 3.13 Mauri and health of fresh water bodies 3.14 Allocation and use of fresh water 3.15 Riparian areas and wetlands 3.18 Ecological integrity and indigenous biodiversity 3.20 Amenity 3.21 Natural character 3.22 Public access
31	8 Fresh water bodies Policy 8.6 Allocating fresh water Relevant objectives	8-13	<p>Policy 8.6 Allocating fresh water</p> <p>Allocate fresh water to manage the increasing competition and demand for water and Manage the allocation of fresh water in a manner that ensures sufficient water is available to meet the reasonably <u>justified and</u> foreseeable needs of people and communities. <u>including by:</u></p> <ul style="list-style-type: none"> a) — prioritising applications for the take and use of water; and b) — managing the increasing demand and competition for water resources. [34.43] <p>The relevant objectives are:</p>

#	Section	Page	Reference text
			3.1 Integrated management
			3.2 Decision making
			3.3 Health and wellbeing of the Waikato River
			3.4 Energy
			3.5 Adapting to climate change
			3.7 Ecosystem services
			3.8 Relationship of tāngata whenua with the environment
			3.9 Efficient use of resources
			3.12 Marine water quality
			3.13 Mauri and health of fresh water bodies
			3.14 Allocation and use of fresh water
			3.15 Riparian areas and wetlands
			3.18 Ecological integrity and indigenous biodiversity
			3.20 Amenity
			3.21 Natural character
32	8 Fresh water bodies Policy 8.7 Efficient allocation and use of water Relevant objectives	8-14	Policy 8.7 Efficient allocation and use of water Ensure the allocable water resource is allocated <u>efficiently</u> and <u>is [134.12]</u> used efficiently. The relevant objectives are: 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.5 Adapting to climate change 3.7 Ecosystem services

#	Section	Page	Reference text
			3.8 Relationship of tāngata whenua with the environment
			3.9 Efficient use of resources
			3.14 Allocation and use of fresh water
33	9 Geothermal Policy 9.4 Relevant objectives	9-8	<p>Policy 9.4 Development Geothermal Systems</p> <p>Development Geothermal Systems shall be managed in a way that provides for large-scale use and development of geothermal energy and water and:</p> <ul style="list-style-type: none"> a) promotes efficient use of the geothermal resource; b) recognises and allows for controlled depletion of energy so as to provide for the energy needs of current and future generations; <p>takes an integrated management approach, including through:</p> <ul style="list-style-type: none"> i) the development of a Ssystem Mmanagement Pplan for each Development <u>Geothermal S</u>ystem [141.25]; ii) establishing a peer review <u>panel for the purpose of assisting the consent authority to manage the system</u> [198.75]; and iii) the development and imposition of appropriate resource consent conditions; <ul style="list-style-type: none"> c) requires reinjection/injection of the geothermal water from large-scale takes remaining after use; d) provides for small- and medium-scale use and development that is not inconsistent with any approved system management plan; and e) avoids, remedies, or mitigates adverse effects on other natural and physical resources including overlying structures. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.7 Ecosystem services 3.9 Efficient use of resources 3.11 Built environment 3.16 Geothermal

#	Section	Page	Reference text
34	9 Geothermal Policy 9.5 Limited development geothermal systems Relevant objectives	9-10	<p>Policy 9.5 Limited Development Geothermal Systems</p> <p>Limited Development Geothermal Systems shall be managed in a way that:</p> <ul style="list-style-type: none"> a) allows sustainable and efficient use and development of geothermal resources; b) avoids, remedies or mitigates significant adverse effects from take, use or discharge of geothermal energy and water on non-geothermal natural and physical resources, including overlying structures; and c) requires consent holders to remedy or mitigate any unintended significant effects occurring as a result of the exercise of a consent. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.7 Ecosystem services 3.9 Efficient use of resources 3.11 Built environment 3.16 Geothermal
35	9 Geothermal Policy 9.6 Protected Geothermal Systems Relevant Objectives		<p>Policy 9.6 Protected Geothermal Systems</p> <p>Protected Geothermal Systems shall be managed in a way that:</p> <ul style="list-style-type: none"> a) protects Significant Geothermal Features from adverse effects, including by maintaining the natural stocks and flows of geothermal energy and water including the flow of deep geothermal water to the surface; and b) encourages the protection of other geothermal features where they are valued for amenity, cultural or scientific reasons. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.2 Decision making 3.3 Health and wellbeing of the Waikato River 3.4 Energy 3.7 Ecosystem services 3.9 Efficient use of resources

#	Section	Page	Reference text
			3.16 Geothermal
36	9 Geothermal Policy 9.7 Research Geothermal Systems Relevant objectives	9-12	<p>Policy 9.7 Research Geothermal Systems</p> <p>Protect the geothermal characteristics of Research Geothermal Systems from adverse effects by maintaining the natural stocks and flows of geothermal energy and water including the flow of deep geothermal water to the surface.</p> <p>The relevant objectives are:</p> <p>3.2 Decision making</p> <p>3.3 Health and wellbeing of the Waikato River</p> <p>3.4 Energy</p> <p>3.7 Ecosystem services</p> <p>3.9 Efficient use of resources</p> <p>3.16 Geothermal</p>
37	9 Geothermal Policy 9.8 Small Geothermal Systems Relevant Objectives	9-13	<p>Policy 9.8 Small Geothermal Systems</p> <p>Small Geothermal Systems shall be managed in a way that allows sustainable and efficient use and development.</p> <p>The relevant objectives are:</p> <p>3.2 Decision making</p> <p>3.3 Health and wellbeing of the Waikato River</p> <p>3.4 Energy</p> <p>3.7 Ecosystem services</p> <p>3.9 Efficient use of resources</p> <p>3.16 Geothermal</p>
38, 39	11 Indigenous biodiversity Policy 11.1 Maintain or enhance	11-1	<p>Policy 11.1 Maintain or enhance indigenous biodiversity</p> <p>Promote positive indigenous <i>biodiversity</i> outcomes to maintain or enhance (including through restoration of) indigenous biodiversity with particular focus on areas that are important for:</p> <p>a) continued functioning of ecological processes;</p>

