

# Auckland Council Regional Plan: Air, Land and Water



# Auckland Regional Council

## Auckland Regional Plan: Air, Land and Water operative in part

At its meeting of 6 October 2010 the Auckland Regional Council resolved to declare the Auckland Regional Plan: Air, Land and Water – 'Operative in Part' subject to the exclusions defined in the following schedule pursuant to clause 17 (2) of Schedule 1 of the Resource Management Act 1991 (RMA).

In accordance with clause 20 (1) of Schedule 1 of the RMA the Auckland Regional Plan: Air, Land and Water becomes 'Operative in Part' on 21 October 2010.

Public notification of the availability of the Auckland Regional Plan: Air, Land and Water – Operative in Part was given on 12 October 2010.

Date of council resolution	6 October 2010
Date of public notice	12 October 2010
'Operative in part' date	21 October 2010

### SCHEDULE

The provisions of the plan excluded from approval are:

- Chapter 5 – Discharges to Land and Water and Land Management
- Chapter 8 – Financial Contributions
- Schedule 3: Industrial or Trade Activities
- Schedule 9: Contents of Integrated Catchment Management Plans and Applications for Network Discharge Consents
- Schedule 10: Permitted Activity Criteria
- Schedule 11: Compilation of Acceptance Guidelines
- Schedule 12: Rainfall Runoff Management for Cultivated Soil
- Schedule 13: Schedules for Reporting on Contaminated Land

Signed by the Auckland Regional Council by affixing its common seal in the presence of

**Michael Lee**  
Chairman

**Bruce Thomas**  
Group Manager Democracy Services

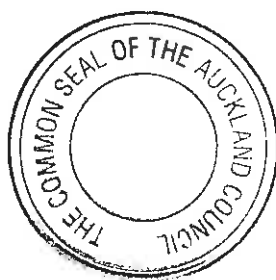
Dated at Auckland this day 21 October 2010.



# Auckland Council

## Auckland Council Regional Plan: Air, Land and Water operative in part

THE COMMON SEAL of the AUCKLAND COUNCIL was hereby affixed  
under the authority of Council:



Mayor / Deputy Mayor / Chief Executive / Chief Officer

Deputy Mayor / Chief Executive / Chief Officer / General Counsel

Further parts of this Plan became operative on 30 April 2012

The Auckland Council Regional Plan: Air, Land and Water remains subject to  
appeal as set out in the following pages:

## Auckland Council Regional Plan: Air, Land and Water operative in part

At its meeting of 16 February 2012 the Auckland Council resolved to declare further parts of the Auckland Council Regional Plan: Air, Land and Water - 'Operative in Part' subject to the exclusions defined in the following schedule pursuant to clause 17 (2) of Schedule 1 of the Resource Management Act 1991 (RMA).

At the same meeting the Auckland Council resolved to:

- withdraw Chapter 8 Financial Contributions from the Plan;
- incorporate the transitional provisions of the National Policy Statement for Freshwater Management 2011 (Freshwater NPS) into the Plan;
- defer by 12 months the operative date of the Plan in relation to those industrial or trade activities outlined in Schedule 3 which were required to comply with the relevant provisions immediately upon Chapter 5 of the Plan becoming part operative.

Public notification of the availability of the Auckland Council Regional Plan: Air, Land and Water - Operative in Part, the withdrawal of Chapter 8 Financial Contributions, the incorporation of the transitional provisions of the Freshwater NPS, and the deferral of the operative date in relation to specified industrial or trade activities was given on 20 April 2012.

In accordance with clause 20 (1) of Schedule 1 of the RMA the Auckland Council Regional Plan: Air, Land and Water will become further 'Operative in Part' on 30 April 2012.

Date of council resolution	16 February 2012
Date of public notice	20 April 2012
'Operative in part' date	30 April 2012

### SCHEDULE

The provisions of the plan excluded from approval are:

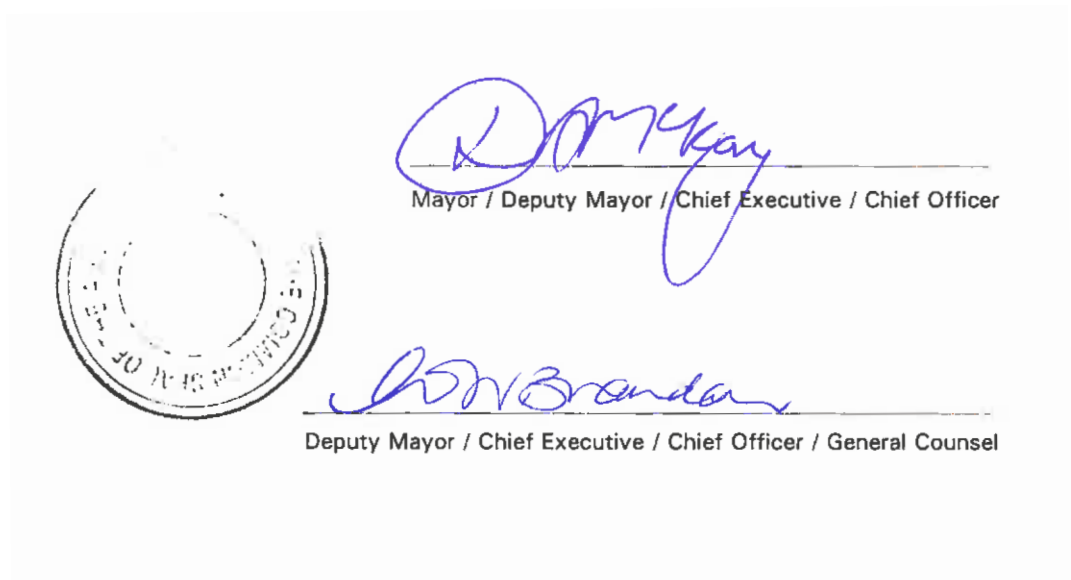
- Discrete sections of Chapter 5 – Discharges to Land and Water and Land Management including:
  - General Objectives and Policies;
  - Sewage Solids;
  - Other Discharges of Contaminants;
  - Onsite Wastewater;
- Discrete definitions within Chapter 12 – Definitions.



# Auckland Council

## Auckland Council Regional Plan: Air, Land and Water operative

THE COMMON SEAL of the AUCKLAND COUNCIL was hereby affixed  
under the authority of Council:



This Plan became fully operative on 30 September 2013

## Auckland Council Regional Plan: Air, Land and Water operative

At its meeting of 19 September 2013 the Auckland Council resolved to declare the remaining parts of the Auckland Council Regional Plan: Air, Land and Water yet to be made operative - 'Operative' pursuant to clause 17 of Schedule 1 of the Resource Management Act 1991 (RMA).

Public notification of the availability of the Auckland Council Regional Plan: Air, Land and Water - Operative was given on 23 September 2013.

In accordance with clause 20 (1) of Schedule 1 of the RMA the Auckland Council Regional Plan: Air, Land and Water will become fully operative on 30 September 2013.

Date of council resolution:	19 September 2013
Date of public notice:	23 September 2013
Operative date:	30 September 2013

## Notes on Plan Annotation

This Plan is in two parts. The first part is the Plan text and the second part is the Plan Maps. The two parts need to be read together.

Words shown in ***bold italics*** are defined in Chapter 12 – Definitions and Abbreviations.

## National Policy Statement for Freshwater Management 2011

The National Policy Statement for Freshwater Management 2011 (Freshwater NPS) sets out the objectives and policies for freshwater management under the Resource Management Act 1991 (RMA). The Freshwater NPS also requires the insertion of specified objectives and policies into regional documents without the need to undertake the Schedule 1 process – these are the transitional provisions set out in policies A4 and B7.

The RMA requires local authorities to amend regional plans to give effect to any provision in a national policy statement that affect those documents. From 1 July 2011, decision-makers under the RMA must have regard to the Freshwater NPS in consenting decisions. The Auckland Council Regional Plan: Air, Land and Water manages water quality and quantity and therefore objectives and policies regarding freshwater must be considered when making an application under this Plan.

The transitional provisions set out below must be considered when making an application under the Auckland Council Regional Plan: Air, Land and Water. The remainder of the Freshwater NPS will be implemented through the Unitary Plan for Auckland.

### A. Water Quality

#### Policy A4

1. When considering any application for a discharge the consent authority must have regard to the following matters:
  - a. the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and
  - b. the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.
2. When considering any application for a discharge the consent authority must have regard to the following matters:
  - a. the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and
  - b. the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.
3. This policy applies to the following discharges (including a diffuse discharge by any person or animal):
  - a. a new discharge or
  - b. a change or increase in any discharge – of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.
4. Paragraph 1 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.
5. Paragraph 2 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 takes effect

## B. Water quantity

### Policy B7

1. When considering any application the consent authority must have regard to the following matters:
  - a. the extent to which the change would adversely affect safeguarding the life-supporting capacity of fresh water and of any associated ecosystem; and
  - b. the extent to which it is feasible and dependable that any adverse effect on the life-supporting capacity of fresh water and of any associated ecosystem resulting from the change would be avoided.
2. This policy applies to:
  - a. any new activity; and
  - b. any change in the character, intensity or scale of any established activity –  
that involves any taking, using, damming or diverting of fresh water or draining of any wetland which is likely to result in any more than minor adverse change in the natural variability of flows or level of any fresh water, compared to that which immediately preceded the commencement of the new activity or the change in the established activity (or in the case of a change in an intermittent or seasonal activity, compared to that on the last occasion on which the activity was carried out).
3. This policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management takes effect on 1 July 2011.



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# 1 Introduction

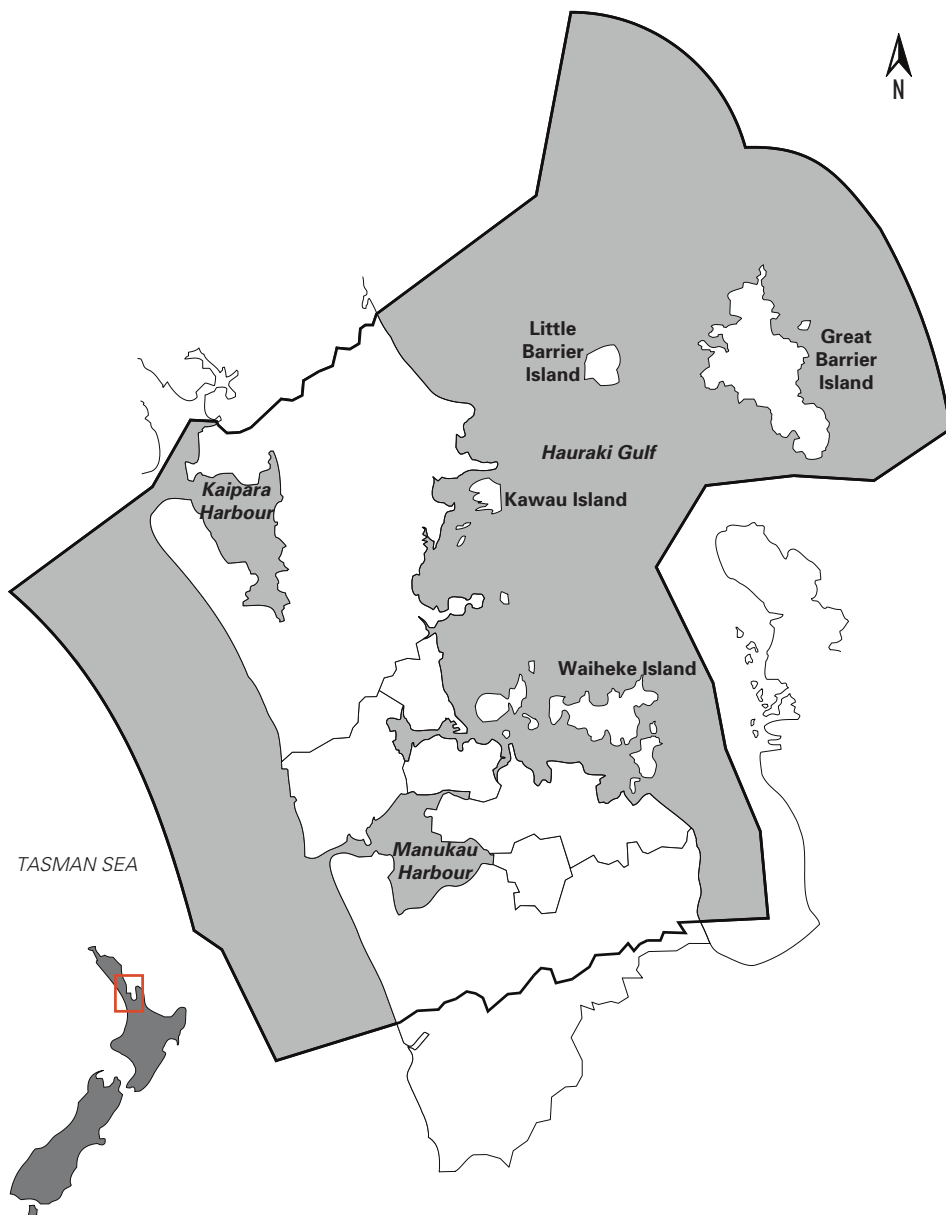
## 1.1 The Plan

This plan is the Auckland Regional Plan: Air, Land and Water. It has been prepared by the Auckland Regional Council (ARC) to assist it to carry out its functions in order to achieve the purpose of the Resource Management Act 1991 (RMA).

## 1.2 Plan Coverage

This plan applies to all of the area within the Auckland Region (the jurisdiction of the Auckland Regional Council – see Figure 1.1).

Figure 1.1: The Auckland Region



The Auckland Regional Plan: Coastal has defined the boundary between the coastal marine area and land and freshwater areas. This boundary often extends upstream into the mouths of rivers and streams. The Regional Plan: Coastal contains maps as well as a detailed description of the agreed river mouths and the associated coastal marine area boundary. This Plan applies to the land and freshwater areas upstream of these boundaries and landward of Mean High Water Springs. The provisions of Part 3 (Discharges to Land and Water and Land Management, Water Allocation and the Beds of Lakes and Rivers and Diversion of Surface Water) only apply to these land and freshwater areas. The Regional Plan: Coastal does not contain provisions relating to the discharges of contaminants to air. The provisions relating to air discharges are contained in this Plan (Part 2: Air Quality) and apply to all of the Auckland Region, including the coastal marine area.

The Auckland Regional Plan: Air, Land and Water applies to the ARC's management of air, land and water resources in the Auckland Region, in terms of its functions under Sections 30 (1) (c), (ca), (d), (e), (f), (fa), (g) and (ga) of the RMA. These Section 30 functions are discussed in more detail in Section 1.3 below.

The Plan is in two parts. The first part is the Plan text (A4) and the second part is the Plan Maps (A3). The two parts need to be read together.

## 1.3 The Resource Management Act

The RMA is the statute under which this plan has been prepared. The cornerstone of the Act is Part 2, Purpose and Principles. Also relevant to the preparation of this regional plan, is Section 30 which lists the functions of regional councils, including those matters over which it can have rule making functions.

### Section 5 of the Resource Management Act

Section 5 (1) states the purpose of the RMA, which is:

*"to promote the sustainable management of natural and physical resources."*

Section 5 (2) defines "sustainable management" to mean:

*"managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well being and for their health and safety while -*

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

The Plan promotes the sustainable management of the Auckland Region's natural and physical resources through the interaction of its four component Parts, (Part 1: Introduction and Values, Part 2: Air Quality, Part 3: Land and Water Resources and Part 4: Information and Processes) and their application to most, but not all of the ARC's functions under Section 30 of the Act.

Chapter 2 entitled Values identifies the values of the air, land and water resources covered by this Plan. It contains objectives and policies to ensure that these values are reflected in the sustainable management of the Region's natural and physical resources.

Parts 2 (Air Quality) and 3 (Discharges to Land and Water and Land Management, Water Allocation and the Beds of Lakes and Rivers and Diversion of Surface Water) deal more specifically with the use and development of the region's air, land and water



resources. It is recognised that demand will occur for use and development of these resources to enable people and communities to provide for their social, economic and cultural wellbeing and for their health and safety. While the objectives and policies seek to enable this, they also seek to ensure that adverse effects of their use and development are avoided, remedied or mitigated.

### Section 6 of the Resource Management Act

Section 6 requires the ARC, in undertaking its functions being addressed by this Plan, to recognise and provide for the following matters of national importance in managing the use, development and protection of the natural and physical resources of the Auckland Region.

- (a) *The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development;*
- (b) *The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development;*
- (c) *The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna;*
- (d) *The maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers;*
- (e) *The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga;*
- (f) *The protection of historic heritage from inappropriate subdivision use, and development; and*
- (g) *The protection of recognised customary activities."*

These matters, where appropriate to the function of this Plan have been recognised and provided for in the plan. Chapters 2.1: Natural Values and 2.2: Use and Development contain objectives and policies which relate to the matters listed in Sections 6 (a) to (g). Similarly, Chapter 2.3: Matters of Significance to Tangata Whenua contains objectives and policies relating to the matters referred to in Section 6 (e) and (g). The specific objectives and policies in the three chapters relate the broad statements contained in Section 6 of the RMA to the management of air, land and water resources in the Auckland Region. These provisions form part of the assessment framework for activities addressed in Parts 4 and 5 of the Plan.

### Section 7 of the Resource Management Act

Section 7 states the following Other Matters to which the ARC must have particular regard when managing the use, development, and protection of natural and physical resources.