#	Section	Page	Reference text
	indigenous biodiversity (in policy text) And relevant objectives text		<ul style="list-style-type: none"> b) supporting (buffering and/or linking) ecosystems, habitats and areas identified as significant indigenous vegetation and significant habitats of indigenous fauna; c) providing ecosystem services; d) the health and wellbeing of the Waikato River and its catchment; e) providing natural character and amenity values; and tāngata whenua relationships with indigenous biodiversity including their holistic view of ecosystems and the environment-; f) <u>enhancing the density, range and survival of indigenous flora and fauna. [106.2]</u> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.3 Health and wellbeing of the Waikato River 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.11 Built environment 3.13 Mauri and health of fresh water bodies 3.15 Riparian areas and wetlands 3.18 Ecological integrity and indigenous biodiversity 3.20 Amenity 3.21 Natural character
40	11 Indigenous biodiversity Policy 11.1 Maintain or enhance indigenous biodiversity Implementation methods 11.1.2 Adverse effects	11-1	<p>11.1.2 Adverse effects</p> <p>Regional and district plans shall recognise that adverse effects on indigenous biodiversity <u>within terrestrial, freshwater and coastal environments are cumulative and [198.85]</u> include:</p> <ul style="list-style-type: none"> a) fragmentation and isolation of indigenous ecosystems and habitats; b) reduction in the extent <u>and quality</u> [198.85] of indigenous ecosystems and habitats; c) loss of corridors or connections linking indigenous ecosystems and habitat fragments or between ecosystems and habitats (ecological sequences from mountains to sea); d) loss or disruption to migratory pathways in water, land or air; e) effects of changes to hydrological flows, water levels, and water quality on ecosystems;

#	Section	Page	Reference text
			<ul style="list-style-type: none"> f) loss of buffering of indigenous ecosystems; g) loss of ecosystem services; h) loss, damage or disruption to ecological processes, functions and ecological integrity; i) changes resulting in an increased threat from animal and plant pests; j) effects which contribute to a cumulative loss or degradation of indigenous habitats and ecosystems; k) <u>noise, visual and physical</u> and [198.85] disturbance on indigenous species, particularly within the coastal environment; and l) loss of habitat that supports <u>or provides a key life-cycle function for</u> [198.85] indigenous species under threat of extinction listed as Threatened or At Risk in the New Zealand Threat Classification System lists. [162.71]
41	14 Soils Policy 14.1 Maintain or enhance the values of the soil resource Relevant objectives	14-1	14 Soils Policy 14.1 Maintain or enhance the values of the soil resource Manage land use activities to: <ul style="list-style-type: none"> a) retain soil on site and in situ; b) maintain or enhance biological, chemical and physical soil properties; and c) <u>retain soil versatility to</u> [198.105] protect the existing and foreseeable range of uses of the soil resource. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.7 Ecosystem services 3.8 Relationship of tāngata whenua with the environment 3.24 Values of soil 3.25 High class soils
42	14 Soils Policy 14.1 Maintain or enhance the values of the soil resource Implementation methods	14-1	Policy 14.1 Maintain or enhance the values of the soil resource Implementation methods 14.1.1 Manage activities to maintain soil quality and reduce risk of erosion Regional plans shall control activities to maintain soil quality and to reduce the risk of erosion, including: <ul style="list-style-type: none"> a) <u>activities that negatively impact on soil quality and soil ecosystem services;</u> [44.21] b) activities on land with high erosion potential and/or near water bodies; and c) earthworks and soil disturbance, including controlling the timing, duration, scale and location of soil exposure.

#	Section	Page	Reference text
43, 44	14 Soils Policy 14.1 Maintain or enhance the values of the soil resource Explanation	14-1, 14-2	<p>Explanation</p> <p>The Waikato region is intensively farmed and relies on the soil resource to support primary industries including farming, forestry and horticulture.</p> <p>The processes to form soil occur over hundreds to thousands of years, so keeping soil on site and in situ is the most natural and effective way for soil to continue to provide ecosystem services and maintain quality for a range of uses. Policy 14.1 reflects this.</p> <p>Soil disturbance and loss results in a decline in soil quality and productive capability, and a loss in range of purposes for which the soil can be used. Erosion occurs naturally irrespective of land use, but the way that land is managed changes the risk and extent of soil disturbance and soil loss. For example, the risk and extent of soil lost during cultivation practices or as a result of vegetation removal may be affected by the soil type, topography, timing, scale of the activity, or the way in which the activity is carried out. Methods 14.1.1, 14.1.2 and 14.1.4 focus on managing activities when the risk of erosion is high or where it may result in adverse effects elsewhere.</p> <p>Degradation of the soil resource may also occur through changes in physical condition, including porosity and soil structure, chemical properties including carbon levels (organic matter), and biological activity. These affect productivity and health of soil and its ability to hold and use nutrients and water. Method 14.1.3 recognises that working with industry and land managers and advocating good soil management practices offers opportunities to ensure that soil quality is maintained or enhanced. Research into soil and land management practices may include consideration of carbon sequestration, green house gas emissions and the values of soils under native vegetation as a reservoir of biodiversity and of ecosystem services. [88.2]</p>
45	14 Soils Policy 14.2 high class soils Relevant Objectives	14-2	<p>Policy 14.2 High class soils</p> <p>Avoid a decline in the availability of high class soils for primary production due to inappropriate subdivision, use or development.</p> <p>The relevant objectives are:</p> <p>3.7 Ecosystem services</p> <p>3.9 Efficient use of resources</p> <p>3.24 Values of soil</p> <p>3.25 High class soils</p>
46	14 Soils Policy 14.3 Soil contaminants	14-3	<p>Policy 14.3 Soil contaminants</p> <p>Ensure that accumulation of contaminants in soils does not cause a reduction in the range of existing and foreseeable uses of the soil resource. Particular attention will be given to the potential for effects on:</p>

#	Section	Page	Reference text
	Relevant objectives		<ul style="list-style-type: none"> a) human health; b) animal health; c) suitability of soil for food production; d) micro-nutrient availability; e) soil ecology; and f) groundwater. <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.7 Ecosystem services 3.9 Efficient use of resources 3.24 Values of soil 3.25 High class soils
47	14 Soils Policy 14.4 Contaminated land Relevant objectives	144	<p>Policy 14.4 Contaminated land</p> <p>Identify and manage contaminated land to ensure human, plant and animal health, and water, air and soil quality are protected from unacceptable risk.</p> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.1 Integrated management 3.2 Decision making 3.7 Ecosystem services 3.9 Efficient use of resources 3.10 Air quality 3.13 Mauri and health of fresh water bodies 3.24 alues of soil
48	14 Soils	14-6	Policy 14.5 Peat soils

#	Section	Page	Reference text
	Policy 14.5 Peat Soils Relevant Objectives		<p>Manage activities to address adverse effects resulting from use and development of peat soils, including by slowing the rate of subsidence and the loss of carbon by oxidation from peat soils.</p> <p>The relevant objectives are:</p> <ul style="list-style-type: none"> 3.7 Ecosystem services 3.9 Efficient use of resources 3.11 Built environment 3.15 Riparian areas and wetlands 3.24 Values of soil
49	Glossary	G-3	<p>Ecosystem services means the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth.</p>

Appendix 2 – Summary and list of all uses of the term 'ecosystem services' in Submission Summary Volumes 1, 2, and 3

The following sections summarise the context in which 'ecosystem services' appeared, and any commentary made by submitters on the inclusion of ecosystem services in the proposed RPS, in public submissions on the proposed RPS. This summary of findings refers only to those submissions that included a use of the term 'ecosystem services', and therefore does not summarise all submissions.

Issue 1.1 State of resources

Two submissions strongly supported Issue 1.1 State of resources with no amendments, and one of these also strongly supported the use of the term 'ecosystem services' within the text of Issue 1.1, noting its relevance to kaupapa Māori. Three submissions supported Issue 1.1 with amendment; the amendments aimed to have changes made that are not related to the use of ecosystem services. No submissions criticised the use of 'ecosystem services' within the text of Issue 1.1 State of resources.

Objective 3.7 Ecosystem services

Four submissions strongly supported *Objective 3.7 Ecosystem services* with no amendments; six submissions supported the Objective with the following amendments:

- Addition of the term 'value' to emphasise the value of ecosystem services
- addition of (underlined text) 'natural and physical resources'
- inclusion of a definition of ecosystem services in the text
- additional information added to make clear what is to be achieved, where and by when, and that achievement of this can be measured
- 'ecosystem services' is not a term that is widely understood and thus should be:
 - explained in greater detail,
 - the term 'Ecosystem processes and services' should be used.

One submission opposed *Objective 3.7 Ecosystem services*, arguing that the term 'ecosystem services' is confusing and that to maintain *all* ecosystem services irrespective of priority or scale is inappropriate. This submission aimed to have Objective 3.7 amended to focus on the 'functional benefits of ecosystems' to be maintained or enhanced where they are found to be significant.

Objective 3.13 Mauri and health of freshwater bodies

Two submissions supported Objective 3.13 with amendments that aimed to have acknowledgement of the provision of ecosystem services included in Objective 3.13.

Method 4.1.11 Economic instruments (Policy 4.1 Integrated approach)

One submission supported Method 4.1.11 with an amendment aimed at specifically recognising ecosystem services.

Section 6A Development principles

Four submissions supported Section 6A Development principles with amendments. The amendments focussed on the following:

- delete principle q) *avoid adverse effects on ecosystem services* deleted, because the term 'ecosystem services' is vague and the intent unclear,
- amend principle q) to read *avoid significant adverse effects on ecosystem services*,
- emphasise the role of rural production systems as providers of ecosystem services.

Policy 8.6 Allocating fresh water

One submission supported Policy 8.6 Allocating freshwater with amendments, including the specific recognition of the inherent values of fresh-water bodies included ecosystem services.

Section 11 Indigenous biodiversity

One submission supported Section 11 in part, with one amendment aimed at strengthening the recognition of ecosystem services.

Method 11.1.2 Adverse effects

One submission supported Method 11.1.2 with amendments. The submission argued that the definition of ecosystem services in the proposed RPS is too broad for the District Plans to effectively meet the requirement under Method 11.1.2 that they recognise that adverse effects on indigenous biodiversity include the loss of ecosystem services.

Method 11.1.10 Information gathering

One submission supported Method 11.1.10 with no amendments, emphasising the importance of having baselines and indicators for ecosystem condition to achieving Objective 3.7 Ecosystem services. One submission supported Method 11.1.10 with amendments; the submission aimed to have collaboration with other resource managers gathering information on ecosystem services prescribed in the text.

Method 14.1.3 Research and advocacy (Under 14 Soils)

One submission supported this method with amendments, including having soil ecosystem services specifically recognised in the text.

Policy 14.3 Soil Contaminants

One submission supported Policy 14.3 with an amendment aimed at specifically recognising the increased provision of ecosystem services due to fertiliser use.

Glossary

Two submissions commented on the definition of ecosystem services in the glossary. One submission wanted the definition retained as it is, or amended to include all ecosystem types including productive land systems. One submission did not support the definition of ecosystem services in the glossary, and wanted the definition deleted from the glossary, arguing that the definition is vague.

No substantial comment on ecosystem services

Submissions on the following topics included a usage of the term ecosystem services but did not make any significant comment on ecosystem services or its inclusion in the proposed RPS:

- Objective 3.18 Ecological integrity and indigenous biodiversity
- Objective 3.24 Value of soils
- Section 6A Development principles
- Section 8 Fresh water bodies.

The following table lists all uses of the term 'ecosystem services' in the proposed Waikato RPS, summary of submissions Volumes 1, 2 and 3.

#	Section	Page	Reference text
1	Contents	i	Contents list
2	Primary Submission: PRPS2-81.5 Aldridge, Roderick Francis David	81	<p>Précis: Maintaining the health and wellbeing of ecosystems is the only way to have a sustainable future. It is also the only way to maintain ecosystem services. A new objective would better address Issue 1.1 and Objective 3.18.</p> <p>Decision requested: ADD a new Issue to read: the declining health, wellbeing and indigenous biodiversity of natural ecosystems AND renumber/cross reference accordingly OR wording to achieve the same effect.</p>
3	Primary Submission: PRPS2-29.2 Waikato By-Products Ltd	29	<p>Précis: Issue 1.1 is supported with amendments. Issue 1.1 identifies that any decline in the quality and quantity of natural and physical resources "reduces our ability to provide for our wellbeing". While this is acknowledged, the ability to use and develop natural and physical resources in order to provide for people and communities social, economic and cultural wellbeing is also a significant resource management issue for the region. WBP seeks an amendment so that the Issue recognises that the purpose is to provide for people and communities social, economic and cultural wellbeing.</p> <p>The Explanation acknowledges the role of natural and physical resources in enabling us to provide for our wellbeing. However, this could be clarified further, for the reasons described above.</p> <p>Decision requested: AMEND Issue 1.1 as follows: "Issue 1.1 State Role of resources The ability to use and develop natural and physical resources is important to enable people and communities to provide for their social, economic and cultural wellbeing. However, a decline in the Declining quality and quantity of natural and physical resources may impacts on their life-supporting capacity, reduces intrinsic values and ecosystem services and in general reduces our ability to provide for our wellbeing."</p> <p>AND AMEND the second paragraph of the Explanation to Issue 1.1 as follows: "Through the use of natural and physical resources.....we need continued access to natural and physical resources and access to a healthy environment."</p> <p>AND ADD a sixth bullet point to the Explanation as follows:</p> <ul style="list-style-type: none"> Increasing pressure on natural and physical resources may impact on access to resources and therefore the ability of people and communities to provide for their wellbeing.
4	Primary Submission: PRPS2-74.2 Submitter: NZ Forest	74	<p>Précis: Supports Issue 1.1. The decline in the quality of soils and water within the region is of high importance to the land users and the community as a whole. Land use intensification, particularly into dairy farming, is a concern and ability of soils to provide ecosystem services into perpetuity relies on the ongoing sustainable management of soils. NZFM supports statements made within the PRPS regarding the sustainable carrying capacity of soils and the detrimental effect that an increasing intensification of land is having on soils within the region. NZFM supports the PRPS recognising that agriculture is</p>