*"(a) Kaitiakitanga:*

- (aa) The ethic of stewardship:*
- (b) The efficient use and development of natural and physical resources:*
- (ba) The efficiency of the end use of energy:*
- (c) The maintenance and enhancement of amenity values:*
- (d) Intrinsic values of ecosystems:*
- (f) Maintenance and enhancement of the quality of the environment:*
- (g) Any finite characteristics of natural and physical resources:*

(h) *The protection of the habitat of trout and salmon:*

(j) *The benefits to be derived from the use and development of renewable energy."*

Particular regard has been made to these matters in the development of the plan, which contains a number of objectives, policies, rules and other methods to give effect to section 7.

## Section 8 of the Resource Management Act

The RMA requires the ARC to take into account the principles of the Treaty of Waitangi. Section 8 states:

*"In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)."*

Whilst there is no list as such, of the principles of the Treaty of Waitangi available for decision-makers to consider, the High Court has paraphrased a list of so-called "central principles" based on the list referred to in "Laws of New Zealand, Treaty of Waitangi". The list must be interpreted in light of any new judgments on s8 of the RMA that may be made from time to time. Processes and outcomes designed to take into account the principles of the Treaty of Waitangi have been incorporated into Chapter 3 of the Auckland Regional Policy Statement (ARPS), and Chapter 2.3 of this Plan.

## Section 30 of the Resource Management Act

The ARC's functions are stated in Section 30 of the RMA. It lists a number of functions, some of which are implemented by the Council through the Auckland Regional Policy Statement or the Auckland Regional Plan: Coastal. This Plan implements the following Section 30(1) functions:

(c) *The control of the use of land for the purpose of –*

(i) *Soil conservation;*

(ii) *The maintenance and enhancement of the quality of water in water bodies;*

(iii) *The maintenance of the quantity of water in water bodies and coastal water;*

(iiia) *The maintenance and enhancement of ecosystems in water bodies and coastal water;*

(iv) *The avoidance or mitigation of natural hazards;*

(ca) *The investigation of land for the purposes of identifying and monitoring contaminated land:*

(d) *In respect of any coastal marine area in the region, the control (in conjunction with the Minister of Conservation) or –*

(iv) *discharges of contaminants into or onto air;*

(e) *The control of the taking, use, damming, and diversion of water, and the control of the quantity, level, and flow of water in any water body;*

(f) *The control of discharges of contaminants into or onto land, air, or water and discharges of water into water;*

(fa) *If appropriate, the establishment of rules in a regional plan to allocate any of the following:*

(i) *The taking or use of water (other than open coastal water);*

(ii) *The taking or use of heat or energy from water (other than open coastal water);*

- (iii) *The taking or use of heat or energy from the material surrounding geothermal water;*
- (iv) *The capacity of air or water to assimilate a discharge of a contaminant;*
- (g) *In relation to any bed of a water body, the control of the introduction or planting of any plant in, on, or under that land, for the purpose of –*
  - (i) *Soil conservation;*
  - (ii) *The maintenance and enhancement of the quality of water in that water body;*
  - (iii) *The maintenance and enhancement of the quantity of water in that water body;*
  - (iv) *The avoidance or mitigation of natural hazards;*
- (ga) *The establishment, implementation, and review of objectives, policies, and methods for maintaining indigenous biological diversity.*

The functions listed in clauses (c), (ca), (d), (e), (f), (fa), (g) and (ga) are given effect through the ability of the ARC to make regional rules under Sections 9(3), 14, 15 and 13 of the RMA respectively. Chapters 4 to 7 of this Plan contain the specific issues, objectives, policies, rules and other methods relating to each of these Section 30 functions. The introductory section of each chapter also provides more detail on the legislative basis for the provisions.

## 1.4 How The Plan Promotes Sustainable Management

A key component to promoting sustainable management is integrating the management of natural and physical resources, hence the reason for dealing with most of the ARC's functions in relation to air, land and water resources in one plan. Consistency is also required with the provisions of the Regional Plan: Coastal. This is important, as the coastal marine area is a **receiving environment** of the effects of land use activities, when discharges of contaminants to land or to freshwater bodies are not adequately managed and end up entering the marine environment.

The RMA requires the ARC to be continually looking forward when making decisions on resource management issues to meet today's needs, and to meet the reasonably foreseeable needs of future generations.

The ARC must also recognise that human communities and other life forms now and in the future will depend on maintaining the essential natural components of these resources. Use of them today must ensure that their life supporting capacity is safeguarded. Also, every person has a duty to ensure that the adverse effects of their activities are avoided, remedied or mitigated.

The RMA defines the 'environment' in a manner that means that the adverse effects of activities must be considered not only in terms of natural and physical resources, but also in terms of people and communities and the social, cultural and economic conditions affecting those people and communities. Furthermore, there needs to be consideration of the **amenity** values which people place on aspects of the natural and physical world. Thus the environment is defined in both physical and social terms.

The promotion of the sustainable management of natural and physical resources therefore requires the integration of the environmental, social, economic and cultural aspects of the environment.

To ensure that natural and physical resources are managed in an integrated and sustainable manner, the provisions of this plan provide for the preservation and **protection** of particular natural values, which are identified in Chapter 2.1, while allowing people to use and develop air, land and water resources to provide for their social, economic and cultural wellbeing.

## 1.5 The Role of this Plan

The role of this Plan is to enable the ARC to fulfil its statutory obligations to control resource use in accordance with Sections 30 (c), (ca), (d), (e), (f), (fa), (g) and (ga). The ARC also uses other mechanisms to meet these obligations. They include:

- A Regional Policy Statement which states integrated broad resource management policy for the Auckland Region;
- The preparation of Annual and Strategic Planning documents which state the priorities of the ARC in the short and medium term;
- The Regional Plan: Coastal, the Regional Plan: Sediment Control, and the Regional Plan: Farm Dairy Discharges, which contain Rules in relation to specific functions and areas in the Auckland Region;
- The Auckland Regional Growth Strategy;
- Education and advocacy programmes (including the development of non-statutory guidelines and strategies) to increase awareness and inform the environmental behaviour of the general public and key stakeholders;
- Resource Consent processes, which implement resource management policy on a site specific basis;
- Monitoring, research, and investigations, which have the purpose of gathering information about the environment (including social and economic aspects) to inform resource management decision making.

Rules in this regional plan are only one method of achieving an environmental outcome, and will often be backed up by other ARC initiatives. The Other Methods sections of Chapters 4 to 7 identify some, but not all of the other initiatives used by the ARC to achieve the Plan's desired environmental results. Education and advocacy are two mechanisms commonly used in conjunction with the rules in this plan.

## 1.6 Reasons for Preparing the Regional Plan: Air, Land and Water

The ARC considers the Auckland Regional Plan: Air, Land and Water is necessary enable it to achieve the purpose of the RMA, namely to promote the sustainable management of natural and physical resources within the Auckland Region.

The Auckland Regional Policy Statement (ARPS), which has as one of its purposes to integrate the management of the region's natural and physical resources, indicates in a number of chapters that a regional plan dealing with air, land and water resources should be prepared. These include: Water Quality (Chapter 8), Water Conservation and Allocation (Chapter 9), Air Quality (Chapter 10), Soil Conservation (Chapter 12), Minerals (Chapter 13), Waste (Chapter 15), and Hazardous Substances (Chapter 16).

The ARC has already prepared the Auckland Regional Plan: Coastal. Many of the issues dealt with in that plan are similar to the issues that need to be dealt with in this Plan. Accordingly, to ensure a comprehensive and consistent management approach to the region's natural and physical resources, this Plan has adopted, where appropriate, a similar approach to the Auckland Regional Plan: Coastal.

In addition, the ARC has two other operative regional plans relating to farm dairy discharges and sediment control. The provisions in those Plans are not included within this regional plan.

The Auckland Regional Plan: Air, Land and Water, in conjunction with the existing regional plans (Sediment Control, Farm Dairy Discharges and Coastal) will enhance the



management of natural and physical resources in the Auckland Region.

Moreover, Section 65 of the RMA - Preparation and change of other regional plans (set out below), states that regional councils should consider the desirability of preparing a plan where the matters specified in that section apply. The ARC considers that the matters in section 65 (3)(a to i) are relevant in the Auckland context and that this regional plan was not only desirable but also necessary. Section 65 states:

*Section 65 (3)*

*Without limiting the power of a regional council to prepare a regional plan at any time, a regional council shall consider the desirability of preparing a regional plan whenever any of the following circumstances or considerations arise or are likely to arise:*

- (a) Any significant conflict between the use, development, or protection of natural and physical resources or the avoidance or mitigation of such conflict;*
- (b) Any significant need or demand for the protection of natural and physical resources or of any site, feature, place, or area of regional significance;*
- (c) Any threat from natural hazards or any actual or potential adverse effects of the storage, use, disposal, or transportation of hazardous substances which may be avoided or mitigated;*
- (d) Any foreseeable demand for or on natural and physical resources;*
- (e) Any significant concerns of tangata whenua for their cultural heritage in relation to natural and physical resources;*
- (f) The restoration or enhancement of any natural and physical resources in a deteriorated state or the avoidance or mitigation of any such deterioration;*
- (g) The implementation of a national policy statement or New Zealand coastal policy statement;*
- (h) Any use of land or water that has actual or potential adverse effects on soil conservation or air quality or water quality;*
- (i) Any other significant issue relating to any function of the regional council under this Act;*

A further important reason is that without this Plan, nearly all proposals to use and develop the region's air, land and water resources or undertake works on the beds of rivers and **lakes** would require a resource consent from the ARC. This is because sections 13(1), 14 and 15 of the RMA state that unless a regional plan expressly provides for use and development of these resources, then a resource consent is necessary, regardless of the environmental effects that any proposal would generate. It is only sections 9(3) and 13(2) of the RMA that have the opposite presumption, whereby land may be used, or plants and animal habitats disturbed in **lake** and river beds, in a manner that does not contravene a rule in a regional plan. The practical result of these sections is that the plan must specify the circumstances when an activity can or cannot be undertaken without a resource consent. One of the key reasons for this plan then is to permit appropriate activities without the need for resource consent and require resource consents for all other activities other than those which are prohibited. Detailed rules are set out in the relevant chapters of this plan.

Another important reason for this regional plan is to provide greater certainty and specificity for all parties involved in the resource management process, by providing a decision making framework by which the ARC implements its Section 30 functions. This is achieved through the establishment of objectives and policies by which the effects of activities on natural and physical resources are assessed, and the inclusion of conditions, or standards and terms to guide plan rules. The development of the plan facilitates greater consistency in the preparation and assessment of resource consent applications and improves certainty of decision making.

## 1.7 Framework for Assessing the Inclusion and Use of External Documents

This Plan refers to and uses a number of *external documents* such as technical publications, codes of practice, guidelines and New Zealand Standards. These may be produced by the ARC or various other agencies, both national and international (e.g. the New Zealand Ministry for the Environment).

These *external documents* generally contain the best available scientific or technical knowledge or provide a best practice framework for the management of activities at a level of detail that is difficult or impracticable to include in the Plan's policies or rules. These documents are used in a number of different ways in the Plan. Some *external documents* are referenced in the Plan's policies as matters which will be considered in the assessment of resource consent applications. References to *external documents* are also included as permitted activity conditions, or standards and terms for controlled activities that must be met as plan of the rule. In other instances references are made via explanatory notes to *external documents* as providing one means of compliance with various rules. The Other Methods sections of various chapters identify the development of various guidelines as areas for ARC education and research.

This section of the Plan sets out a framework for assessing the inclusion and use of *external documents* in the Plan and seeks to ensure that the most relevant document is applied to the management of certain activities or environments. The Plan does not adopt a single approach to the use of *external documents*, but recognises that different approaches are required depending on the activity or resource being managed. The determination of which external document is the most appropriate one to use and how it is best used in the Plan is made taking into consideration the following matters:

- Whether it is an appropriate means to meet the objectives and policies of the Plan;
- There is clear identification of the section or part of the *external document* that is relevant to use in the Plan;
- There is an understanding of the basis upon which the *external documents* have been derived and their purpose;
- There is consistency in the purpose and use of *external documents* in the Plan with the purpose and use for which they were originally developed;
- The transferability of *external documents* to the Auckland Region situation, with an understanding of the points of difference between the locations or circumstances where the documents were developed and the Auckland Region situation;
- The allowances to be made for the differences between the origins of the *external documents* and the Auckland Region situation;
- Whether it is beneficial to provide national consistency in the management of activities or environments by using *external documents* that are acceptable at the national level or by a particular sector provided that circumstances or environmental factors unique to Auckland, such as our stream characteristics combined with urban growth, have been taken into account;
- Whether the *external documents* have been through a robust and transparent consultation and review process in their development or review.

Any changes to the Plan's references to *external documents* such as replacing them with other documents or newer versions of the same document will only be made by a variation or change to the Plan. Before any new technical document, code of practice, guideline or standard is referred to in the Plan or before any such changes or replacements are made to *external documents* already referred to in the Plan, the ARC shall undertake a consultative process that shall include:

- Identification by the ARC of the purpose of the *external document*;
- The development of a draft *external document* and its distribution to affected and identified parties, where these are known to the ARC for their comment;
- Peer review of an *external document* by suitably qualified experts;
- Consultative meetings with interested and affected parties where these are known by the ARC;

Where the ARC proposes to use *external documents* prepared by other agencies, it will:

- Identify the purpose of any *external document*;
- Hold consultative meetings with interested and affected parties where these are known to the ARC on the use of this document;
- These meetings shall take place prior to the initiation of any formal variation or change to the Plan.

## 1.8 Policy Framework

As well as providing the legislative framework for the development of this plan through the purposes and principles, the RMA provides for a framework of statutory policy statements and plans to guide and regulate the management of air, land and water resources. This plan fits within the hierarchy as shown in Figure 2.

### 1.8.1 National Environmental Standards

National Environmental Standards are standards issued by means of regulation to provide a nationally consistent approach to the management of the environmental effects of certain activities. National Environmental Standards prescribe technical standards, methods or requirements for matters referred to in Sections 9, 11, 12, 13, 14 and 15 of the RMA, including but not limited to the management of contaminants, water quality, water levels and flows, air quality, soil quality in relation to the discharge of contaminants, noise and monitoring methods and requirements. These standards may be stated as qualitative or quantitative measures.

National Environmental Standards may be in the form of rules that allow or prohibit an activity or require rules to address matters specified in the standards. A National Environmental Standard prevails over rules in a regional plan or a resource consent, except where the plan contains rules that are more stringent than the National Environmental Standard and the standard expressly says a rule or a consent may be more stringent.

### 1.8.2 National Policy Statements

#### The New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement applies to the coastal environment which is wider than the coastal marine area. Accordingly the air, land and water resources controlled by this Plan that are within the coastal environment are subject to the provisions of this policy statement.

Pursuant to section 55, this Plan shall not be inconsistent with the New Zealand Coastal Policy Statement issued by the Minister of Conservation and gazetted on 5 May 1994. The purpose of a New Zealand Coastal Policy Statement, as stated in section 56, is:

*“to state policies in order to achieve the purpose of this Act in relation to the coastal environment of New Zealand.”*

The provisions of the New Zealand Coastal Policy Statement have been considered in the development of this Plan’s objectives, policies and rules. Section 104 (1) of the RMA requires that applications for resource consents under this Plan must also have regard to the New Zealand Coastal Policy Statement.

### 1.8.3 The Hauraki Gulf Marine Park Act

Section 7(1) of the Hauraki Gulf Marine Park Act states

*“The interrelationship between the Hauraki Gulf, its islands and catchments and the ability of that relationship to sustain the life-supporting capacity of the environment of the Hauraki Gulf and its islands are matters of national significance.”*

Section 7(2) and Section 8 list specific matters which must be recognised in the management of Hauraki Gulf, its islands and catchments. These sections have the status of a New Zealand coastal policy statement issued under the Resource Management Act.

The provisions of this Plan where they apply to the Hauraki Gulf, its islands and catchments must not conflict with sections 7 and 8 of the Hauraki Gulf Marine Park Act. Applications for resource consents under this Plan must also have regard to Sections 7 and 8 of the Marine Park Act, in addition to the matters contained in the RMA.

Much, but not all of the Auckland Region covered by this plan lies within the Hauraki Gulf’s drainage catchment and hence is subject to the provisions of the Hauraki Gulf Marine Park Act. The Hauraki Gulf’s drainage catchment is shown in the map in Schedule 3 of that Act.

### 1.8.4 Auckland Regional Policy Statement (ARPS)

The ARPS became operative on the 31 August 1999. The purpose of the ARPS, pursuant to section 59 of the RMA, is:

*“to achieve the purpose of the Act by providing an overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region.”*

The ARPS provides a broad framework for the management of growth within the Auckland Region and its effects on air, land and water resources. Various chapters of the ARPS address specific management issues relating to regional air, land and water resources. Implementation of the ARPS provisions occurs through district plans and regional plans, as well as other non-statutory means. This plan has been prepared to enable the ARC to implement ARPS policy through its statutory responsibilities under Section 30 of the RMA.