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	Managers Ltd		having an adverse effect on soil and water quality. Decision requested: RETAIN Issue
5	PRPS2-77.1 Environmental Defence Society Inc (EDS)	77	Précis: Issue 1.1 is supported. A healthy environment is essential for our social, cultural and economic wellbeing and provides essential ecosystem services. It is appropriate to recognise that natural resources also have intrinsic value. The specific areas of focus largely reflect key resource management issues for the Waikato region. However, emphasis must also be placed on the effects of agricultural conversions and loss of outstanding natural landscapes and features and the natural character of the coastal environment. Decision requested: AMEND Issue 1.1 to acknowledge that agricultural conversions, loss of outstanding natural landscapes and features and the natural character of the coastal environment are also issues for the Waikato Region.
6	PRPS2-146.1 Rio Tinto Mining & Exploration Limited	146	Précis: Support with amendments Issue 1.1. Issue 1.1 identifies that the declining quality and quantity of natural and physical resources “reduces our ability to provide for our wellbeing”. While this is acknowledged, the ability to use and develop natural and physical resources to provide for people and communities” social, economic and cultural wellbeing is also a significant resource management issue for the region, particularly in relation to mineral resources given that the region is rich in these resources. The Explanation to Issue 1.1 acknowledges the role of natural and physical resources in enabling us to provide for our wellbeing. However, this could be clarified further, for the reasons described in relation to Issue 1.1 above. Decision requested: AMEND Issue 1.1 to read: "Issue 1.1 State Role of resources <u>The ability to use and develop natural and physical resources is important to enable people and communities to provide for their social, economic and cultural wellbeing.</u> However, D declining quality and quantity of natural and physical resources impacts their life supporting capacity, reduces intrinsic values and ecosystem services and in general reduces our ability to provide for our wellbeing. While...." AND AMEND Issue 1.1 Explanation to read: "Through the use of natural and physical resources we provide for the necessities of life as well as the comforts and pleasures that come with prosperity. In order to remain prosperous and healthy, we need continued access to natural and physical resources such as mineral resources, as well as access to a healthy environment."

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			AND ADD additional bullet point to Issue 1.1 Explanation to read: "Increasing pressure on natural and physical resources may impact on access to resources and therefore the ability of people and communities to provide for their wellbeing."
7	PRPS2-181.3 Raukawa Charitable Trust, Environmental Group	181	Précis: Issue 1.1 is supported as it represents a key issue for Raukawa and they strongly support the explicit recognition of intrinsic values and ecosystem services. Raukawa support recognition of clauses a)-d), and f). Clause e) seems a little out of place as this seems to be about competition for space rather than effects on the natural environment per se. Decision requested: RETAIN Issue 1.1.
8	PRPS2-18.2 Coeur Gold New Zealand Limited and Viking Mining Limited	18	Précis: Objective 3.7 is supported. It revolves around the concept of ecosystem services, which is a concept recognised by the United Nations in 2004 that acknowledges that humankind benefits from resources and processes supplied by natural ecosystems. Objective 3.7 seeks to ensure that these services are recognised, maintained and enhanced. As these services are inherently connected to the natural resources available within the region, and given that these resources do provide a service in relation to mine closure and rehabilitation activities, this objective is supported. Decision requested: RETAIN Objective 3.7
9	PRPS2-28.9 Smith, Catherine	28	Précis: Objective 3.7 is supported in part. Insert the word "value" in the objective to emphasise the worth of the ecosystem services. Decision requested: AMEND Objective 3.7 by inserting the word value.
10	PRPS2-29.7 Waikato By- Products Ltd	29	Précis: Objective 3.7 is supported. The Objective revolves around the concept of ecosystem services which is a concept recognised by the United Nations in 2004 that acknowledges that humankind benefits from resources and processes supplied by natural ecosystems, for example the breakdown of nutrients in soils or the pollination of crops by bees. Objective 3.7 seeks to ensure that these services are recognised, maintained or enhanced. Decision requested: RETAIN Objective 3.7.
11	PRPS2-43.15 Horticulture New Zealand	43	Précis: Objective 3.7 is supported with amendment. It is noted that the objective only refers to natural resources. To be consistent with the other parts of the PRPS and the definition in the Glossary this should be natural and physical resources. Regional wellbeing should specifically provide for communities. It would be preferred that the glossary definition was incorporated in the Objective and the Issue directly. Decision requested: AMEND Objective 3.7 to read: "The range of ecosystem services (i.e. the benefits people obtain from

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			ecosystems) associated with natural and physical resources are recognised and maintained or enhance to enable ongoing contribution to regional wellbeing and communities."
12	PRPS2-77.13 Environmental Defence Society Inc (EDS)	77	<p>Précis: Objective 3.7 is supported with amendments. Ecosystem services perform a range of critical and necessary functions that contribute to the region's wellbeing. Further detail should be included to ensure this objective is met.</p> <p>Decision requested: AMEND Objective 3.7 so that it is measurable and more specific as to what is to be achieved, where and by when.</p>
13	PRPS2-82.14 Advisory Committee for Regional Environment (ACRE)	82	<p>Précis: Objective 3.7 is supported in part. Ecosystem services are fundamental to all life but are not well understood by the general public. ACRE would like to see this objective spelt out more clearly.</p> <p>Decision requested: ADD Objective 3.7 the words: Ecosystems are managed sustainability to insure the continued availability of services required to meet the needs of both present and future generations. This includes provisioning, regulating, and cultural services that humans use directly and the supporting services that underpin them.</p>
14	PRPS2-86.8 Genesis Energy Ltd, Corporate Office	86	<p>Précis: Objective 3.7 is supported in part.</p> <p>Decision requested: AMEND Objective 3.7 to read: "The range of ecosystem services associated with natural resources are recognised and maintained or enhanced to enable their ongoing contribution to regional wellbeing."</p>
15	PRPS2-110.34 Sustainable Waikato	110	<p>Précis: Objective 3.7 is supported in part. More emphasis is needed on the value of the ecosystem services in question, rather than the "range" of them. In addition it is not clear why "associated with natural resources" is mentioned, as all ecosystem services are associated with natural resources.</p> <p>Decision requested: AMEND Objective 3.7 as follows (or similar): "The range of ecosystem services associated with natural resources are recognised and maintained or enhanced to enable ongoing contribution to regional wellbeing. The value of maintaining and enhancing the full range of ecosystem services is recognised and provided for, to enable ongoing contribution to regional wellbeing."</p>
16	PRPS2-113.6 King Country Energy Ltd	113	<p>Précis: Objective 3.7 is opposed. The term 'ecosystem services' is confusing, and it is inappropriate to maintain or enhance 'all' benefits obtained from ecosystems associated with natural resources regardless of the scale of benefit provided, and at the detriment of other resources, including physical resources.</p> <p>Decision requested: AMEND Objective 3.7 to read: "The functional benefits of ecosystems range of ecosystem services</p>

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			associated with natural resources are recognised and <u>where identified as being significant, are</u> maintained or enhanced to enable ongoing contribution to regional wellbeing." OR any similar amendments to like effect. AND any consequential amendments.
17	PRPS2-160.11 Mairi Jay & Pippa Wallace	160	<p>Précis: Objective 3.7 is supported with amendments. The average person is likely to assume that the phrase 'ecosystem services' applies to services that ecosystems provide for human beings. Many ecosystem services involve processes of ecosystem maintenance that are distinct from services to human beings.</p> <p>Decision requested: AMEND the title of Objective 3.7 as follows: "Protection of Ecosystem processes and services"</p>
18	PRPS2-181.15 Raukawa Charitable Trust, Environmental Group	181	<p>Précis: Objective 3.7 is supported as it is consistent with Te Ao Maori which recognises that the people cannot be separated from the environment. Raukawa strongly supports the recognition of ecosystem services.</p> <p>Decision requested: RETAIN Objective 3.7.</p>
19	PRPS2-43.21 Horticulture New Zealand	43	<p>Précis: Support in part with amendment Objective 3.13. The objective is confusing because it has the words fresh water bodies in bold indicating that the term is defined. The term fresh water bodies is not defined in the Glossary but the RMA definitions for fresh water and water body are as follows:</p> <p>Fresh water includes all water except coastal water and geothermal water. Water Body means fresh water or geothermal water in a river, lake, stream, pond, wetland or aquifer, or any part thereof that is not located within the coastal marine area. The definitions do not include the same matters so it is unclear which definition is to be applied for fresh water bodies. The definition of water body also relies on the RMA definitions of river and lake and wetland, which make the definition of water body more limited than the definition of fresh water. There needs to be clarity as to what is included within the term fresh water bodies. The Objective sets out a range of 'values' for fresh water bodies which are to be maintained. These values effectively confer a priority to some values for water uses over others.</p> <p>Decision requested: ADD Objective 3.13a) vii) to read: <u>Enabling people and communities to provide for their social, economic and cultural wellbeing and for their health and safety.</u> AND AMEND Objective 3.13 c) to read: "Establish values for protecting the values of fresh water bodies where they are high; and " AND DELETE Objective 3.13 d). AND ADD a new clause to Objective 3.13 to read: <u>Maintenance of ecosystem services.</u></p>
20	PRPS2-133.10 Solid Energy New Zealand Limited	133	<p>Précis: Objective 3.13 is supported with amendments, as the list does not recognise the ecosystems services provided by wetlands in particular, where such water bodies are currently being used for treatment of wastewater, or have been created for that purpose.</p>

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			<p>Decision requested: AMEND Objective 3.13 as follows: "The mauri and health of fresh water bodies are protected by: "...vi)...including swimming; and vii) <u>ecosystem services provided by wetlands used for treatment of wastewater;</u> b) restoring or enhancing..."</p>
21	PRPS2-43.26 Horticulture New Zealand	43	<p>Précis: Support in part with amendment Objective 3.18. The objective seeks to provide for a full range of ecosystem types but is unclear what it really means. The term "full range of ecosystem types" is defined in the Glossary but does not include production land ecosystems that provide ecosystem services to the Waikato Region. Therefore the Objective does not include the full range of ecosystem types</p> <p>Decision requested: AMEND the definition and Objective to specify certain ecosystem types. OR AMEND to include all ecosystem types.</p>
22	PRPS2-177.26 Tuwharetoa Maori Trust Board	177	<p>Précis: Support Objective 3.24. The Board supports the management and protection of soils, in particular their capacity to support life and provide for ecosystem services. The objective is consistent with Ngati Tuwharetoa role as kaitiaki of the environment and sustaining all ecosystem processes.</p> <p>Decision requested: RETAIN Objective 3.24.</p>
23	PRPS2-43.43 Horticulture New Zealand	43	<p>Précis: Support with amendment Method 4.1.11. Method 4.1.11 is supported but it is considered that there should be specific recognition of ecosystem services. Horticulture NZ seeks that the term "transferable permits" are used as tradable implies that money is exchanged. This may not always be the case.</p> <p>Decision requested: AMEND Method 4.1.11 b) to read: "differential rates and ... where a public good <u>such as ecosystem services</u> is provided by private interests;" AND AMEND c) to read: "full-cost pricing to ensure negative externalities are borne by those responsible where possible <u>including general public and public benefits;</u>" AND AMEND e) to read: "tradable <u>transferable</u> permits to assist in the efficient management of resources."</p>
Volume Two			
1	PRPS2-45.18 Transpower New	45	<p>Précis: Section 6A Development principles is supported in part. The phrase 'where appropriate' should be added to recognise that not all of the principles will be relevant and/or of equal importance to a particular situation. Principle q) should be</p>