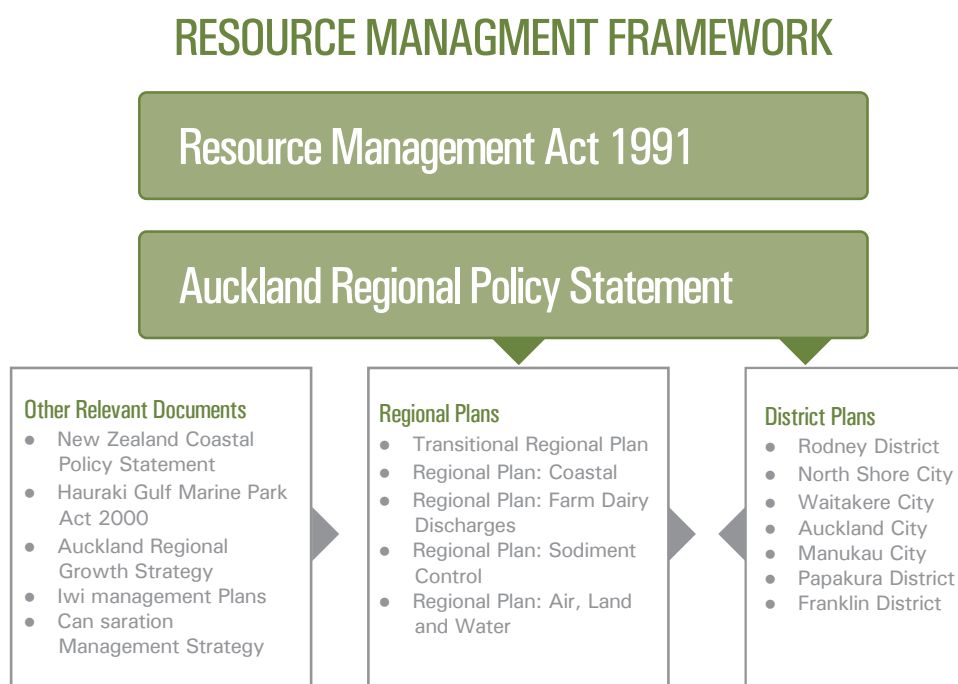
Further discussion on how the Plan gives effect to the ARPS is contained in the Explanation accompanying Issue 2.2.2.1 of Chapter 2.2: Use and Development.

### 1.8.5 Transitional Regional Plan

Pursuant to section 368 of the RMA, instruments that were in force in respect of any region except the coastal marine area immediately prior to 1 October 1991 (the date of commencement of the RMA) are deemed to constitute the ‘transitional’ regional plan.

The 'transitional' regional plan will cease to be operative when this Plan becomes operative.

Figure 1.2 Resource Management Framework



### 1.8.6 District Plans

There are seven *Territorial Authorities (TAs)* within the Auckland Region: Rodney District, North Shore City, Waitakere City, Auckland City, Manukau City, Papakura District and Franklin District Councils. Each TA is required to prepare a district plan under section 73 of the RMA to assist in carrying out it's functions.

District plans must give effect to the New Zealand Coastal Policy Statement, the ARPS and not be inconsistent with regional plans.

Territorial Authorities were consulted about their District plans in the development of this Plan. This was to avoid inconsistencies between the different plans. It also ensures that wherever possible there are complementary provisions between district plans and this Plan which promote integrated management of land use activities and their associated impacts in terms of soil conservation, air quality, water quality and quantity and the management of activities on the beds of *lakes* and rivers.

### 1.8.7 Iwi Planning Documents

Section 66 (2A) of the RMA requires the ARC, in preparing this Plan, to take into account any relevant planning document recognised by an *iwi* authority and lodged with the council, to the extent that its content has a bearing on resource management issues of the region. Any relevant planning document recognised by an *iwi* authority lodged with this Council has been consulted in the preparation of this Plan and in particular in the development of Chapter 2.3: Tangata Whenua Values.

### 1.8.8 Conservation Management Strategy (CMS)

The Department of Conservation (DOC) has responsibilities under the Conservation Act 1987 to prepare a Conservation Management Strategy (CMS) for the Auckland Conservancy. The purpose of the CMS is to establish objectives for the integrated management of natural and historical resources managed by DOC and to implement policies prepared under section 17B of the Conservation Act. The CMS covers all land, marine areas, and historic resources administered by DOC, as well as all aspects of the department's work. It also indicates desired outcomes for the *protection* of natural and historic values not directly managed by the department, such as lands administered by other agencies or in private ownership.

Section 66(2)(c)(i) of the RMA requires the ARC, in preparing this Plan, to have regard to any management plans and strategies prepared under other Acts. Information contained in the CMS has been used in the preparation of this Plan and in particular the development of Schedule 1: Wetland Management Areas. Regard has been had to reflecting the provisions of the CMS where these are consistent with the purpose of the RMA. For example the policies of Chapter 2.1: Natural Values include reference to the CMS.

### 1.8.9 Auckland Regional Growth Strategy

The Auckland Regional Growth Strategy (ARGS) has been prepared by the Auckland Regional Growth Forum under the Local Government Act 1974. The purpose of the Strategy is *"to ensure growth is accommodated in a way that meets the best interests of the inhabitants of the Auckland region."* It provides a vision and a framework to manage a regional population growth which is estimated to reach two million people by 2050. A Growth Concept is identified which illustrates how the region could look in fifty years time, if this growth is managed according to the vision, outcomes and principles contained in the Strategy. The concept focuses on accommodating most future growth within the existing metropolitan area, with development outside the current *urban area* only where environmental, accessibility and community principles can be met. Some growth would be accommodated in future urban areas (greenfield areas) in the north, south and west of the region. Rural Auckland, which includes rural and coastal towns will double in population size as a result of continued natural growth. Development of the most highly valued and sensitive natural areas is to be avoided.

## 1.9 Other Statutes

While the RMA is the statute under which objectives, policies and rules are stated in this plan, several other statutes also play an important role. In preparing this plan it has been recognised that other legislation may affect activities occurring within the region with respect to these resources.

Readers of this document should be aware that in addition to the requirements of this Plan, it may be necessary to obtain approvals pursuant to other legislation. This other legislation may allow activities that would otherwise not be permitted activities by this plan.

The major statutes that could affect use and development of air, land and water resources of the Auckland Region are:

- Auckland Metropolitan Drainage Act 1960
- Biosecurity Act 1993
- Building Act 1991
- Conservation Act 1987
- Crown Minerals Act 1991
- Electricity Act 1992
- Fire Service Act 1975
- Fisheries Act 1996
- Forest and Rural Fires Act 1977
- Freshwater Fisheries Regulations 1983
- Gas Act 1992
- Hazardous Substances and New Organisms Act 1996
- Health Act 1956
- Health and Safety in Employment Act 1992
- Historic Places Act 1993
- Land Transport Act 1998
- Litter Act 1979
- Local Government Act 2002\_
- Local Government Auckland Amendment Act 2004
- Māori Fisheries Act 1989
- North Shore Drainage Act 1963
- Reserves Act 1977
- Resource Management (Marine Pollution) Regulations 1998
- Submarine Cables and Pipelines Protection Act 1966
- Telecommunications Acts 1987 and 2001
- Te Ture Whenua Māori Act 1993
- Treaty of Waitangi Act 1975
- Treaty of Waitangi (Fisheries Claims) Settlement Act 1992
- Wildlife Act 1953

Compliance with any other relevant legislation is also required.

## 1.10 International Obligations

The main method available under international law for countries to work together on global environmental issues is the multilateral environmental agreement (MEA). MEAs cover a broad range of areas often relating to air, land and water resources. For these international treaties to have any legal and practical effect they must be ratified or acceded to by the New Zealand Government and incorporated into domestic legislation such as the RMA. Some of the relevant MEAs to which New Zealand is party to and which have been given effect by legislation in New Zealand are:

- Montreal Protocol on Substances that Deplete the Ozone Layer 1987
- Given effect to by the Ozone Layer Protection Act 1996;
- Vienna Convention for the Protection of the Ozone Layer, 1985.
- Convention for the Prevention of Pollution from Ships, 1973 [MARPOL]. Although New Zealand has not ratified, it has signed up to four of its six technical Annexes
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1971 [London Dumping Convention] (ratified by New Zealand in 1975)

The Resource Management (Marine Pollution) Regulations 1998 ensure its consistency with the conventions and give effect to these obligations within the Territorial Sea. Marine protection rules promulgated under the Maritime Transport Act (MTA) give effect to these same obligations beyond the Territorial Sea, to the limits of the Exclusive Economic Zone – and in some cases to the limits of the continental shelf.

Some other relevant treaties and international instruments to which New Zealand is a party to or has adopted are:

- Convention on Wetland of International Importance especially as Waterfowl Habitat, 1971
- [Ramsar Convention] - New Zealand has five sites listed as wetlands of importance under the Convention.
- United Nations Convention on Biological Diversity, 1992
- In response to its obligations under the CBD, New Zealand adopted the *New Zealand Biodiversity Strategy*.
- Rio Declaration on Environment and Development, 1992.
- The Sustainable Development for New Zealand Programme of Action aims to translate the concepts in the declaration into practical terms.
- United Nations Framework Convention on Climate Change, 1992 [UNFCCC] and the Kyoto Protocol to the UNFCCC, 1997
- The Climate Change Response Act 2002 puts in place a legal framework to allow New Zealand to ratify the Kyoto Protocol and to continue to meet its obligations under the United Nations Framework Convention on Climate Change.

Although this Plan only includes matters which are within the RMA, its provisions may complement the operation of other legislation as well as treaties and international instruments.



## 2 Values

### 2.0 Introduction

The Values chapters address the use, development and protection of air, land and water resources that are values by the Auckland regional community for a number of environmental, social, economic and cultural purposes. Some of these natural and physical resources are important for their high environmental values. Other resources are important for their contribution to the community's health and safety, while other resources are used for economic, social and cultural development.

Section 5 of the RMA requires that this Plan promotes the sustainable management of natural and physical resources. The Values chapters implement this purpose by identifying how land, air and water resources that are within the ARC's responsibilities are to be sustainably managed in terms of their use, development and protection. Section 1.3 of Chapter 1 explains the ARC's functions under Section 30 in more detail.

The Values part of the Plan is in three chapters. The first chapter (2.1) addresses the management of natural values and in particular those natural values that are specifically identified in Sections 6(a) and (c) of the RMA as being matters of national importance, which the Plan must address. It contains objectives and policies that outline how the activities that are within the ARC's jurisdiction are managed in terms of their effects on the natural character of waterbodies and their ecosystems. A major factor influencing the management approach to these natural values is whether they are located inside or outside *Urban Areas*. The chapter also contains policies relating to the use of offset mitigation measures to compensate for adverse effects that cannot be avoided, remedied or mitigated directly.

The second chapter (2.2) sets out the broad strategy by which the Plan addresses the use and development of air, land and water in the Auckland Region. This second chapter recognises that management of air, land and water in the Region occurs within a framework of ongoing urban growth and its associated resource use requirements. The objectives and policies link to the regional policy framework within which growth is managed. Particular attention is given to managing the effects of growth inside *Urban Areas* and in rural parts of the Region, and the operative of physical infrastructure. The chapter also contains provisions relating to *public access* and cultural heritage *protection*, together with an indication of how effects of activities on these will be assessed.

These provisions only deal with the management of the ARC's responsibilities under Section 30 and Sections 9 (3), 13, 14 and 15. These responsibilities relate to the control of the use of land for soil conservation and water quality and quantity purposes, control of the quality and quantity of freshwater, control of the discharge of contaminants into, or onto land, air or water and activities in the beds of lakes and rivers. They do not control the subdivision and use of land which is the responsibility of district plans.

The third chapter (2.3) specifically addresses Matters of Significance to Tangata Whenua.

The Values chapters contain issues, objectives, policies and other methods, but not rules. The rules, which give effect to the Values chapters, are contained in Chapter 4: Air Quality, Chapter 5: Discharges to Land or Water and Land Management, Chapter 6: Water Allocation, and Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water. The objectives and policies of these chapters form one part of the assessment against which resource consent applications will be evaluated to determine whether they promote the sustainable management of natural and physical resources

The provisions of Chapter 2: Values are relevant to the activities in Chapters 4 to 7 which require a resource consent. This means that reference should be made to the objectives and policies of Chapters 2.1, 2.2 and 2.3 in assessing any activity for which a resource consent is required under Chapters 4 to 7, where the Chapter 2 matters are relevant to the activity. Where an activity is a controlled or restricted discretionary activity, reference to Chapters 2.1, 2.2 and 2.3 will not always be necessary. The relevance of the Values chapters to controlled and restricted discretionary activities is dependent on the matters over which the ARC has exercised its control or discretion. These are listed in the relevant rules in Chapters 4 to 7. Where an activity is a discretionary or non-complying activity, then reference to the relevant objectives and policies of the three Values chapters is required. Reference to Chapters 2.1, 2.2 and 2.3 is not required for any permitted activity.

The Auckland Region's air, land and water resources are complex and interrelated. Managing these resources requires a good understanding of them, their current state (pristine or degraded), their interrelated nature and the effects that use and development has on them.

The following is a brief overview of the region's resources, particularly air, land and water, to provide the context for the more specific objectives, policies and methods to promote the sustainable management of these resources. More detailed descriptions of these resources are provided in Chapter 3 – Management Areas. Statements of the Management Issues and Objectives, Policies and Other Methods to address these resources are contained in separate parts which deal with Natural Values (2.1), Use and Development (2.2) and Matters of Significance to Tangata Whenua (2.3).

## 2.0.1 Urban Sustainability

The Auckland Region contains this country's largest metropolitan area and this area continues to accommodate an increasing population. The Auckland Region has 2 per cent of New Zealand's land area, but it accommodates approximately one third of the total population, 35 percent of the national workforce, and 38 percent of business enterprises. The region's sea and airports are New Zealand's major overseas trade gateways handling the majority of the nation's imports and exports by value. In addition to the metropolitan area there are a number of towns and urban settlements which contribute to the urban nature of the region.

The nature of the Auckland metropolitan area, mostly in a low-density land use pattern, has significant implications for the sustainable management of the air, land and water resources of the Region. Significant levels of contaminants are generated and discharged into the air, land and water from industrial, commercial and household activities. The use of motor-vehicles releases pollutants into air and water, while our urban and rural land uses displace natural ecosystems and also impact upon nearby and downstream ecosystems. However people and communities need to be able to live and work in the Region. Enabling people and communities to provide for their social, economic and cultural wellbeing and their health and safety, while still ensuring the *protection* of natural ecosystems and environmental *amenity* is fundamental to sustainable management. Urban sustainability is a significant issue addressed by this plan.

*See also Chapter 2.2: Use and Development, Issues 2.2.2.1 and 2.2.2.2, Objectives 2.2.3.2 to 2.2.3.4, and Policies 2.2.4.1 to 2.2.4.4*

## 2.0.2 Rural Land Management

The greatest proportion of the Region's land area consists of rural, semi-rural and coastal areas. These areas, mainly pasture and forest/bush, are used for a range of activities, including industrial, farming of animals and plants, recreational and household purposes. These activities all contribute to the social and cultural identity

of Auckland and are important for its economy. However they also to a greater or lesser degree, discharge contaminants into the air, land and water bodies, or undertake activities in the beds of lakes and rivers. **The management of discharges in rural areas and the management of activities in the beds of lakes and rivers are significant issues addressed by this Plan.**

Soil resources are vital for a number of reasons. Soil provides the medium for plant growth as well as being able to absorb and filter runoff and some discharges of contaminants. For all practical purposes soil is a non-renewable resource due to the thousands of years it takes for soil to form. It is therefore of key importance to prevent soil loss and contamination. **Soil conservation and soil health are significant issues addressed by this Plan.**

*See also Chapter 2.2: Use and Development, Issue 2.2.2.4, Objective 2.2.3.6 & Policy 2.2.4.5, Chapter 4: Air Quality; Chapter 5: Discharges to Land and Water and Land Management, Chapter 6: Water Allocation and Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water.*

### 2.0.3 Air

Clean air is not visible, has no odour and contains no pollutants that may change its composition. Although air quality in the Auckland Region is generally acceptable, at times air can be visible, have an odour or contain pollutants, all of which can cause adverse effects on human health, **amenity** and the environment. The greatest single contributor to degraded air quality in the Auckland Region is emissions from motor vehicles.

The Auckland Region's unpredictable weather and variable topography means that the level of pollutants varies significantly around the region and can hang in valleys such as Henderson and Albany. There are localised areas, such as near roads, where contaminants exceed international health guidelines and hence air quality falls below acceptable levels.

The Auckland Region's population is continuing to grow. As a consequence there are more motor vehicles on the roads, more people to undertake activities that discharge contaminants into air and more people to be affected by discharges of contaminants into air. Although the air shed is large, it is finite resource and can only absorb a certain level of contaminants. The production of air contaminants in the region also contributes to increasing **greenhouse gas** concentrations.

The Auckland Region's air quality is inextricably linked to land use activities and in particular those activities within urban Auckland. These activities include industrial processes and household activities, such as open-burning and domestic fires which may discharge various contaminants into the air such as **hazardous air pollutants**, odour and dust. This has implications for human health and **amenity**. **Declining air quality is a significant issue addressed by this Plan.**

*See also Chapter 3: Management Areas , Section 3.11- Industrial Air Quality Management Area, Section 3.12 – Urban Area Quality Management Area, Section 3.13 – Rural Air Quality Management Area and Section 3.14 – Coastal Marine Air Quality Management Area and Chapter 4: Air Quality*

### 2.0.4 Rivers and Streams

Compared to other parts of New Zealand, Auckland is a region of small rivers and streams. The characteristics of these water bodies are hugely variable, depending on variables such as geology, topography and, land use.

The character of a stream in any one location also reflects its position in the catchment. A stream system can be thought of as a continuum, with the head of the stream at one end and the river mouth at the other. In reality, distinguishing the exact location where a stream starts can be extremely difficult. Zones of flowing water, standing water or simply moist ground vary both seasonally and from year to year. This variability presents difficulties for consistently managing the use, development and protection of the region's river and stream resources.

This Plan resolves this uncertainty by defining and managing rivers and streams as one of two types, depending on the permanence of their hydrology or year-round existence. *Permanent rivers or streams* are those rivers or streams which provide year round habitat for fish and other freshwater biota. They also provide other instream values, notably in regulating water quality and providing pathways for the migratory lifecycle of native fish. *Permanent rivers or streams* are distinguished by the presence of permanent habitat in the form of continual flow or standing water through the summer, (see definition of *Permanent rivers or streams* in Chapter 12).

There are approximately 10,000 km of *Permanent rivers or streams* in the Auckland Region. Approximately 90 per cent are headwater streams with no more than one tributary and generally less than two metres wide. Even the largest rivers, the Kaipara and Hoteo in Rodney District and the Wairoa River in Manukau City and Franklin District, are small compared to those in other parts of New Zealand. Small streams meandering through numerous short and steep catchments are characteristic of the narrow (30 - 60 km wide) Auckland Region. While the values of such streams may not always be immediately apparent, particularly where streams have been modified or are degraded, on a cumulative basis they comprise the major part of the region's freshwater environment. Each *Permanent river or stream* therefore plays an important role in contributing to the overall habitat, water quality and connectivity of freshwater bodies at the regional scale.

*Intermittent streams* are those streams which do not provide permanent or year-round freshwater habitat. The Plan simply defines these as any stream which does not meet the *Permanent river or stream* definition. However *Intermittent streams* also contribute to catchment hydrology and instream values. The extent of this contribution is uncertain and the Plan therefore sets out as another Method, the ARC's intention to further investigate the values of *Intermittent streams*.

The Plan deliberately adopts the terms 'Permanent' and 'Intermittent' rather than "perennial" and "ephemeral" because, whilst these latter terms are in common usage, their use technically only relates to stream flow characteristics. The common usage often does not reflect the hydrological meanings of the terms. In contrast, the management approach distinguishes streams on the basis of habitat performance, of which continual flow is not an exclusive indicator. The use of the terms 'Permanent' and 'Intermittent' leads the Plan user to make an assessment of habitat permanence, rather than making a judgement solely based on stream flow characteristics.

The small scale of river and stream resources puts them at risk from land activities. Small streams are easy to physically modify through channelisation, removal of riparian vegetation, and burying in *culverts* and pipes. Stream channels in urban areas are often modified and designed to facilitate the *drainage* of stormwater from roads, houses and buildings. In rural areas, the removal of native riparian vegetation, the introduction of unwanted weed and pest species, unrestricted access for stock and water extractions have degraded streams. The construction of *dams* provides water supply benefits to rural and urban users, and enables the restoration, creation or maintenance of natural wetlands, but results in the modification of the natural flow regime and habitat values upstream and downstream of *dams*, as well as the area flooded by the *dam* itself. *Dams* and *culverts* can also be insurmountable barriers to the movement of native fish, while degraded water quality can reduce the habitats for freshwater fauna.

Although these modifications have social and economic benefits, the ecological values of streams are important in terms of biodiversity and ensuring the health and wellbeing of ecosystems. Water quality is also important for recreational activities as well as stock and human consumption.

Land based activities can also compromise the ways in which tangata whenua value water in rivers and streams. The mixing of different types of water through discharges, or by the diversion of these water bodies is contrary to Māori views on how water should be managed.

There are many opportunities for restoring the quality of streams in the region. These include restoration of riparian buffer strips, restricting stock from streams and *lakes*, designing *culverts* to provide for *fish passage*, designing urban areas that preserve wetlands and natural stream channels, managing stormwater discharges and minimising contaminant inputs. However it is recognised that opportunities are limited in existing urban areas and a framework is provided in Chapter 3.6 to guide the management of urban rivers and streams. **Declining water quality and quantity in rivers and streams and a reduction in their natural character is a significant issue addressed by this Plan.**

*See Chapter 5: Discharges to Land and Water and Land Management, Chapter 6: Water Allocation and Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water.*

## 2.0.5 Lakes

There are a number of naturally created *lakes* in the Region. Most of these are 'dune lakes' formed by the impoundment of water behind sand dunes blown in from coastal beaches. Many, but not all of these *lakes* have been identified as Natural Lake Management Areas. Lake Pupuke is unique as the only *lake* formed by volcanic action. It is identified as an Urban Lake Management Area. There are also a number of water supply reservoirs in the Waitakere and Hunua Ranges. The maintenance of their water quality is important for public health. This is achieved through the reservoirs being in forested catchments and by restrictions on *public access* to activities in these catchments. However as the water supply reservoirs were artificially created, they are not classified as natural lakes by this Plan.

Water quality in the naturally created *lakes* ranges from high quality to severely degraded. However all of the *lakes* show signs of a gradual deterioration in quality. These *lakes* are sensitive aquatic environments because they have little or no outflow, and thus are poorly flushed, accumulate contaminants, and are prone to nutrient enrichment. They reflect the cumulative effects of many years of human activity in their catchments. Their ecology is also complicated by the introduction, both lawfully and unlawfully, of *exotic plants* and fish over the last 150 years. Lake Pupuke has the largest number of different exotic fish in New Zealand.

It would be near impossible to fully restore these natural *lakes* because of the ecological changes that have already occurred. The highest priority is to keep the *lakes* from deteriorating further, especially those of high quality which are most at risk. Opportunities to maintain and possibly even improve *lake* quality include *protection* of the *lake* fringe, riparian buffer strips along tributaries, fencing of stock and restricting access. **Declining water quality in the lakes and a reduction in or loss of natural character are significant issues addressed by this Plan.**

*See also Chapter 3: Management Areas – Section 3.3 – Natural Lake Management Areas; Section 3.7 – Urban Lakes Management Areas; Schedule 4: Natural Lakes and the policies and rules in Chapters 5, 6 and 7 relating specifically to Natural Lake Management Areas and Urban Lake Management Areas.*

## 2.0.6 Wetlands

Wetlands include permanently and intermittently wet areas, shallow water and land/ water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions. Generally these include areas of marsh, fen, peat land or brackish water. Freshwater wetlands now cover less than 0.4 per cent of the region's land area and are now one of the rarest and at risk ecosystems. The largest and probably best-known natural wetland is the Te Henga wetland in Waitakere City and Rodney District.

Internationally, wetlands are considered to be under threat. The Ramsar Convention on wetlands of which New Zealand is a part signatory, seeks to preserve and protect the world's remaining wetlands. The large wetland in the Firth of Thames (within the Auckland and Waikato Regions) is a 'Ramsar wetland site' administered by the Department of Conservation. Section 6 of the RMA requires that provision be made for the preservation of the *natural character* of wetlands and their *protection* from inappropriate subdivision, use and development. The loss of the natural character of wetlands from inappropriate subdivision, use and development is a significant issue addressed by this Plan.

*See also Chapter 3: Management Areas – Section 3.2 – Wetland Management Areas, Schedule 1: Wetland Management Areas and the policies and rules in Chapter 5, 6 and 7 relating to Wetland Management Areas.*

## 2.0.7 Groundwater

The Auckland Region has a number of significant *aquifers* both within the urban and rural parts of the Auckland Region. *Aquifers* are important as direct sources of water supply for domestic and commercial use. They are also major contributors to the base flow of many streams, particularly in the southern parts of the region.

*Aquifers* are susceptible to contamination from *stormwater* and *wastewater*, as well as the application of *fertiliser*. Also, due to the level of *take* some of these *aquifers* are under threat. The rate of *take* can reduce the amount of water available to feed rivers and streams, thereby affecting their life-supporting capacity, and also reducing the amount of water available for other activities including stock, domestic and recreational use. *Salt-water intrusion* is another threat from *taking*, which will affect the ability to use the water from that *aquifer*. Declining water quality and quantity in *aquifers* is a significant issue addressed by this Plan.

*See also Chapter 3: Management Areas, Sections 3.9 – High Use Aquifer Management Areas and 3.10 – Quality Sensitive Aquifer Management Areas, Chapter 5: Discharges to Land and Water – Industrial or Trade Processes provisions and Chapter 6: Water Allocation.*

## 2.0.8 Geothermal Resources

Known geothermal fields are located at Parakai, Waiwera, Whitford and Great Barrier Island. It is important to protect the geothermal *aquifers* from the ingress of cold ground water or seawater that could result in the reduction in *bore* production temperatures. The bore production temperatures, of up to 65°C, result from hot water rising rapidly from depth through fractures in the rocks. Sustainably managing geothermal water resources is a significant issue addressed by this plan.

*See also Chapter 5: Discharges to Land and Water and Land Management – Other Discharges of Contaminants to Land and Water provisions and Chapter 6: Water Allocation.*

## 2.1 Natural Values

### 2.1.1 Introduction

This chapter recognises and provides for several matters of national importance contained in Sections 6 (a) and (c) of the RMA. These are:

- (a) *The preservation of the natural character of ... wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use and development;*
- (b) *The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*

Other Section 6 matters are addressed in Chapter 2.2: Use and Development.

While this chapter is structured around Section 6 matters, the implementation of its objectives and policies must occur with reference to the principal purpose of the RMA, namely the sustainable management of natural and physical resources as defined by Section 5. The factors contained in Chapter 2.1 are subordinate to Section 5 matters, but contribute to the evaluation of what constitutes the sustainable management of air, land and water resources in the Auckland Region.

Section 7 of the Act lists other matters to which there must be particular regard. Those which are directly relevant to the natural values of air, land and water resources include:

- (b) *The efficient use and development of natural and physical resources;*
- (d) *Intrinsic values of ecosystems;*
- (f) *Maintenance and enhancement of the quality of the environment;*
- (g) *Any finite characteristics of natural and physical resources;*
- (h) *The protection of the habitat of trout and salmon;*

These “Other Matters” are given effect through the policies of this chapter and through the provisions of Chapters 4, 5, 6 and 7, although direct reference to the particular wording of Section 7 is not necessarily made.

The management of the Region’s natural values is also undertaken within a strategic growth framework set out in the Auckland Regional Policy Statement. This framework promotes intensification of development within **Urban Areas** and discourages urban development outside of these areas. It requires that protection be given to highly valued and sensitive natural environments. This Plan implements this strategic framework in the manner outlined in Issue 2.2.2.1 and through Objectives 2.2.3.2 to 2.2.3.7 and Policies 2.2.4.1, 2.2.4.2 and 2.2.4.5 (pages 2.2-3 and 2.2-9 to 2.2-11). The objectives and policies of this chapter reflect this strategic framework, by giving the highest protection to those areas or resources that have high natural character or ecological and habitat values consistent with Sections 6(a) and (c). Within **Urban Areas** the focus is on managing use and development in a way that maintains as far as practicable important remaining areas of natural value and mitigates adverse effects in other areas.

Chapter 3 Management Areas also contains information on the natural values of particular areas of the Auckland Region, while the Introductory sections to Chapter 4- Air Quality, 5 – Discharges to Land and Water and Land Management, 6 – Water Allocation and 7 – Beds of Lakes and Rivers and Diversion of Surface Water identify the particular resource management issues associated with these activities.

Section 1.3 of Chapter 1 outlines the ARC’s functions under Section 30 of the RMA.



In this chapter these functions are referred to generically as “use and development,” rather than listing all the matters separately. Use and development does not encompass the subdivision, use and development of land which is the responsibility of *territorial authorities*.

## 2.1.2 Issues

- 2.1.2.1** The *natural character* of wetlands, *lakes* and rivers and their margins is adversely affected by inappropriate use and development within the waterbodies themselves and on adjacent land.

Changes in the *natural character* of wetlands, *lakes*, rivers and streams occur through various activities. Degraded water quality from direct and indirect discharges of contaminants, the loss or reduction in riparian vegetation and in-stream habitats, changes to the quantity and seasonal flow patterns of water as well as development within the beds of the wetland, *lake*, river or stream all give rise to changes in the *natural character* of the water body itself and its margins.

All of the region's natural *lakes* and most of its rivers and streams have been modified to some degree. Areas of highest *natural character* are usually wetlands, rivers and streams in reserves and where large areas of indigenous riparian vegetation remain. However even here, upstream discharges or *takes* can affect the quality and quantity of water and ecosystem health.

Most pastoral streams have lost much of their original *natural character*, and original indigenous riparian vegetation may be replaced by pasture or *exotic plantings*. The loss of riparian vegetation in pastoral areas and changes in adjacent land use are usually accompanied by a corresponding reduction in the quality and diversity of instream values. Water *take* and *waste* discharges also affect natural water quality and quantity.

However it is in the region's urban areas where the impacts on the *natural character* of streams have been the greatest. Not only has water quality and quantity been severely affected by urban development, with instream biota lost or reduced, but stream channels are often straightened or lined, or lost altogether by being piped. However urban development can also provide the opportunity to restore or enhance degraded streams and to increase the level of *natural character* of these *watercourses* and their margins.

*This issue relates to Objectives 2.1.3.1; 2.1.3.2, Policies 2.1.4.1 to 2.1.4.4*

*See also Section 3.6: Urban Rivers and Streams of Chapter 3: Management Areas for guidance on the management of different categories of urban streams.*

- 2.1.2.2** The Region's natural *lakes*, its major rivers, the majority of its wetlands and much of the remaining indigenous vegetation are of local, regional or even national significance. Smaller rivers and streams are also the habitat of regionally rare or endangered aquatic fauna. A loss or reduction in the quality and quantity of water in the Region's *lakes*, rivers and streams, significant modification of the beds of *lakes*, rivers, streams and wetlands, and poor land management practices giving rise to sedimentation and loss of soil can adversely affect these significant habitat areas.

*This issue relates to Objectives 2.1.3.1, 2.1.3.3, Policies 2.1.4.6 to 2.1.4.9.*

*See Sections 3.2, 3.3 and 3.4 of Chapter 3: Management Areas*

- 2.1.2.3** The Region's *lakes*, rivers, streams and wetlands may be lost or their values significantly degraded by the adverse effects of individual and cumulative proposals for use and development. While individual activities may have localised environmental effects, the cumulative effect of small, incremental loss or reduction in natural values can give rise to significant cumulative effects on Auckland's natural environment.

*This issue relates to Objectives 2.1.3.1 to 2.1.3.3 and Policies 2.1.4.1 to 2.1.4.12.*



### 2.1.3 Objectives

**2.1.3.1** To sustainably manage the quality and diversity of Auckland's natural values by:

- (a) Maintaining areas of high environmental quality;
- (b) Remedying or mitigating adverse effects on degraded natural and physical resources where these cannot be avoided;
- (c) Enhancing degraded areas where practicable.

*This issue relates to Issues 2.1.2.1 to 2.1.2.5 And Policies 2.1.4.1 to 2.1.4.12.*

**2.1.3.2** To preserve the *natural character* of wetlands, *lakes* and rivers and their margins by protecting them from inappropriate use and development.

*This issue relates to Issue 2.1.2.1 and Policies 2.1.4.1 to 2.1.4.5.*

**2.1.3.3** To protect significant indigenous terrestrial and aquatic vegetation and the significant habitats of indigenous fauna, both terrestrial and aquatic from inappropriate use and development.

*This issue relates to Issues 2.1.2.2 and 2.1.2.3 and Policies 2.1.4.6 to 2.1.4.12.*

**2.1.3.4** To maintain and enhance the quality of the Region's *Permanent rivers and streams* where practicable.

### 2.1.4 Policies

#### Natural Character

**2.1.4.1** The *natural character* of wetlands, *lakes* and rivers and their margins shall be preserved and protected from inappropriate use and development by avoiding, remedying or mitigating adverse effects on the qualities, elements and features that contribute to the *natural character* of these areas.

(See also Introduction or Planting of Plants provisions in Chapter 7: Beds of Lakes and Rivers).

**2.1.4.2** In assessing the actual or potential effects of use and development on the *natural character* of wetlands, *lakes*, rivers and their margins, particular regard shall be had to:

- (a) Maintaining high levels of natural character in Natural Lake, Natural Stream and Wetland Management Areas;
- (b) Maintaining appropriate remaining elements of natural character in:
  - i Other *Permanent rivers or streams* in rural areas;
  - ii *Permanent rivers and streams* in *Greenfield Areas* that have been assessed as having high ecological, habitat or water quality values; and
  - iii Urban Lake Management Areas.
- (c) Retaining as far as practicable remaining elements of natural character in other Type 2 and 3 Urban Streams, consistent with the management objectives for these streams in Section 3.6.
- (d) Protecting the natural character of wetlands and *Permanent rivers and streams* in *Water Supply Management Areas* as far as practicable, while providing for the use of these areas as water supply areas.

When determining the qualities, elements and features that contribute to *natural character* for the purposes of Policy 2.1.4.2 (a) and (b), regard should be had to Policy 2.1.4.8.

(See also Chapter 3: Management Areas, including Sections 3.2, 3.3 & 3.4)

- 2.1.4.3** When determining the qualities, elements and features that contribute to *natural character* for the purposes of Policy 2.1.4.1 and 2.1.4.2 (a) to (d), regard should be had to the matters listed in Policy 2.1.4.9.
- 2.1.4.4** When use and development gives rise to actual or potential adverse effects on the *natural character* of wetlands, *lakes* and rivers and their margins, where appropriate these effects shall be remedied or mitigated by restoration or rehabilitation of the *natural character* of these areas.
- 2.1.4.5** In determining whether any adverse effects on *natural character* can be remedied or mitigated by restoration and rehabilitation that is to be carried out, regard shall be had to:
- (a) the extent to which the qualities and features of *natural character* in the area of the proposed use and development will be adversely affected, and the ability to restore or rehabilitate *natural character* in the area subject to the proposal;
  - (b) where restoration or rehabilitation is not practicable in the area subject to the proposal, the potential to mitigate any adverse effects by the rehabilitation or restoration of *natural character* in another area of wetland, *lake* or river and their margins;
  - (c) Where restoration plantings are carried out, preference shall be given to the use of indigenous species with a further preference for local genetic stock.