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	Zealand Ltd		<p>deleted as the term 'ecosystem services' is vague and the intent is unclear.</p> <p>Decision requested: AMEND 6A General development principles to read: "New development should, where appropriate: ..." OR any other amendment to achieve the same intent, AND DELETE principle q) from general development principles, AND RETAIN principles c), e) and l) insofar as they pertain to infrastructure, subject to amendments above.</p>
2	PRPS2-50.17 Powerco Limited, Corporate Office	50	<p>Précis: Section 6A Development principles is supported in part. The phrase 'where appropriate' should be added to recognise that not all of the principles will be relevant and/or of equal importance to a particular situation. Principle q) should be deleted as the term 'ecosystem services' is vague and the intent is unclear.</p> <p>Decision requested: AMEND 6A General development principles to read: "New development should, where appropriate: ..." AND ADD a new principle to read: <u>Ensure there is co-ordination between the design, location, timing and sequencing of new urban development and the development, funding, implementation and operation of infrastructure serving the area in question, so that all infrastructure required to serve new urban development is available, or is known to be available, prior to development occurring.</u> OR any other amendments to achieve the same intent. AND DELETE principle q), AND RETAIN principles c), e) and l) insofar as they pertain to infrastructure, subject to amendments above.</p>
3	PRPS2-198.43 Waikato Regional Council	198	<p>Précis: 6A Development principles are generally supported. However, in anticipation of the impending release of the National Policy Statement for Renewable Electricity generation, it is considered that recognition will need to be given to providing for new electricity generation infrastructure. Recognition should be made that such infrastructure must be located where the resource is available and that it may have effects on landscape, amenity and natural character values. Clarify that such infrastructure should be directed away from at least regionally significant landscape, amenity and natural character values. Principle q) states that "new development should avoid adverse effects on ecosystem services". This is a high bar and a more realistic provision would be to avoid significant adverse effects on ecosystem services.</p> <p>Decision requested: AMEND 6A as follows: "q) avoid <u>significant</u> adverse effects on ecosystem services r) <u>encourage the location of new electricity generation infrastructure away from areas of regionally significant landscape, amenity and natural character.</u>" AND make any consequential amendments necessary to give full effect to the intent of the relief sought.</p>
4	PRPS2-43.111 Horticulture New	43	<p>Précis: Support with amendment 6A Development Principles. Horticulture NZ seeks changes with decisions sought in this submission, with a particular focus on meeting the needs of primary production and rural communities.</p>

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	Zealand		Decision requested: ADD to 6A Principles for rural-residential development a new point to read: <u>not compromise the ability for rural production systems to provide ecosystem services, by removing access to water or any other factor of production;</u>
5	PRPS2-42.26 Te Arawa River Iwi Trust (TARIT)	42	Précis: Support with amendment Section 8. Wetlands are an important means to support ecosystem services , biodiversity (particularly native plants and mahinga kai), natural processes within waterways and restoration of the mauri of waterways (and water quality). A method specifically addressing wetlands would assist to focus attention on protection and restoration of wetlands. Decision requested: ADD a method specifically addressing wetlands would assist to focus attention on protection and restoration of wetlands
6	PRPS2-42.31 Te Arawa River Iwi Trust (TARIT)	42	Précis: Support with amendment Policy 8.6. The proposed RPS seeks to manage water allocation in a way that meets the reasonably foreseeable needs of people and communities. The policy should be amended to refer to the inherent values of water bodies (e.g. mauri, ecosystem services , natural character, natural processes and so on). There is currently no reference to tangata whenua use. There should be explicit acknowledgement that water allocation is a means to support the relationship of Maori with their taonga. Decision requested: AMEND Policy 8.6 to refer to the inherent values of water bodies (e.g. mauri, ecosystem services, natural character, natural processes and so on). AND AMEND to explicit acknowledgement that water allocation is a means to support the relationship of Maori with their taonga.
	Volume Three		
1	PRPS2-181.145 Raukawa Charitable Trust, Environmental Group	181	Précis: Chapter 11 is supported in part. Our indigenous biodiversity is a taonga to Raukawa. We support proactive protection and restoration of this taonga. We would like to see the trend of biodiversity decline reversed so our children experience the dawn chorus we struggle to hear. We support the integrated management of indigenous biodiversity. The overlapping roles of different agencies can create uncertainty and we believe the Proposed RPS goes some way to clarifying the respective roles of local authorities but not far enough. We support the recognition of ecosystem services but believe this could be strengthened further.

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			<p>Decision requested: ENSURE that the Proposed RPS addresses the protection and restoration of the region's indigenous biodiversity and continues to recognise and protect tangata whenua interests.</p> <p>AND PROVIDE further clarification around respective roles for biodiversity and strengthen the recognition of ecosystem services.</p> <p>AND RETAIN policies and methods in this chapter, subject to specific changes requested.</p>
2	PRPS2-94.117 Hamilton City Council	94	<p>Précis: Method 11.1.2 is supported in part as this method requires district plans to recognise that adverse effects on indigenous biodiversity includes the loss of ecosystem services. The reference to the loss of ecosystems services is important as it ensures biodiversity loss is recognised not only for its intrinsic worth but also its service provision. The term also ensures impacts are seen in terms of their effects on ecosystem functioning, rather than a couple of favoured species. Referring to them as 'services' means treating ecological areas as assets that ought to be maintained for the important services they provide. However, the term 'ecosystem services' is very broad and it is considered that in a district plan context this could be very difficult to address.</p> <p>Decision requested: AMEND the Glossary definition of ecosystem services by ADDING words to clarify.</p>
3	PRPS2-30.16 Waikato Biodiversity Forum	30	<p>Précis: Supports Method 11.1.10. Information gathering and views is an important way of providing districts with information which will assist with monitoring. It is critical that baselines and indicators for ecosystem health and conditions are available to meet Objective 3.7 Ecosystem services.</p> <p>Decision requested: RETAIN Method 11.1.10.</p>
4	PRPS2-162.74 Director General of Conservation	162	<p>Précis: Method 11.1.10 is supported in part. The Department of Conservation undertakes ecosystem services monitoring and it would be appropriate to work with Regional Council to avoid duplication of this work.</p> <p>Decision requested: AMEND Method 11.1.10 by ADDING the following: c) <u>collaborate with other resource managers when gathering information and data.</u></p>
5	PRPS2-43.103 Horticulture New Zealand	43	<p>Précis: Support in part with amendment Policy 14.1.</p> <p>Policy 14.1 should focus on the soil resource as opposed to the 'values'. The focus should be on the life supporting capacity of the soil resource.</p> <p>It is difficult to determine what may be the foreseeable range of uses of soil, therefore to implement point c) is impossible. Nor is it the 'uses' that should be protected, rather the soil resource.</p> <p>The explanation states that the Waikato Region is intensively farmed. However it is unclear how the term 'intensively' may be</p>