When determining how rehabilitation or restoration of *natural character* should be carried out, regard should be had to Policy 2.1.4.9.

(See also Introduction or Planting of Plant provisions in Chapter 7: Beds of Lakes and Rivers).

### Ecosystems and Habitats

- 2.1.4.6** The values of ecosystems and habitats shall be managed by:
- (a) Outside Urban Areas:
    - i Avoiding inappropriate use and development in Natural Lake, Natural Stream and Wetland Management Areas which will result in more than minor modification of their values and ecological and physical processes;
    - ii Ensuring that as far as practicable, change in the extent, quality and diversity of habitats in these areas arise only from the functioning of natural processes;
    - iii Avoiding, remedying or mitigating adverse effects on the ecological, habitat and water quality values of rivers and streams in rural areas that are classified as *Permanent rivers and streams*;
    - iv Maintaining and enhancing the high ecological, habitat and water quality values of the Waitakere and Hunua Ranges while recognising their regional importance for water supply purposes by their inclusion in Water Supply Management Areas.
  - (b) Inside *Urban Areas*
    - i Maintaining as far as practicable *Permanent rivers and streams* in *Greenfield Areas* where these rivers and streams are assessed as having significant ecological, water quality and habitat values, or are identified for protection in structure plans or appropriate catchment based planning processes;
    - ii implementing the provisions for Urban Lakes and Urban River and Stream Management Areas in accordance with Chapter 3 of this Plan.
- and
- (c) Enhancing degraded ecosystems and habitats and water quality both outside and inside *Urban Areas* where this is practicable;

- (d) Providing for fish passage between *Permanent rivers and streams* and the coastal marine area as far as practicable.

**2.1.4.7** The provision of fish passage under Policy 2.1.4.6(d) above shall be assessed against the following matters:

- (a) the extent to which there are natural physical barriers (e.g. waterfalls) along *Permanent rivers and streams* and between *Permanent rivers and streams* and the coastal marine area that provide natural barriers to fish passage;
- (b) the extent to which there are existing artificial barriers (e.g. dams, weirs or culverts) that currently prevent the passage of fish and for which it is impracticable to modify to provide for fish passage;
- (c) the environmental benefit to be obtained from the provision of fish passage along *Permanent rivers and streams*. Benefits shall be considered to be high where the passage of migratory aquatic fauna is enabled between:
  - i Wetland Management Areas, Natural Lake Management Areas and Natural Stream Management Areas;
  - ii Type 2 Urban Streams and the Coastal Marine Area;
  - iii *Permanent rivers and streams* in rural areas having regard to the location of the stream within the catchment and the availability of actual or potential upstream habitat.

**2.1.4.8** Where areas of terrestrial indigenous vegetation and habitats of terrestrial indigenous fauna have been identified as being significant, the ARC will have regard to the adverse effects on the ecological values and significance of these areas, of land disturbance, the discharges of contaminants or other activities affecting water quality or quantity.

**Explanation:**

See Policy 2.1.4.9 (n) for the determination of the significance of indigenous vegetation and habitats of indigenous fauna.

**2.1.4.9** In assessing the effects of use and development on *natural character* and terrestrial and aquatic ecosystems in terms of Policies 2.1.4.1 to 2.1.4.8, regard shall be had to maintaining and where practicable enhancing the matters listed in clauses (a) to (n) below, or preventing or minimising the adverse effects of any discharge of contaminants where a Best Practicable Option approach is used, where these are relevant:

- (a) The physical or ecological integrity of the ecosystem and the continuation of the physical, biological or chemical processes necessary to ensure its proper functioning;
- (b) Vegetation patterns (ecotones) and connections between habitats;
- (c) Riparian vegetation bordering *lakes*, rivers and wetlands;
- (d) Natural biodiversity, productivity and biotic patterns;
- (e) Access, migratory and dispersal pathways for terrestrial and aquatic fauna;
- (f) The physical characteristics of the *lake* or wetland, including its shape, size and natural substrate composition;
- (g) The physical characteristics of a stream channel, including dimension (width, depth), pattern (meander wavelength) and profile (slope);
- (h) Aquatic habitat structure, including in the case of rivers and streams, pools, riffles and runs;
- (i) Flow regimes, water levels and hydraulic processes of a wetland, *lake* or river;

- (j) The natural sediment processes in a river channel, including bank erosion, sediment transport and sediment deposition;
- (k) The natural substrate composition in *lakes*, rivers and wetlands, by:
  - i avoiding the addition of material not found naturally in the area;
  - ii maintaining natural processes of erosion, movement and deposition of substrate;
  - iii avoiding disturbance and deposition that could have significant or irreversible effects on substrate composition;
- (l) The physical characteristics of the floodplain of a stream or river;
- (m) Water and air quality necessary to protect human and ecological health.
- (n) The significance of the ecosystem, having regard to:
  - i whether it is listed in the Schedules of this plan;
  - ii whether it is identified in Appendix B of the Auckland Regional Policy Statement, the Department of Conservation's Auckland Conservation Management Strategy or as a significant area in any district plan;
  - iii whether it has been identified in any published Protected Natural Area report;
  - iv whether it is the habitat of any nationally or regionally threatened rare or endangered species.

### Environmental Compensation

**2.1.4.10** The adverse effects of use and development in one area or on one type of resource may, having regard to the benefits and adverse effects of the activity and Part 2 of the RMA be offset by mitigation measures elsewhere within the Region, to compensate for adverse effects that cannot be avoided, or directly remedied or mitigated. However, any adverse effects on areas of high *natural character* or significant ecosystems identified in Policy 2.1.4 9(n) should be avoided to the fullest extent practicable in the first instance, with offset mitigation being implemented where adverse effects on those resources are unavoidable.

**2.1.4.11** Where offset mitigation measures referred to in Policy 2.1.4.10 are to be implemented by way of works or services, the scope of any necessary works or services and associated conditions of consent imposed under section 108(2)(c) of the RMA, shall be determined having regard to the following matters:

- (a) that as far as practicable off set mitigation should be of the same kind or scale as and should remedy or mitigate effects caused at least in part by the activity being granted consent;
- (b) any mitigation shall restore, create or enhance natural or physical resources in order to compensate the adverse effects created by the activity at the original location; or
- (c) the offset mitigation should be applied as close as possible to the site where the adverse effects occur; and where this is not practicable, the ARC will work with the applicant to identify an alternative site, preferably in the same catchment or receiving environment as the consented activity, having regard to the nature of the environment including the community adversely affected by the consented activity;
- (d) whether the activity is located inside or outside of *Urban Areas* and is an existing or new activity;
- (e) the extent to which the works or services are practicable and effective to remedy or mitigate adverse effects.

- 2.1.4.12** Where the offset mitigation measures determined by Policy 2.1.4.10 are to be implemented by way of a financial contribution paid to the ARC, then the actual level of financial contribution shall be determined in accordance with the provisions of Chapter 8 of this Plan.

**Explanation:**

*For the purposes of this Plan offset mitigation is that designed to enhance lost or diminished values in a particular location to compensate for adverse effects that occur as a result of another activity elsewhere.*

## 2.1.5 Other Methods

- 2.1.5.1** The ARC will prepare guidelines to assist resource users in assessing the value of *Permanent rivers or streams* when applying for a resource consent.
- 2.1.5.2** The ARC will develop and maintain a database recording the locations and results of stream assessments, including stream category, throughout the Auckland Region.
- 2.1.5.3** The ARC will undertake investigations into:
- (a) the intrinsic value (ecology and biodiversity) of a representative cross section of *Permanent rivers or streams*;
  - (b) the contribution to catchment hydrology of *Permanent rivers or streams*;
  - (c) hydrological and ecological functions of *Intermittent streams*.
- 2.1.5.4** The ARC will review the form and extent of future controls on the clearance of riparian vegetation under Section 9(3) of the RMA as part of its review of the Auckland Regional Plan: Sediment Control.

## 2.1.6 Anticipated Environmental Results

### Natural Character

- 2.1.6.1** Appropriate use and development of air, land and water resources is enabled, areas of high natural character are protected, and adverse effects on natural character elements in other areas are minimised.

### Ecosystems and Habitats

- 2.1.6.2** The *protection* of areas of significant indigenous vegetation and significant habitats of indigenous fauna from inappropriate use and development.
- 2.1.6.3** The maintenance and enhancement of indigenous biological diversity, integrity, form, functioning and resilience of land and water ecosystems within the region as a whole.
- 2.1.6.4** The life supporting capacity of the region's air, land and water resources is safeguarded.
- 2.1.6.5** The enhancement of the overall quality of the Region's natural environment.
- 2.1.6.6** *Permanent rivers or streams* are generally retained in rural areas and their loss is minimised in *Urban Areas*.

## 2.2 Use and Development

### 2.2.1 Introduction

The Auckland Region contains New Zealand's largest metropolitan area and a third of its population. The ability to use and develop air, land and freshwater is critical to local, regional and national economic and social prosperity. These resources are used and developed for a wide range of activities including residential, commercial, industrial and recreational land uses, the operation of regional infrastructure such as roads, water supply, stormwater and wastewater networks and rural production activities such as pastoral farming, arable farming, horticulture, intensive farming and forestry. This chapter addresses the use and development of natural and physical resources,

which are under the ARC's jurisdiction within the context of an urbanised region, experiencing rapid population growth, and increased demand for physical infrastructure and within the sustainable management framework of Part 2 of the RMA.

The purpose of the RMA as defined by Section 5 is to promote the sustainable management of natural and physical resources (See Chapter 1, section 1.3). Natural and physical resources are defined by the RMA as being "land, water, soil, minerals, and energy, all forms of plants and animals (whether native to New Zealand or introduced) and all structures." This chapter focuses on the use and development of key natural and physical resources that are essential for the operation of the region. This includes the use and development of urban and rural land, the operation and upgrading of existing physical infrastructure and the provision of new infrastructure. The use and development of these natural and physical resources is also guided by the strategic framework set out in the Auckland Regional Policy Statement for the integrated management of regional population growth, land development and future infrastructure requirements.

The second part of this chapter specifically addresses several matters of national importance. These are matters that the Plan is required to recognise and provide for, although they are sub-ordinate to the purpose of Section 5 of the RMA. Those matters of national importance which relate principally to natural resources are addressed in Chapter 2.1: Natural Values. However, Section 6 of the RMA also requires that this plan recognise and provide for:

- (d) *The maintenance and enhancement of public access to and along ...lakes and rivers.*

**Public access** to and along **lakes** and rivers is addressed by specific provisions in this chapter.

The Other Matters listed in Section 7 of the RMA which are directly relevant to the use and development of air, land and water resources include:

- (aa) The ethic of stewardship;
- (b) The efficient use and development of natural and physical resources;
- (c) The maintenance and enhancement of **amenity** values;
- (f) The maintenance and enhancement of the quality of the environment;
- (g) Any finite characteristics of natural and physical resources.

The Section 7 matters are given effect through the objectives and policies of this chapter and through the provisions of Chapters 4, 5, 6 and 7 as a whole, rather than by specific provisions which address each of these matters in turn.

Section 1.3 of Chapter 1 outlines the ARC's functions under Section 30 of the RMA. In this chapter these functions are referred to generically as "use and development," rather than listing all the matters separately. Use and development does not encompass the subdivision, use and development of land which is the responsibility of **territorial authorities**.

## 2.2.2 Issues

### 2.2.2.1 The Auckland Region's population continues to grow at a significant rate.

Accommodating an expanding regional population requires the use and development of the natural and physical resources to enable the on-going social, economic and cultural well-being of the regional community. However unmanaged population growth may cause adverse effects on the environment. A lack of integrated management may also limit the ability to make appropriate decisions on how best to avoid, remedy or mitigate adverse effects from growth enabling activities.

**Explanation:**

The Auckland Region's population is expected to grow at a rate exceeding that of other regions in New Zealand. By 2050 it could be home to up to two million people. Accommodating this growth through urban development is fundamental to the ongoing economic growth of the Auckland Region and to the social, economic and cultural well-being of people and communities.

The Auckland Regional Policy Statement 1999 (ARPS) including Change 6 to the ARPS establishes the framework for integrated management, strategic direction and the environmental effects of growth in the Auckland Region. The Strategic Direction of the ARPS is to ensure that the Region's growth can be accommodated, while still maintaining and enhancing the overall quality of the urban environment and protecting the intrinsic values of the Region's natural resource base.

The Auckland Regional Growth Strategy 2050, developed under the Local Government Act, builds on the Strategic Direction of the ARPS. It provides more detailed guidance on the form, amount and staging of development within and outside the **Metropolitan Urban Limits** (MULs), and identifies particular greenfield areas for development.

The principal components of the Regional Strategic Direction as contained in the Regional Policy Statement and elaborated upon in the Regional Growth Strategy (RGS) are:

- (a) the containment of urban development within **Urban Areas** (that is within the **Metropolitan Urban Limits** and the defined boundaries of rural and coastal settlements) (ARPS);
- (b) the promotion of quality, compact urban environments through the creation of high density communities within the MULs, focused around town centres and major transport routes (RGS);
- (c) less emphasis on general suburban infill and greater focus on redevelopment and intensification within specific areas; (RGS)
- (d) growth in identified greenfield areas, including Takanini, East Tamaki, Hingaia, Westgate/Redhills, Albany, Greenhithe, Long Bay and Orewa/Silverdale and the expansion of rural and coastal towns; (RGS)
- (e) the intensification of urban activities at selected locations within areas of new development; (ARPS)
- (f) constraints upon **countryside living** to avoid significant adverse effects on natural resources, in particular regionally significant environmental values, and the **rural character** of areas outside **Urban Areas**; (ARPS)
- (g) urban development is avoided in highly valued and sensitive natural areas including the Waitakere and Hunua Ranges, Puhoi, Waiwera, Mahurangi, Weiti, Okura, eastern Waiheke Island and Whitford; (RGS)
- (h) the promotion of transport efficiency and the provision for the safe and efficient operation of existing and new regional infrastructure; (ARPS)
- (i) the maintenance of urban **amenity** values and **rural character**; (ARPS)
- (j) the identification of significant environmental values and the management of effects of activities on the air, land and water resources of the Auckland Region by resource specific chapters. (ARPS)

This Plan must be consistent with the Regional Policy Statement. Hence the broad structure of the Plan and its objectives, policies, rules and other methods, translate the strategic direction of the Regional Policy Statement and its social, economic, cultural and environmental outcomes into the management of the effects of rural and rural activities on air, land and water resources.



Accordingly this Plan reflects the principal components listed above by:

- (a) protecting important and sensitive natural environments through the objectives and policies of Chapter 2.1: Natural Values; and the inclusion of these areas in specific management areas (see Chapter 3). Management Areas relating to some **lakes**, and rivers and streams with significant natural environmental values outside of **Urban Areas** are given a higher level of **protection** through Plan policies and rules than those within the **Urban Areas**. Particular attention is given to avoiding adverse effects on indigenous freshwater habitat resources;

- (b) supporting future development within the **Urban Areas** by a more permissive rule regime, but recognising that such development may result in environmental impacts. Therefore the management approach primarily focuses on mitigating adverse environmental effects;

For example the management of the adverse effects of discharges from **stormwater** and **wastewater networks**, discharges to air within **Urban Areas** and discharges from **industrial and trade processes** promotes the use of the BPO (Best Practicable Option);

- (c) categorising rivers and streams within the **Urban Areas** according to their present natural values and degree of modification, and identifying the ability to mitigate adverse effects and undertake varying degrees of environmental enhancement;
- (d) recognising and providing for the transition of rural land into urban uses in Greenfield Areas by categorising rivers and streams within these areas separately from rivers and streams within areas that are already largely urbanised;
- (e) providing for the use and development of air, land and water outside of **Urban Areas** for rural activities, but focusing on containing adverse effects as much as possible on site. This recognises that the lower density of development in rural areas generally provides opportunities to avoid, remedy or mitigate adverse environmental effects within an individual property or site. For example, the Rural Air Quality Management Area is more permissive in the types of permitted discharges to air than the Urban Air Quality Management Area, as there are generally greater buffer areas between rural properties to manage adverse effects, than exist in **Urban Areas**. The aim of managing discharges of contaminants to land is to contain and treat these contaminants on the property which generated the discharge
- (f) recognising and providing for the location and operational requirements of network utility infrastructure, but requiring a higher level of environmental performance outside of **Urban Areas** and particularly in regionally significant environmental areas;
- (g) recognising and providing for existing regionally important Water Supply areas in the Waitakere and Hunua Ranges and recognising their dual value as water supply catchment and significant areas of indigenous flora and fauna;
- (h) adopting an approach to the status of activities and the notification requirements that:
- Is more permissive within **Urban Areas**, where some reduction in resource quality already exists;
  - Is permissive throughout the Region, where likely environmental effects are minor and management approaches can readily avoid, remedy or mitigate adverse effects;
  - Is more restrictive in identified areas of high environmental value.



This issue relates to Objectives 2.2.3.1 to 2.2.3.9 and Policies 2.2.4.1 to 2.2.4.15

Refer also to the provisions of Chapters 3, 4, 5, 6 and 7 for detailed implementation of this management approach.

- 2.2.2.2** Areas of rural land within *Urban Areas* as defined by the Auckland Regional Policy Statement have been identified for development for residential, commercial and industrial purposes. The development of these *Greenfield Areas* is important to accommodate Auckland's projected population growth and provide future opportunities for regional economic expansion. The transition from rural land uses to developed urban land means that *Greenfield Areas* will experience significant physical change. This includes the contouring of land to provide suitable building sites, the diversion, piping or channelling of rivers and streams and changes in water quality. Development of *Greenfield Areas* needs to be managed to avoid, remedy or mitigate the environmental effects of these changes. Co-ordination of development between the Regional Council and territorial authorities is also necessary to ensure good physical, environmental, economic and social outcomes and to ensure an integrated approach to managing land use change within these areas.

**Explanation:**

*Development within Greenfield Areas is necessary to provide for the physical, economic, social and cultural wellbeing of the Auckland Region. Paragraph d of Issue 2.2.2.1 above lists the Greenfield Areas currently identified for development by the Auckland Regional Policy Statement. This document encourages the more efficient use of available urban land, than previously occurred. This is likely to result in higher densities of development in Greenfield Areas than was historically the case. Planning for this requires an integrated approach between the land developer, territorial authorities in terms of the development of structure plans and changes to district plans and this Plan in terms of dealing with resource consents associated with modification of rivers and streams, the taking and use of water and the discharge of contaminants.*

*Issues of particular focus for this Plan are the construction and management of stormwater and wastewater networks required to service new urban development and the associated modification or loss of rivers and streams. The first issue is addressed by the provisions relating to stormwater and wastewater networks in Chapter 5: Discharges to Land and Water. Provisions relating to the management of rivers and streams in Greenfield Areas are contained in section 3.6 of Chapter 3: Management Areas and Chapter 7: Beds of Lakes and Rivers. The Auckland Regional Plan: Sediment Control deals with land disturbing activities (earthworks) associated with the development of Greenfield land.*

- 2.2.2.3** Physical infrastructure is an essential component of Auckland's current and future growth. The development, upgrading, maintenance and operation of infrastructure is a major component which determines the form, location and timing of urban growth proposed by the Auckland Regional Policy Statement and the Auckland Regional Growth Strategy. This infrastructure provides economic, social and cultural benefits to the community and is essential for the functioning of the region. Its development and operation can also avoid, remedy or mitigate adverse environmental effects that would otherwise occur if it was not present. However the development and operation of this infrastructure can result in adverse effects on air and water quality, water quantity and *lake*, river and stream beds. Other activities can also adversely affect the operation of physical infrastructure.

**Explanation:**

*Physical infrastructure includes facilities such as the Ports of Auckland, as well as facilities which are specified as network utility operations under Section 166 of the RMA. This network utility infrastructure encompasses the Auckland International Airport and other regional airports, roading and rail networks, telecommunication, energy (electricity, oil and gas) networks as well as water, wastewater and*

**stormwater networks.** Water supply networks include the area used for the collection and treatment of water, as well as the pipe distribution system.

The roading and rail networks, the ports and the regional airports all provide essential facilities for the transport of both people and freight, and are used by emergency services. The telecommunication networks provide for personal, business and emergency communication, for the transfer of data and information and for access to regional, national and international information sources. Energy networks provide and distribute the electricity, oil and gas that is necessary for residential, commercial and industrial operations and for the community's **amenity** and wellbeing. The water, **wastewater** and **stormwater networks** are essential services that are necessary for public health and safety. This includes the provision of a secure bulk water supply from catchment land outside **Urban Areas** and its collection and distribution through a pipe network system to all users. The operation of a wastewater and stormwater network system and the collection and treatment of stormwater from major roads acts as a mitigatory measure preventing the degradation of land and water as it contains discharges of contaminated water and **wastes** within a pipe system. Use of physical infrastructure by emergency service providers enables them to undertake their activities effectively, thereby contributing to the safety and well-being of people and communities

Network utility infrastructure must inherently be located where it is required to serve existing or proposed communities and to operate as an efficient network. Hence there may be functional constraints on the location and operation of infrastructure which result in its impacting on sensitive environments, or areas of special value.

This Plan provides for the operation and upgrading of existing and new regional infrastructure, while addressing the adverse effects generated by such infrastructure in terms of discharges to air, land and water, the management of surface and **groundwater** resources and the beds of **lakes**, rivers and streams.

It also acknowledges that other activities controlled by the Plan have the potential to affect the safe and efficient operation of physical infrastructure. For example, uncontrolled discharges of contaminants may affect areas used for public water supply purposes.

Network utility infrastructure is addressed in different chapters of this Plan. Telecommunication and energy distribution networks are primarily affected by the provisions of Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water. Other infrastructure such as the development of new roads or rail, or the collection and distribution of bulk water generates effects which cross all chapters of the Plan. Chapter 3: Management Areas includes a Water Supply Management Area that covers two regionally important water supply catchments. **Stormwater** and **wastewater networks** and highway networks are principally affected by the provisions of section 3.6 relating to Urban River and Stream Management Areas, Chapter 5: Discharges to Land and Water, the **damming** provisions of Chapter 6: Water Allocation and by Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water.

District Plans also exercise major control over the form, location and operation of network utility infrastructure.

This issue relates to Objectives 2.2.3.4 and 2.2.3.5 and Policies 2.2.4.2, 2.2.4.3 and 2.2.4.4.

See also the provisions relating to **stormwater** and **wastewater** discharges in Chapter 5 and the provisions relating to network utility infrastructure in Chapter 7.

- 2.2.2.4** The provision for and maintenance of some network utility infrastructure is funded by the community serviced by the infrastructure. Other network utility infrastructure may be funded by central government or by commercial investment. The costs associated with this infrastructure and with the maintenance or enhancement of the environment must be considered against the community's expectations and the community's ability to pay. The development, upgrading, maintenance and operation of network utility infrastructure involves making decisions about the priorities for infrastructure

investment, the standard of environmental performance to be met, and the timing and staging of infrastructure development, upgrading or maintenance.

**Explanation:**

*Significant investment is required to provide new infrastructure and to maintain and upgrade existing infrastructure in the Auckland Region to meet the demands of growth and to maintain and enhance environmental quality. Decisions on the priorities for investment, the timing and staging of this investment, and acceptable levels of environmental **protection**, remediation or enhancement are influenced by the management approach to the use and development of air, land and water resources contained in this Plan.*

This issue relates to Objectives 2.2.3.4 and 2.2.3.6 and Policies 2.2.4.2 to 2.2.4.4 and 2.2.4.6 to 2.2.4.11.

See also the provisions relating to **stormwater** and **wastewater** discharges in Chapter 5 and the provisions relating to network utility infrastructure in Chapter 7.

- 2.2.2.5** The Auckland Region has a large and thriving rural sector, which includes pastoral farming, horticulture, viticulture, forestry and intensive farming as well as a range of rural servicing and processing activities, recreation, tourism, cultural facilities and home occupation and other employment opportunities. Rural activities contribute significantly to the local, regional and national economy and to the social and cultural identity of the Region. These activities need to be encouraged, while at the same time ensuring that the effects on air quality, the quality and quantity of freshwater and the beds of lakes and rivers are avoided, remedied or mitigated. The rural areas of the Auckland Region also provide significant rural residential lifestyle opportunities. However this can give rise to conflicts between the **amenity** expectations of people seeking a rural lifestyle and those undertaking production activities.

**Explanation:**

*The rural areas of the Auckland Region are not only important generators of economic activity, but they are also places to live in, as well as containing many of the Region's significant remaining natural areas. Use and development of air, land and water in rural areas can give rise to conflicts between competing objectives, which need to be managed by this Plan.*

*The management approach of this Plan to rural activities is influenced by:*

- (a) *the lower density of development within rural areas, compared with urban areas and the ability to avoid, remedy or mitigate adverse effects on the site;*
- (b) *the recognition that rural production activities can affect air quality, and in particular generate odours, which cannot practicably be contained on the site;*
- (c) *the proportion of **point source** and **non-point source discharges** and the management methods available to address the effects of these discharges;*
- (d) *the identification and **protection** of regionally significant natural areas, or freshwater resources.*

This issue relates to Objective 2.2.3.6 and Policies 2.2.4.5 to 2.2.4.11.

- 2.2.2.6** Some discharges of contaminants to air, land or water, the excessive **take** of **surface water** from waterbodies, or inappropriately located structures or other activities in the beds of **lakes** and rivers may adversely affect **amenity** values and the recreational use of natural and physical resources, which are important to people and the community.

**Explanation:**

*Amenity values are defined as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic*

coherence and cultural and recreational attributes. Activities controlled by this Plan can have direct physical impacts on the quality of the Region's urban and rural environment. Some of these effects may be highly visible, such as an increase in air contaminants giving rise to brown haze or noxious odours, a reduction in the amount of water flowing in streams, or changes to the clarity and colour of lakes and rivers from the discharge of polluting substances. Other changes may be less obvious, or be the result of the cumulative effect of a number of different activities. An example of this is a reduction in the amount and diversity of indigenous vegetation and aquatic fauna in watercourses, due to increasing levels of unseen contaminants, or the significant physical modification of existing watercourses.

Both individually and collectively, inappropriately managed activities can adversely affect the qualities and characteristics of the Auckland Region, which contribute to people's amenity, and their use and enjoyment of air, land and freshwater resources.

This issue relates to Objective 2.2.3.7 and Policy 2.2.4.11

- 2.2.2.7** *Public access* to and along **lakes** and rivers, and the use and enjoyment of these waterbodies can be inhibited by a range of inappropriately sited structures. Changes in river and stream flows may also affect **public access** up and down these water bodies, as well as their usability by canoes, kayaks and other recreational vessels.

**Explanation:**

The maintenance and enhancement of public access to and along lakes and rivers is a matter of national importance, for which this Plan must recognise and make provision. Access to lakes and rivers is extremely variable in the Auckland Region and is often determined by the presence of roads or pedestrian accessways, esplanade reserves, strips or other types of publicly owned land adjoining the lake, river or stream. In some instances access to the lake, river or stream is restricted by adjoining land being in private ownership. There may also be legal restrictions on public access up and down the bed of the river or stream. Issues of legal access to and along river beds or the provision of access across land to lakes, rivers and streams are not addressed by this Plan.

The Plan focuses on the effects of activities, such as the construction and operation of pipelines, culverts, dams, or the clearance of debris and sediment from the beds of rivers and streams, changes in surface flow through the take of water, or degraded water quality through the discharges of contaminants from adjacent land, on physical public access to and along lakes, rivers and streams. These activities can form physical barriers to public access along the margins of lakes, rivers and streams, or affect walking access up and down the river or stream itself, or the use of the water body by recreational craft such as canoes and kayaks.

This issue relates to Objective 2.2.3.8 and Policies 2.2.4.12 and 2.2.4.13.

- 2.2.2.8** Various sites, buildings, places or areas throughout the Auckland Region contribute to our cultural heritage, but many have been and continue to be modified, damaged or destroyed by use and development. Activities controlled by this Plan such as some discharges of contaminants, the **taking** or **damming** of **surface water**, or activities in the beds of rivers or streams may affect the values of these historic heritage sites.

**Explanation:**

The recognition and protection of the heritage values of sites, buildings, places or areas is a Section 7 matter, to which particular regard must be had. The principal RMA focus for heritage protection is through district plans as they regulate subdivision and the effects of land use on heritage sites, buildings, places and areas. However there may be circumstances where activities controlled by this Plan may impact on these areas as well.

This issue relates to Objective 2.2.3.8 and Policies 2.2.4.14 and 2.2.4.15.

### 2.2.3 Objectives

- 2.2.3.1** To enable appropriate use and development of air, land and freshwater resources, while recognising the characteristics, constraints and availability of these resources.  
This Objective relates to Policies 2.2.4.1 to 2.2.4.15.
- 2.2.3.2** To manage the use and development of natural and physical resources in a sustainable, efficient and integrated manner that is consistent with the strategic growth management provisions of the Auckland Regional Policy Statement and the Auckland Regional Growth Strategy.  
This Objective relates to Policies 2.2.4.1 to 2.2.4.15.
- 2.2.3.3** To enable the use and development of air, land and water in a way that provides for the efficient use of land and supports increased urban densities within the *Urban Areas*.  
This Objective relates to Policy 2.2.4.1
- 2.2.3.4** To provide for the ongoing operation, maintenance, development and upgrading of physical infrastructure, in a manner that meets regional growth requirements and supports the economic, social and cultural wellbeing of the Region's people and communities and provides for their health and safety, while avoiding, remedying or mitigating adverse effects on the environment.  
This Objective relates to Policies 2.2.4.2, 2.2.4.3 and 2.2.4.6 to 2.2.4.11.
- 2.2.3.5** To protect network utility infrastructure from inappropriate use and development.  
This Objective relates to Policy 2.2.4.4
- 2.2.3.6** To enable rural activities in rural areas, while avoiding, remedying or mitigating adverse effects.  
This Objective relates to Policies 2.2.4.2 to 2.2.4.11
- 2.2.3.7** To maintain and where practicable to enhance the quality and *amenity* values of Auckland's air, land and freshwater resources.  
This Objective relates to Policies 2.2.4.1 to 2.2.4.15
- 2.2.3.8** To maintain and enhance *public access* to, along and within *lakes* and rivers.  
This Objective relates to Policies 2.2.4.12 and 2.2.4.13.
- 2.2.3.9** To protect the values of significant cultural heritage sites, buildings, places or areas from inappropriate use and development and to retain a diverse and representative range of cultural heritage resources.

This Objective relates to Policies 2.2.4.14 and 2.2.4.15.

### 2.2.4 Policies

#### Use and Development

- 2.2.4.1** Use and development of air, land and water within *Urban Areas* (the *Metropolitan Urban Limits* and rural and coastal settlements) is appropriate where:
- it is consistent with the strategic directions of the Auckland Regional Policy Statement and the Auckland Regional Growth Strategy; and
  - adverse effects are avoided, remedied or mitigated.
- 2.2.4.2** Use and development of air, land and water within Greenfield is appropriate where:
- efficient use is made of available land;

- (b) *Permanent rivers and streams* with significant ecological, habitat and water quality values are maintained where practicable;
- (c) adverse effects on other *Permanent rivers and streams* and on water quality are remedied or mitigated.

**2.2.4.3** District and regional planning and consent processes should be integrated as far as practicable to ensure full consideration of the matters outlined in Policy 2.2.4.2.

**2.2.4.4** The use, development, upgrading or maintenance of network utility infrastructure shall be considered appropriate where:

- (a) it is consistent with the strategic directions of the Auckland Regional Policy Statement; or
- (b) it is consistent with the Auckland Regional Growth Strategy; or
- (c) it is to improve environmental outcomes that result from the operation of this infrastructure; or
- (d) it is undertaken in an efficient and cost effective manner that recognises the community's ability to pay;

and

- (e) significant adverse effects on natural and physical resources are avoided, remedied or mitigated.

**2.2.4.5** Resource consents for network utility infrastructure may be granted on a network wide basis where it can be demonstrated that:

- (a) it promotes integrated management of the infrastructure; and
- (b) the activity for which the consent is sought is generally consistent across the network; and
- (c) practical methodologies are available to avoid, remedy or mitigate adverse effects from the activity in all relevant circumstances; and
- (d) it is effective and efficient to grant a network wide consent.

See also Chapter 5: Discharges to Land and Water and Land Management – Stormwater and Wastewater Provisions and the network utility infrastructure provisions of Chapter 7: Beds of Lakes and Rivers and Diversion of Surface Water.

**2.2.4.6** Use and development of air, land and water shall avoid giving rise to *reverse sensitivity* conflicts, particularly in relation to effects on network utility infrastructure.

**2.2.4.7** Use and development of air, land and water outside of *Urban Areas* is appropriate where:

- (a) it is necessary for rural production activities; or
- (b) it is for activities which require a rural location and which are consistent with the maintenance of *rural character*; or
- (c) it is for activities that are consistent with Policy 2.2.4.4; and
- (d) significant natural areas are protected consistent with Policies 2.1.4.1 to 2.1.4.8; (See Chapter 2.1: Natural Values)
- (e) significant adverse effects on natural and physical resources are avoided, remedied or mitigated.

- 2.2.4.8** The positive social, economic and cultural effects and benefits arising from any proposal for use and development shall be considered when assessing the overall effects of a proposal on air, land or water resources.
- 2.2.4.9** Cumulative adverse effects of new use and development of air, land and water bodies shall be avoided as far as practicable, or remedied or mitigated.
- 2.2.4.10** A precautionary approach shall be taken to proposals for use and development where there are potentially significant adverse effects, that cannot be fully assessed due to a lack of scientific or technical knowledge and where there is a threat of serious or irreversible harm to the environment.
- In assessing any applications, the ARC or its agents may consent to an application and impose conditions that will ensure that the effects of the activity are avoided, remedied or mitigated. These conditions may include but are not limited to any or all of the following:
- (a) That consent conditions be reviewed in order to avoid, remedy or mitigate any adverse effects that may be generated by the activity; and
  - (b) That the consent holder be required to regularly monitor the effects of any activity at an appropriate frequency; and
  - (c) That bonds be imposed to ensure that any works or actions required by any consent are undertaken; and
  - (d) That the duration of any consent is limited to a period that is appropriate to the circumstances.
- 2.2.4.11** Proposals to use or develop air, land or freshwater resources shall have regard to:
- (a) The relevant provisions of the Auckland Regional Policy Statement;
  - (b) The relevant provisions of the Auckland Regional Plan: Coastal where the proposal may directly affect the coastal marine area;
  - (c) The relationship between the use of air, land and freshwater and the provisions of district plans and other relevant resource management strategies.
- 2.2.4.12** Use and development shall be undertaken at times of the day, week or year which will avoid, remedy or mitigate adverse effects on:
- (a) The growth and reproduction of terrestrial and aquatic vegetation and the feeding, breeding and migratory patterns of fauna, including bird roosting, nesting and feeding; and/or
  - (b) Lawful recreational use of air, land and freshwater bodies; and/or
  - (c) Other lawful established activities in the locality that are likely to be adversely affected by any proposal.