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			<p>interpreted. More clarification is sought that intensive farming does not include horticultural activities is sought.</p> <p>Decision requested: AMEND Policy 14.1 to read: "Policy 14.1 Maintain or enhance the <u>life supporting capacity</u> values of the soil resource" AND AMEND Policy 14.1 c) to read: "protect the existing and foreseeable range of uses of the <u>Provide for the continued use of the soil resource for the range of existing uses</u>" AND AMEND Policy 14.1 to allow for consequential amendments to remove "values" from the implementation methods for Policy 14.1. AND DELETE paragraph one of Explanation. AND ADD new paragraph one to Explanation to read: <u>The Waikato Region has a range of important attributes that enable production land activities to be undertaken in the region. The soil resource is one such attribute and activities such as farming, forestry and horticulture depend on this resource for their activities, including provision of ecosystem services.</u></p>
6	PRPS2-88.2 Landcare Research New Zealand Ltd	88	<p>Précis: <i>Method 14.1.3 is supported with amendment. Some other functions of soil could be mentioned here, such as importance as a reservoir of carbon and manipulating green house gas emissions, and the value of soils under native vegetation as an unrecognised reservoir of indigenous biodiversity. The amendment is suggested to broaden the scope.</i></p> <p>Decision requested: AMEND 14.1.3 as follows: ...a) advocate for research into the risks... ..that enhance the values of the soils resource including carbon sequestration, manipulating green house gas emissions, and the value of soils under native vegetation as an unrecognised reservoir of indigenous biodiversity and of ecosystem services; and...</p>
7	PRPS2-43.106 Horticulture New Zealand	43	<p>Précis: Support in part with amendment Policy 14.3. As identified in relation to Policy 14.1 it is difficult to determine what may be the foreseeable range of uses of soil, therefore to implement the policy is difficult. In addition, Environment Waikato is not responding to the agreed responsibilities or strategies set up to respond to the accumulation of contaminants by industry, despite being a part of the Cadmium Working Group that established national strategy for the management of Cd accumulation in soil.</p> <p>Soil management for animal or plant nutritional purposes is not a resource management matter so the regional council should not include it in plans. It should also be recognised that adding fertilisers and other products to soil have beneficial effects that increase soil productivity and the provision of ecosystem services.</p>

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			<p>Decision requested: AMEND the Explanation to Policy 14.3, so that it informs the need to ensure that that the soil resource is not contaminated in a manner that precludes its use for the range of existing uses.</p> <p>AND AMEND paragraph two of the Explanation by ADDING that fertilisers and other products applied to soil have beneficial effects that increase soil productivity and the provision of <i>ecosystem services</i>.</p>
8	PRPS2-43.17 Horticulture New Zealand	43	<p>Précis: The Glossary is supported with amendments.</p> <ul style="list-style-type: none"> • Horticulture NZ supports the Objective relating to efficient use of resources. However it is noted that there is no definition for efficiency in the Glossary to assist with understanding what it means so a definition for efficiency is required to support Objective 3.9. • The focus of Issue 1.4 and Objective 3.11 are on infrastructure and structures and their development. Both infrastructure and structures are defined in the Glossary and the RMA so it would provide greater clarity if the Objective was renamed "Infrastructure and structures". This is clearer than needing to define "built environment." Include a definition for reverse sensitivity effects. • The term fresh water bodies is not defined in the Glossary. • The definition in the Glossary for wetland is not the definition used in the RMA. To provide consistency it is considered that the definition in the RMA should be used. • Method 14.1.1 seeks to control earthworks and soil disturbance. Neither term is defined in the PRPS so it is unclear what earthworks and soil disturbance may be sought to be controlled. Horticulture NZ seeks a definition for earthworks and soil disturbance in the Glossary so there is clarity on this matter. • The ability to manage activities can be hindered by a lack of understanding about environmental processes and the effects of activities. Therefore, an approach which is precautionary but responsive to increased knowledge is required. <p>Point e) refers to the 'best available technique.' It would be more appropriate that 'best practicable option' as defined in the RMA is used as this defines a range of parameters to be considered in respect of is charges of contaminants.</p> <ul style="list-style-type: none"> • Allocable flow - The definition of allocable flow should mean the amount of water that can be allocated for consumptive uses. <p>Consumptive Take or Use - Horticulture NZ seeks that a definition is included for consumptive take or use so that it is clear if a take and use of water is consumptive or not.</p> <ul style="list-style-type: none"> • Catchment - The definition of catchment should identify that there may be sub-catchments or management areas within a catchment. • The definitions of "Cultural impact assessment" and "cultural value assessments" are considered to be vague and lacking clarity through the use of imprecise language such as "can" and "much like". The definitions should be clarified by separating both out and providing a little more certainty around the form and function, if possible.

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			<ul style="list-style-type: none"> • The definition of ecosystems is supported. • As outlined elsewhere in this submission the separate categorisation of high class soils is not supported. • As identified in section 3.17 of this submission, Historic heritage is defined in the RMA which is largely the definition used in the PRPS. However the term has been amended to be 'Historic and cultural heritage'. Culture matters are considered as part of the definition of historic heritage so it is unclear why the definition needs to be amended in this way. • The definition of Integrated Transport Assessment states that it is a 'comprehensive review' of all the transport impacts of a development proposal. Any ITA should be relative to the scale of the development and potential for effects. • Lifeline utilities. • The RMA provides a definition for Infrastructure which includes the matters listed in the definition of lifeline utilities, therefore it is not needed. • Minimum flow - It is considered that the definition should be for Environmental flow, as opposed to minimum flow as this is the basis of water allocation in Variation 6. The definition for environmental flow should be that used in Variation 6. • The definition of point source discharge should be the opposite of the definition of non-point source discharge. • The definition of regionally significant infrastructure is problematic. Like most definitions that are lists, there are omissions and inclusions that should be included or deleted as a consequential result of the submission of the Parties. In particular, the infrastructure developed that is crucial to provisioning the regional benefits of horticulture are missing from the PRPS. • There is a significant gap in the chapter where the definition of infrastructure does not cover some other regionally significant facilities such as facilities for research and development, aggregate resources and schools. In particular it is appropriate to provide for the regionally significant role played by Crown Research Institutes including Plant and Food Research, and existing educational facilities including the University of Waikato. • Urban - The definition of urban is problematic in that it depends on a number of other terms which are not defined - such as agricultural or rural. It would be clearer to use words or terms that are defined elsewhere such as production land in the RMA. • Riparian areas - Part of the purpose of riparian areas is to provide ecosystem services. This should be included in the definition. • The term land use is used throughout the PRPS but is not defined. The following definition is sought to provide clarity to the planning framework. • Activity - The term activity is used throughout the PRPS but is not defined. The following definition is sought to provide clarity to the planning framework. • Versatile land - Horticulture NZ does not support the use of high class soils. In its place it may be appropriate to consider