### Amenity Values

- 2.2.4.13** In assessing applications for use and development, particular regard shall be had to the maintenance and enhancement of *amenity* values, including any effects on recreational use of air, land and water bodies.

### Public Access

- 2.2.4.14** Use and development should ensure that *public access* to, along and within *lakes* and rivers is maintained or enhanced, except where it is necessary to restrict access in order to:
- (a) Protect areas of significant indigenous vegetation, significant habitats of indigenous fauna or natural features;
  - (b) Protect areas of restoration and rehabilitation such as riparian plantings;



- (c) Protect cultural and spiritual values of tangata whenua;
- (d) Protect areas or sites of special spiritual, cultural or historical significance;
- (e) Protect public health and safety;
- (f) Ensure a level of security consistent with the activities being undertaken or the purpose of a resource consent;
- (g) Provide for other exceptional circumstances sufficient to justify a restriction of *public access*, notwithstanding the national importance placed on maintaining *public access*.

Explanation: Much of the land adjacent to rivers, streams and *lakes*, and in some instances the beds themselves, are in private ownership. Notwithstanding this policy, *public access* to *lakes* and rivers across this private land and access along privately owned stream beds requires the approval of the landowner.

**2.2.4.15** Use and development that adversely affects *public access* to, along and within *lakes* and rivers shall be required to remedy or mitigate that effect. In assessing the effects on *public access* and the ability to remedy or mitigate adverse effects, regard shall be had to:

- (a) The nature, degree and scale of any restriction;
- (b) Whether the restriction is permanent or temporary and the length of the time *public access* is to be restricted;
- (c) The purposes for which access to and along the river or *lake* is required and options for reasonable alternative access;
- (d) Whether any remedy or mitigation of *public access* restriction is consistent with Policy 2.2.4.14 above.

### Cultural Heritage

**2.2.4.16** Use and development of, air, land and freshwater shall consider any effects on sites, buildings, places or areas which have cultural heritage values and which are identified in the ARC's Cultural Heritage Inventory, and should avoid, remedy or mitigate, adverse effects on these resources.

**2.2.4.17** In assessing applications for use and development which will adversely affect sites, buildings, places or areas identified in the ARC's Cultural Heritage Inventory, regard shall be had to:

- (a) The significance of the historical or cultural values of the site, building, place or area including the relationships that people have with the site, building, place or area and to the extent to which these will be maintained;
- (b) The integrity of the site, building, place or area, including in the case of a structure its physical appearance, and the extent to which it will be maintained;
- (c) The ability to record the values by means of:
  - i photographic and/or written record;
  - ii identification at or near the site by a plaque, sign or other method;
  - iii archaeological investigation and recording.
  - iv silent files



**Explanation:**

The ARC maintains and progressively updates a computer-based Cultural Heritage Inventory that lists a large number of cultural heritage sites, buildings, places or areas. Information from this inventory is available from the ARC and from *territorial authorities*. Before any significant use and development of air, land and freshwater, applicants are recommended to seek information from the ARC on known Cultural Heritage Sites.

Many sites, buildings, places or areas are *archaeological sites*. These sites are protected under the Historic Places Act 1993 and authority to modify, damage or destroy any recorded or unrecorded *archaeological site* is required from the Historic Places Trust before any work is undertaken.

## 2.2.5 Anticipated Environmental Results

### Use and Development

- 2.2.5.1** That people and communities in urban and rural areas are able to use air, land and water resources to provide for their social, economic and cultural wellbeing in a way that is consistent with the principles of sustainable management and supports the strategic growth outcomes for the Auckland Region.
- 2.2.5.2** The quality and *amenity* values of Auckland's air, land and freshwater resources are maintained and wherever practicable enhanced.
- 2.2.5.3** Network Utility Infrastructure develops and operates in an efficient and cost effective manner, while avoiding, remedying or mitigating adverse effects on the environment.

### Public Access

- 2.2.5.4** *Public access* to and along and within *lakes* and rivers is maintained and enhanced where appropriate.

### Cultural Heritage

- 2.2.5.5** That the values of significant cultural heritage sites, buildings, places or areas are protected from inappropriate use and development and a diverse and representative range of cultural heritage resources is retained.

## 2.3 Ngā Take Tūturu Mō Tāngata Whenua (Matters of Significance to Tāngata Whenua)

**Toitu Te Marae o Tane**

**Toitu Te Marae o Tangaroa**

**Toitu Te Iwi**

**If the domain of Tane is sustained**

**And the domain of Tangaroa sustained**

**So too will the people be sustained**

### 2.3.1 Introduction

The RMA includes a number of matters which relate to the relationship of tangata whenua to the management of air, land and water resources. This plan is required, among other things:

- (a) As a matter of national importance to recognise and provide for the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, *wāhi tapu and other taonga* (section 6(e) and (g) the protection of recognised customary activities);
- (b) To have particular regard to kaitiakitanga (section 7(a));
- (c) To take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi) (section 8);
- (d) To have regard to recognised relevant *iwi* planning documents, the Historic Places Register, and any regulations relating to ensuring sustainability, or the conservation, management or sustainability of fisheries resources (including regulations or bylaws relating to taiapure, mahinga mataitai, or other non-commercial Maori customary fishing) (sections 66(2)(c)(iia) & (iii) and 2A;
- (e) To give effect to the ARPS (section 67(3)(c)).

Most tangata whenua of the Auckland Region have prepared planning documents. A list of *iwi* planning documents is available from the *Iwi* Relations section of the Auckland Regional Council. The NZHPT Historic Places Register of the region lists a number of sites and areas of significance to tangata whenua.

Chapter 3 of the RPS identifies and addresses matters of significance to tangata whenua. There are five main policy directions of the ARPS relating to tangata whenua:

- (a) Recognising sites and areas of special value in accordance with tikanga Māori, and providing appropriate levels of protection;
- (b) Providing for Māori customary activities and actively protecting these from the effects of other activities;
- (c) The effective involvement of tangata whenua in the preparation, implementation, monitoring and review of statutory plans and resource consent processes;
- (d) Taking into account the effects of managing resources on Treaty claims and customary rights; and

Enabling the practical expression of Kaitiakitanga by tangata whenua.

This plan supplements the provisions of the ARPS relating to tangata whenua, and should be read alongside the ARPS. Policies and methods have been included in the ARPS which, amongst other things, establish the rights of tangata whenua to be involved in resource management decision-making, recognise the obligations of the ARC to consult with tangata whenua, and encourage consent applicants to consult with tangata whenua. New policies and methods dealing with consultation and other procedural matters are not included in this section of the plan. The ARPS provisions are considered adequate. Rather, the policies and methods in this section focus on environmental outcomes to be achieved.

### 2.3.1.1 Tangata Whenua World View

Māori values associated with the land, air and freshwater bodies of the Auckland Region are based on *whakapapa*, and stem from long social, economic and cultural associations and experiences with such *taonga* extending over several centuries.

The Māori world begins with the creation, where all life emanated from Io, the Supreme God. A series of cosmological birth stages followed, culminating with Papatuanuku, the earth mother and Ranginui, the sky father. Ranginui and Papatuanuku were separated by one of their children, Tane Mahuta, to let light, and hence knowledge, into the world. The children of Rangi and Papa subsequently set about creating their domains, breathing *mauri* or life force emanating from Io into all things, both living and inanimate.

As well as the values attributed to them by those who benefit from and, in turn, care for them, land, air and freshwater bodies and their associated resources have inherent values of their own. They are part of the domains of various deities and consequently have mana atua.

Through creation tangata whenua claim an intimate relationship established by *whakapapa* to all entities of the natural world. Inherent in this relationship are the ancestral obligations as *Kaitiaki* to care for all other parts of the natural world.

*Kaitiaki* can take a physical or spiritual (metaphysical) form. Physical *Kaitiaki* include tangata whenua, reptiles, fish and birds. An example of a spiritual *Kaitiaki* is a taniwha.

Kaitiakitanga is an integral part of the expression of Rangatiratanga or authority, whereby it is often impossible to protect resources without also exercising a degree of authority and control over them. This is axiomatic.

This culturally distinct view of the world established natural and proper behavioural patterns – tikanga – between tangata whenua and other living things. When tangata whenua needed to hunt birds or fish, dig up plants or cut down trees, for example, proper rituals were performed recognising the sacredness of other life forms. The various deities maintained absolute power over their domains and it was to such deities that requests to use specific resources were made. Underlying these relationships was the holistic world view briefly described earlier, and it was only after such tikanga was satisfied that tangata whenua could safely take the lives of other living entities for food and resources for survival. For those who ignored tikanga, punishment was by way of personal calamity.

Over time tangata whenua developed a highly specialised knowledge of their environment and the resources that they relied upon for survival. Tribal tikanga sought to maintain the balance between people and other life forms. Birds and fish, for example, were protected much of the year by *rahui* or temporary ban, ensuring that such resources were not disturbed during breeding. Although continuing to evolve to suit changing circumstances, tribal tikanga still determines what activities can occur,

and if so, how they can occur. While there is tikanga which is universal to Māori, there is also tikanga which is specific to different *iwi* and *Hapū*.

A Māori world view is further illustrated by the following statement by an *iwi* authority of the Auckland Region:

“

**Rivers are not just channels to facilitate the flow of water  
Rivers are the lifelines, the blood veins of Papatuanuku  
Rain is not just water that falls out of the sky  
Rain represents the tears of Ranginui, the sky father  
who continues to weep as a result of the separation  
from Papatuanuku.**

”

(Huakina Development Trust 1995)

While an abundance of food is valued for the physical sustenance it provides a tribe, tikanga also places enormous value on the concept of *manākitanga*. The ability to provide an abundance of food to guests is a matter of tribal mana and well-being. Māori values are also expressed in the importance placed on cultural materials found in the coastal environment, including those used for weaving and dyeing processes. The ability to live and work on ancestral lands (e.g. marae and *papakainga*) is also of fundamental importance, facilitating the meeting of *Kaitiaki* responsibilities and enabling relationships, culture and traditions with ancestral *taonga* to be nurtured.

Many activities have the potential to adversely affect the relationship of Māori and their culture and traditions with their ancestral water, sites, *wāhi tapu* and other *taonga*. Of particular concern are the effects of *sewage* and *stormwater* discharges into waterways, degradation of water quality, damage to or destruction of *wāhi tapu*, and any action that degrades or depletes life forms, particularly of species gathered and used by tangata whenua.

The values of tangata whenua towards land, air and freshwater bodies and associated resources, and the expression of such values in tribal tikanga and institutions, were confirmed and guaranteed by Te Tiriti o Waitangi, signed in 1840. Rights and obligations in terms of the principles of the Treaty of Waitangi need to be taken into account in the management of natural and physical resources.

### 2.3.1.2 The Treaty of Waitangi (Te Tiriti o Waitangi)

Tangata whenua consider that the Treaty forms the basis of relationships between tangata whenua and the Crown (including organisations such as the ARC that have been delegated Crown responsibilities under the RMA). The following is an example of tangata whenua statement regarding what the Treaty means to them and how it should be given effect.

“... the Treaty still provides the clearest articulation of *iwi* and Crown relationships in resource management and in particular the primacy of the relationship between *iwi* and natural resources and consequently the central role they could expect to play in making decisions about their environment today....

A Treaty based partnership with Council in the sustainable management of natural and physical resources is something that the Board is definitely committed towards achieving...Taking the step from talking about partnership to defining it is a complex task but an absolutely essential one.” (Hauraki Māori Trust Board 2000).

### 2.3.2 Issues

Following is a list of tangata whenua concerns which are illustrated in *iwi* planning documents and have been confirmed in consultation with tangata whenua during preparation of this Proposed Plan. The concerns are grouped according to the three matters of resource management significance to tangata whenua identified in the ARPS:

- (a) Relationships with ancestral *taonga* are being adversely affected by inappropriate processes and activities;
- (b) There is a need for direct and effective involvement of tangata whenua in the sustainable management of their ancestral *taonga*;
- (c) The Treaty of Waitangi needs to be recognised in the sustainable management of ancestral *taonga*.

#### 2.3.2.1 Processes and Activities Adversely Affecting Relationships With Ancestral Taonga

Tangata whenua are concerned that processes and activities are adversely affecting relationships of tangata whenua and their culture and traditions with their ancestral *taonga*. Issues of concern to tangata whenua, identified to the ARC to date, are summarised as follows:

##### Air Quality

- The health and safety effects of spray drift in close proximity to marae, *papakāinga*, waterbodies and other sensitive areas;
- The effects of dust emissions;
- Cumulative adverse effects of contaminants on important food resources, in particular puha and watercress;

##### Land Disturbing Activities

- The potential for koiwi or artefacts to be uncovered or for other *wāhi tapu* to be damaged or destroyed during land disturbing activities. tangata whenua want to monitor land disturbance activities and be consulted immediately in such an event;
- The cultural offensiveness of removing top soil from areas known to be tapu and depositing it elsewhere;
- The effects of land disturbing activities adjacent to waterbodies, including emergency works;

##### Water Quality

- The inappropriateness of discharging liquid wastes directly to waterbodies. As far as practicable, all liquid wastes (in particular *sewage* and *stormwater*) need to be in the first instance, discharged to land for treatment;
- The inappropriateness of combining different types of liquid waste (e.g. *sewage*, *stormwater*) and treating them together;
- Inadequate establishment and maintenance of riparian zones adjacent to waterbodies to control diffuse discharges of contaminants;
- The unauthorised dumping of wastes and the need for stronger monitoring, enforcement and penalties;

##### Water Resources

- Further disruption and *drainage* of wetlands;
- The adverse effects of dams, culverts, causeways and other barrier structures on natural waterbodies, particularly the obstruction of *fish passage*;

- Insufficient water being retained in natural waterbodies (including *aquifers*) to protect instream values, tangata whenua traditions (e.g. mahinga kai), and *natural character* and *amenity* values;
- The potential adverse effects of *drilling* on *wāhi tapu*;
- The effects of new developments diverting *stormwater* and preventing the replenishment of natural waterbodies (e.g. *aquifers*);
- The modification and/or diversion of natural flow paths (e.g. construction of stopbanks), interfering with the normal function of waterbodies and/or causing other natural hazards (e.g. instability);
- The effect of further *reclamations* on natural waterways, unless the works can be shown to improve the wellbeing of the waterway;
- The potential adverse effects of *dredging*, extracting and/or depositing material on instream values, tangata whenua traditions, and *natural character* and *amenity* values;
- The potential adverse effects of introducing exotic species into natural water systems.

#### 2.3.2.2 Direct and Effective Tangata Whenua Involvement in Managing their Ancestral Taonga

Tangata whenua have expressed their wish to have direct and effective involvement in managing their ancestral *taonga*. Methods suggested by tangata whenua include:

Ensuring Plan rules provide opportunities for tangata whenua to assess the potential effects of resource consent applications on relationships with ancestral *taonga*;

Supporting and protecting *kaitiaki* initiatives, including *rahui* and *whakatapu*, and monitoring, enforcement and enhancement programmes;

Local authorities assisting with the preparation of *Iwi* Resource Management Plans and incorporating such Plans into statutory processes;

Ensuring proactive and quality consultation occurs between tangata whenua, applicants and local authorities;

Ensuring quality information is available regarding tangata whenua interests; and

Increasing the representation of tangata whenua interests in decision making, including the use of Hearing Commissioners with recognised expertise in tikanga Māori, where appropriate.

Some of these methods relate directly to the resource consent processes proposed by this plan, while others concern the wider scope of tangata whenua relationships with the ARC. Their method of implementation may occur through means other than a statutory regional plan.

#### 2.3.2.3 Recognition of the Treaty of Waitangi

The Treaty of Waitangi confirmed customary rights and practices, including the ability of tangata whenua to continue to use and enjoy their ancestral *taonga*. Traditional practices include:

The use of natural materials for cultural, domestic and health purposes (e.g. carving, weaving, medicines), and the retention of indigenous vegetation to facilitate this;

Harvesting mahinga kai (e.g. vegetables, plants, fish, shellfish) for physical sustenance and *manākitanga*;

Establishing and maintaining marae, *papakāinga*, *kohanga reo*, *kura*, and other facilities for social, economic and cultural wellbeing.

Such traditions can be adversely affected by other activities (e.g. spray drift, liquid waste discharges to waterbodies, earthworks removing natural material).

tangata whenua are also concerned to ensure that the management of natural and physical resources does not exacerbate existing Treaty claims. Claims which tangata whenua believe are relevant include those relating to environmental degradation (e.g. Manukau Harbour, destruction of *wāhi tapu*), and the ownership of natural resources (e.g. minerals, geothermal resources, foreshore).

### 2.3.3 Objectives

- 2.3.3.1** To sustain the *mauri* of natural and physical resources in ways which enable provision for the social, economic and cultural wellbeing of Māori.
- 2.3.3.2** To afford appropriate priority to the relationship of tangata whenua and their culture and traditions with their ancestral *taonga* when this conflicts with other values.
- 2.3.3.3** To involve tangata whenua in resource management processes in ways which:
  - (a) Take into account the principles of the Treaty of Waitangi, including rangatiratanga;
  - (b) Have particular regard to the practical expression of kaitiakitanga.