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			<p>the versatility of the land, as opposed to the soil. The definition below lists a range of matters that would be considered in assessing the versatility of a land resource.</p> <p>Decision requested: ADD definition of Efficiency that includes economic, technical and allocative efficiency as follows: <u>Efficiency is measured by considering how technically efficient the use is, how economically efficient the use is and how efficiently the resource is used.</u></p> <p>AND DELETE definition of Built Environment.</p> <p>AND ADD definition of Reverse Sensitivity to read: <u>'Reverse Sensitivity' means the vulnerability of an existing lawfully established activity to complaint from other activities located in the vicinity which are sensitive to adverse environmental effects that may be lawfully generated by the existing activity, thereby creating the potential for the operation of the existing activity to be constrained.</u></p> <p>AND ADD definition of Fresh water bodies to read: <u>fresh water in a river, lake, stream, pond, wetland or aquifer, or any part thereof, that is not located within the coastal marine area.</u></p> <p>AND AMEND definition of Wetland to that in the RMA.</p> <p>AND ADD a definition for Precautionary approach to reflect the intent outlined in the paras of 4.1.9 of this submission.</p> <p>AND ADD a definition for Best Practicable Option to match the definition in the RMA.</p> <p>AND ADD definition for Include a definition for earthworks and soil disturbance as follows: <u>Means the disturbance of the land surface by any means including by blading, blasting, contouring, cutting of batters, filling, excavating, ripping, root raking, recontouring, or moving or removing soil or earth.</u></p> <p><u>Earthworks excludes:</u></p> <ul style="list-style-type: none"> <u>(a) cultivation or harvesting</u> <u>(b) forestry</u> <u>(c) clearance or disturbance by animals including grazing</u> <u>(d) activities undertaken for the sole purpose of establishing a fence line</u> <u>(e) the maintenance or upgrade of existing tracks, structures (including fences), or infrastructure</u> <u>(f) maintaining shelterbelts (including cutting of shelterbelt roots)</u> <p>AND AMEND Allocable flow to read:</p>

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			<p>"Allocable flow means the amount of water in a water body that can be allocated for <u>consumptive</u> take or use."</p> <p>AND ADD a definition for consumptive use to read:</p> <p>"Consumptive use means any use of fresh water that alters the flows and or levels in a water body on either a temporary or permanent basis, but excludes any use that:</p> <p>(a) substantially returns water to the same water body at or about the same location; and</p> <p>(b) does not affect the spatial or temporal availability, or the physical, chemical or biological quality of the fresh water."</p> <p>AND AMEND Catchment to read:</p> <p>"Catchment means the area of land that provides water to a water body, <u>and may be divided into sub-catchments or management areas.</u>"</p> <p>AND AMEND the definitions of cultural impact assessment and cultural value assessments to provide clarity as to what can be usefully anticipated and prepared for.</p> <p>AND RETAIN the definition of ecosystem services.</p> <p>OR AMEND to include all ecosystem types and variants, including production land systems and versatile land ecosystems.</p> <p>AND DELETE the definition of high class soils.</p> <p>AND DELETE Historical and Cultural and define as in RMA.</p> <p>AND AMEND the definition of Integrated Transport Assessment to read:</p> <p>"means a comprehensive review of all the potential transport impacts of a development proposal, <u>relative to the scale of the development and potential for effects.</u>"</p> <p>AND DELETE the definition of lifeline utilities.</p> <p>AND DELETE the definition of minimum flow and through the PRPS and replace with environmental flow and use the definition from Variation 6 to the Waikato Regional Plan.</p> <p>AND AMEND the definition of point source discharge to read:</p> <p>"discharges from a stationary or fixed <u>having a single point of origin or introduced into the receiving environment from a specific outlet or facility.</u>"</p> <p>AND AMEND the definition of regionally significant infrastructure to include infrastructure established for the purpose of supporting horticultural production including postharvest facilities and logistics hubs, greenhouses, irrigation and water distribution infrastructure, drainage and access networks, soil conservation systems, water storage structures, shelterbelts, packhouses, research and educational facilities, transportation and accommodation facilities.</p> <p>OR</p> <p>If it is determined that the amendments asked for in this submission are not required then provide alternative relief through</p>

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			<p>amendment to the issues, objectives and methods to redress the omissions referred to.</p> <p>AND AMEND definition of Urban to delete 'agricultural or non-rural in nature' and replace with 'if production land as defined in the RMA or other activities requiring a rural location such as mineral extraction.</p> <p>AND AMEND the definition of Riparian areas to read:</p> <p>"a strip of land adjacent to a water body and which contributes, or may contribute, to the maintenance and enhancement of <u>ecosystem services and</u> the natural functioning, quality and character of the water body."</p> <p>AND ADD definition of Land Use to read:</p> <p><u>A series of activities undertaken in land zoned for the primary purpose of enabling the activities. Intensive farming or agricultural production, pastoral farming, horticultural production and forestry are all activities that occur on rural zoned land. A change from one rural activity to another is not a change in the land use.</u></p> <p>AND ADD definition of Activity to read:</p> <p><u>A series of actions undertaken either intermittently or constantly associated with enabling the primary purpose of a defined land use. Rural production activities are generally activities that facilitate the use of land for rural production, and can include post harvest production and associated rural industry trades and services.</u></p> <p>AND ADD definition for versatile land to read:</p> <p><u>Is rural land with functioning rural production capability. Versatility refers to the extent to which land is suitable for, and capable of, supporting a wide range of land use activities that can make use of natural qualities of the land</u></p> <p><u>Matters that determine the versatility of land include:</u></p> <ul style="list-style-type: none"> • <u>Soil</u> • <u>Site slope</u> • <u>Site drainage</u> • <u>Storm water</u> • <u>Flooding matters</u> • <u>Wind exposure</u> • <u>Availability of irrigation water</u> • <u>Effects of incompatible land use on the activity, and effects of the activity on neighbouring land use</u> • <u>Previous cropping history</u> • <u>Relevant contaminants of soils and their associated effects</u> • <u>The relationship with regional planning matters concerning discharges</u>

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			<ul style="list-style-type: none"> • <u>Transport network management</u>
9	PRPS2-45.3 Transpower New Zealand Ltd	45	<p>Précis: The Glossary is supported in part. The definition of infrastructure needs to be clear that 'lines' includes support structures, conductors, and the stations and substations and other works required to connect them. The definition of ecosystem services is vague.</p> <p>Decision requested: RETAIN glossary definition of regionally significant infrastructure, specifically clause d) insofar as it specifically includes the national electricity grid.</p> <p>AND AMEND glossary definition of infrastructure, clause d) to read:</p> <p>"...lines used or intended to be used to convey electricity, and including support structures for lines used or intended to be used to convey electricity, and stations <u>and substations and other works required to connect them, but</u> excluding facilities, lines, and support structures if a person..."</p> <p>OR any other amendment to achieve the same intent</p> <p>AND RETAIN the glossary definition of lifeline utilities</p> <p>AND RETAIN the glossary definition of built environment</p> <p>AND DELETE the glossary definition of ecosystem services</p> <p>AND any consequential amendments, including deleting all provisions associated with the definition of ecosystem services.</p>