**Explanation:**

*These objectives are the same as the objectives in section 3.3 of the ARPS.*

### 2.3.4 Policies

**Explanation:**

*The policies below should be read alongside the policies in section 3.4 of the ARPS. The policies and associated methods in the ARPS set out, amongst other things, how tangata whenua will be consulted and involved in planning and resource consent processes. New policies and methods dealing with consultation and other procedural matters are not included in this Plan. The ARPS provisions are considered adequate. Rather, the policies below focus on environmental outcomes to be achieved. The policies and methods of both the ARPS and this Plan are required in regard to the issues (in section 2.3.2) and objectives (in section 2.3.3) concerning tangata whenua matters.*

- 2.3.4.1** Sites and areas of special value to tangata whenua identified in –
  - (a) Schedule 8 of this Plan; or
  - (b) Appendix B of the Auckland Regional Policy Statement; or
  - (c) A district plan – shall be protected from inappropriate use and development that would cause adverse effects on the qualities, elements and features which contribute to the values of these sites and areas.
- 2.3.4.2** Sites and areas of special value to tangata whenua, which are not identified in accordance with Policy 2.3.4.1, shall be managed by avoiding where practicable, remedying or mitigating adverse effects on the qualities, elements and features which contribute to the values of these sites and areas, having regard to:
  - (a) The significance of the site or area, taking into account:
    - i Whether it is identified in any relevant *iwi* planning document, recognised by an *iwi* Authority;
    - ii Whether it is identified in the Auckland Conservation Management Strategy;
    - iii Whether it has been identified as being significant in any published archaeological or heritage report;
    - iv Whether it is identified as being significant by tangata whenua during consultation.
  - (b) Whether any disturbance or modification would have significant or irreversible effects on the physical or cultural integrity of the site or area;

- (c) Whether the proposal will protect or enhance the cultural heritage, scientific, or *amenity* values of the site or area.
- (d) Physical or visual connections with other heritage sites or areas.

**2.3.4.3** The use and enjoyment of marae, *papakāinga* and associated customary uses of ancestral *taonga* shall be recognised and provided for.

In assessing the effects of use and development on marae, *papakāinga* and associated customary uses of ancestral *taonga*, regard shall be had to:

- (a) Whether the proposal adversely affects the ability of local *iwi* or *hapū* to provide for their social, economic and cultural well-being;
- (b) Whether provision has been made to protect customary and traditional uses and enjoyment of, or access to, ancestral *taonga*.

**2.3.4.4** Regional rules and decisions on resource consents which may affect matters of significance to tangata whenua, shall take into account the following:

- (a) Any relevant *iwi* planning document recognised by an *Iwi* Authority;
- (b) Measures required to address the issues specified in section 2.3.2.1;
- (c) The importance of Māori customary, cultural, or traditional knowledge.

## 2.3.5 Other Methods

**2.3.5.1** Relevant aspects of those methods stated in Chapter 3 of the Auckland Regional Policy Statement, namely Methods 3.4.2, 3.4.5, 3.4.8, 3.4.11 and 3.4.14.

For the purposes of implementing Policy 2.3.4.1, tangata whenua will be consulted over the appropriate process and timing for establishing Schedule 8 to this Plan listing sites and areas of special value to tangata whenua. Prior to the introduction of Schedule 8 into the Plan, through a Plan Variation or Plan Change process, consultation will be undertaken with potentially affected landowners.

## 2.3.6 Anticipated Environmental Results

**2.3.6.1** The special Treaty relationship between the Crown and tangata whenua is recognised and facilitated.

**2.3.6.2** The relationship of tangata whenua and their culture and traditions with their ancestral *taonga*, including use of and access to these *taonga*, are recognised and provided for.

**2.3.6.3** Adverse effects of use and development on the relationship of tangata whenua and their culture and traditions with their ancestral *taonga*, are avoided, remedied or mitigated.



## 3 Management Areas

### 3.1 Introduction

Air, land and water resources within the region vary enormously. Accordingly, their sustainable management means that the Plan has developed a range of different management approaches, depending on the location and characteristics of the resources being managed. For example, water quality in rivers and streams within the highly urbanised areas of metropolitan Auckland is significantly different than in pastoral farming areas and different again where there is significant riparian vegetation and little or no development.

This section describes these management areas in terms of their physical characteristics, and describes the adopted management approach. The more specific provisions, issues, objectives, policies and methods, including the rules which determine how these areas are to be managed, are contained in Parts 2 and 3 of the plan.

A variety of management areas have been developed along with management approaches, and are set out below:

- Wetland Management Areas
- Natural Lake Management Areas
- Natural Stream Management Areas
- Water Supply Management Areas
- Urban River and Stream Management Areas
- Urban Lake Management Areas
- High Use Stream Management Areas
- High Use Aquifer Management Areas
- Quality Sensitive Aquifer Management Areas
- Industrial Air Quality Management Areas
- Urban Air Quality Management Areas
- Rural Air Quality Management Areas
- Coastal Marine Air Quality Management Area

Some of these management areas are shown on Map Series 1, 1A or Map Series 2 of the Plan Maps.

### 3.2 Wetland Management Areas

#### 3.2.1 Description

Significant wetlands have been identified and included in Schedule 1 and indicated on the maps in Map Series 1. These scheduled wetlands constitute the Wetland Management Areas. Information on the boundaries of particular wetlands is contained in the ARC's Natural Heritage Information database.

Wetlands are a very diverse habitat type with numerous values and functions. Wetlands include permanently or intermittently wet areas, shallow water, and land/ water margins that support a natural ecosystem of *predominantly indigenous plants* and animals that are adapted to wet conditions. Generally these include areas of marsh, fen, peatland or brackish water. The largest and probably best-known wetland is the Te Henga wetland in Waitakere City and Rodney District.

In the Auckland Region, freshwater wetlands and swamp forests (with kahikatea, cabbage tree, pukatea and swamp maire) would have once covered large stretches of the low-lying land. The vast majority have now been drained or modified for farmland or urban development. Freshwater wetlands now only cover less than 0.4 per cent of the region's land cover. This means that wetlands are now one of the region's rarest and most at-risk ecosystems.

Wetlands are valued for the plant and animal communities they support as well as their important functions in regulating water flows. Wetlands have complex associations of plants depending on water flow conditions and the degree of salinity. They provide key habitats for native fish and birds and contain high levels of biodiversity. As a result of habitat loss and modification, many wetland species are now classified as being rare or threatened and include birds such as the bittern, fern bird, banded rail, brown teal and freshwater fish such as the giant kokopu. Protecting and restoring wetland areas affords **protection** to rare and unique native plants and animals.

**Lakes** and wetlands form part of the region's natural landscape and offer many options for **recreation** such as passive enjoyment, fishing, hunting, canoeing and bird watching. These water bodies also hold special character for Māori who view wetlands and **lakes** as **taonga** or valued treasures. Additional values include acting as recharge areas for **groundwater** and purifying water by removing contaminants, trapping sediment, and providing storage areas for flood waters.

### 3.2.2 Management Approach

The preservation of wetlands is a matter of national importance under the RMA. This means that all persons exercising functions and powers under the Act must "recognise and provide for" wetland preservation. **Protection** is also influenced by New Zealand's international responsibility under the Ramsar Convention, to provide a level of **protection** to all wetlands, irrespective of whether they are listed as being of international importance. Given the rarity and value associated with wetlands it is necessary to apply a strict management regime to ensure the remaining wetlands are not destroyed and that the quality of them is not degraded further. The majority of activities that have the potential to directly or indirectly affect the values of the wetlands will require some form of resource consent.

## 3.3 Natural Lake Management Areas

### 3.3.1 Description

This Management Area applies to the rural **lakes** of the Auckland Region. Many of these are "dune **lakes**" formed by the impoundment of water behind sand dunes formed adjacent to coastal beaches. They include Tomarata, Slipper and Spectacle in the north-east of Rodney District, Ototoa, Kuwakatai and Kereta on the South Kaipara peninsula and Wainamu near Bethells Beach. There are also **lakes** Pehiakura, Pokorua and Whatihua on the Awhitu Peninsula.

The larger **lakes**, which form permanent bodies of water are identified on the Plan Maps as Natural Lake Management Areas and described in Schedule 4. These Management Areas consist of the **lake** itself and a 50 metre buffer strip surrounding the **lake** edge. This buffer distance is measured landward from the Mean Annual Water Level. Other smaller **lakes** are identified as water bodies on the Plan Maps, but are not included in the Natural Lake Management Areas.

The **lakes**, in terms of water quality range from high quality (Lake Ototoa) to Lake Kereta and Lake Spectacle that have been severely degraded for many years. However all the **lakes** show signs of a gradual deterioration in water quality with Tomarata and Wainamu showing a significant drop in quality over the last 10 years. These **lakes** are sensitive aquatic environments because they have little or no outflow, and thus are

poorly flushed, accumulate contaminants, and are prone to nutrient enrichment (i.e. eutrophication). They reflect the cumulative effects of many years of human activities in their catchments. Their ecology is also complicated by the introduction (both lawfully and unlawfully) of *exotic plants* and fish over the last 150 years.

Despite human modification and a reduced water quality, many of the region's *lakes* are also important wildlife areas, being the habitat for several regionally threatened bird species such as the fern bird, bittern and Caspian tern. For these reasons the *lakes* have been identified by the Department of Conservation as being Sites of Special Wildlife Interest (SSWIs). These values are derived in many instances from the presence of important swamp and marginal vegetation which provides areas for breeding and feeding.

The region's *lakes* are important habitats for freshwater fish species. Although originally found in all of the *lakes*, native freshwater fish are now the dominant species only in Lake Ototoa. In other *lakes* the introduction of more aggressive exotic species such as perch, rudd, and trout have resulted in the reduction of native freshwater fish species and numbers.

Protecting the habitat of trout and salmon is a matter of national importance. Lake Ototoa and Lake Whatihua hold important trout fisheries that have been identified by New Zealand Fish and Game as being of regional significance.

### 3.3.2 Management Approach

The management approach is to maintain and where possible enhance water quality in these *lakes* to protect the in-lake ecological and *amenity* values. However in most cases it is not realistic to fully restore these natural *lakes* to pristine condition. This is because the ecological and water quality changes that have already occurred, in general, cannot be reversed. Therefore the highest priority is to keep the *lakes* from deteriorating further, especially those with high water quality. Opportunities to maintain and possibly improve *lake* quality include protection of the *lake* fringe, fencing out stock, restricting access, and restricting the release of *exotic plant* pests and further species of exotic fish. While the ARC has responsibility for weed pests under the Biosecurity Act 1993, the control of exotic fish is the responsibility of the Department of Conservation under the Freshwater Fisheries Regulations 1983. The establishment of riparian buffer strips along the streams that drain into *lakes* will also enhance their quality by acting as contaminant filters for *non-point source discharges* and by protecting the margins from physical disturbance.

Due to their physical characteristics, natural *lakes* are sensitive to a wide range of activities, both within the *lakes* themselves and on the land adjacent to them. For this reason the majority of activities that have the potential to directly or indirectly affect natural *lakes* will require some form of resource consent.

## 3.4 Natural Stream Management Areas

### 3.4.1 Description

Many rivers and streams in rural parts of the Auckland Region have been significantly modified. However some stretches retain a significant amount of '*natural character*' mainly through the retention of significant indigenous riparian vegetation. Rivers and streams that meet the following criteria have been included in the Natural Stream Management Areas.

### 3.4.2 Criteria for Natural Stream Management Areas

A Natural Stream Management Area is defined as follows:

*Any Permanent river or stream, outside of the Urban Areas as defined in the Auckland Regional Policy Statement, with predominantly indigenous vegetation cover along a length (reach) of not less than 600 metres; and*

- (a) an average total width of vegetation cover of 80 metres (i.e. an average width of 40 metres on either side); and
- (b) a minimum total width of vegetation cover of 10 metres from the stream edge, for a length not exceeding 10 percent of the total reach.

Where there are cleared areas for tracks and stream crossings, these are included in the measurements of vegetation length and width.

NB: A Natural Stream Management Area may be determined from measurements taken from an aerial photograph or an accurately scaled plan.

See Chapter 12: Definitions for definition of “*Predominantly Indigenous Vegetation*.”

Note: Natural Stream Management Areas are also illustrated in an indicative fashion in Map Series 1 of this Plan. For the avoidance of doubt, the criteria stated above is the primary reference for defining Natural Stream Management Areas. Compliance with any rules relating to Natural Stream Management Areas shall be determined with reference to the definition above and not with reference to the Plan Maps.

In some areas, indigenous vegetation extends beyond 40 metres from the stream channel. This vegetation does not form part of the Natural Stream Management Area. The criteria are based on several pieces of research which indicate that 600 metres in length and 40 metres either side of the stream channel is the minimum area of indigenous vegetation required to re-establish high quality freshwater ecosystems.

Despite their generally small size, stream reaches identified as Natural Stream Management Areas provide habitat for a wide range of biota including native plants, insect larvae, freshwater crayfish, shrimps, freshwater mussels, snails, limpets and native fish. Sixteen species of fish have been recorded of which 80 per cent are *diadromous*, i.e. require access to or from the sea. The values are particularly high where the adjacent land remains in indigenous vegetation. The presence of indigenous vegetation provides a food source for aquatic biota, as well as providing shade which helps maintain water temperatures at a level suitable for aquatic species. It also acts as a filter to contaminants, particularly sediment and reduces levels entering the river or stream, thereby maintaining water quality. The combination of suitable temperature, pH and water quality and the presence of native plants and aquatic fauna are collectively referred to as “instream values”.

The removal of indigenous vegetation and its replacement with exotic forestry, pasture or urban land uses results in a significant reduction in instream habitat for fish and other aquatic organisms. The decline in habitat quality increases as land use changes from indigenous cover to pastoral land and finally to urban land uses. The purpose of the management area is to protect the instream values of these rivers and streams and the values of the riparian vegetation adjacent to these rivers and streams, by controlling water takes and contaminant discharges.

Much of the riparian vegetation associated with the Natural Stream Management Areas is identified in district plans which often have some controls on the removal of indigenous vegetation. These and the provisions of this plan relating to Natural Stream Management Areas need to be complied with. Other mechanisms such as covenanting of areas of indigenous vegetation and the establishment of riparian margins through revegetation programmes also complement district plan provisions and the rules in this Plan relating to Natural Stream Management Areas.

### 3.4.3 Management Approach

The purpose of the Natural Stream Management Area is to protect the instream values of these stretches of river and streams. While there is a range of provisions applying to this management area, many of which are similar to the other river and stream management areas, of particular importance is the retention of the riparian vegetation. The 600 metres by 80 metres riparian buffer is critical to the maintenance

of water quality and instream habitat diversity. The provision for and maintenance of *fish passage* up and down the rivers and streams and to and from the coastal marine area is also an important management approach. To ensure the maintenance of the high water and instream values and the provision of *fish passage*, the majority of activities, which have the potential to directly or indirectly affect these natural streams, will require some form of resource consent. However, in some areas the provision of *fish passage* may not be necessary, due to the presence of natural impediments that cannot be overcome.

#### 3.4.4 Other Streams

Streams outside the *Urban Areas* which are not classified as Natural Stream Management Areas, (i.e. do not meet the criteria in Section 3.4.2) are not included in a particular management area. Rather they are covered by the general provisions of the Plan, which apply to activities affecting rivers and streams.

### 3.5 Water Supply Management Areas

#### 3.5.1 Description

This management area applies to the catchment areas as defined in Map Series 1 of the Plan Maps. They comprise the area that is mainly in public (ARC) ownership surrounding *municipal water supply* infrastructure, including five dams in the Waitakere Ranges and four dams in the Hunua Ranges, land owned by Watercare Services Ltd at Hays Creek Papakura, which includes the Hays Creek dam, and land owned by Watercare Services Ltd in the Riverhead Forest. The Water Supply Management Areas also include all related supporting and connected water supply infrastructure (e.g. pipe network and pumping stations) located within these catchments. These Water Supply Management areas contain water supply networks that are *regionally significant infrastructure* for the purposes of Section 2.3.4.1 of the Auckland Regional Policy Statement (ARPS) and Section 2.2.2.3 of this Plan.

Watercare Services Ltd has identified the Lower Mangatawhiri as a Future Water Supply Area and is shown in Map Series 1 of the Plan Maps.

#### 3.5.2 Management Approach

The establishment of Water Supply Management Areas (WSMA) assists in the implementation of Policy 2.6.7 of the ARPS and Objective 2.2.3.4 and Policy 2.2.4.4 of this Plan, which provide for the ongoing operation, maintenance, upgrading and development of *regionally significant infrastructure*.

Activities that may affect the quality and quantity of water and its security of supply include the discharge of contaminants into or onto land or into rivers and streams, including contaminated stormwater from urban development and discharges from rural activities within the catchment. The taking or *damming* of *surface water* can affect the quantity of water available for *municipal water supply* and structures in *Permanent rivers or streams*, or disturbance of river and stream beds can affect both the quality and quantity of water supply. These activities can also affect the physical integrity of the water supply infrastructure itself.

The efficient and effective provision of *municipal water supply* to Auckland requires the maintenance of the existing *dams*, pipe system and pumping stations as well as their future replacement and upgrading and expansion. The management area also recognises and gives priority to the allocation of water for *municipal water supply* purposes over other uses, subject to first meeting the minimum flow requirements needed to protect in-stream ecological values and providing for the taking of water permitted under Section 14(3)(b) of the RMA.

The Water Supply Management Areas contain a mix of vegetation cover. There are large areas of significant indigenous vegetation in the catchments that meet the criteria for Natural Stream Management Areas as well as areas of pasture and other vegetation that do not qualify for inclusion in this management area. (See section 3.4 of Chapter 3 for further discussion on Natural Stream Management Areas). Hence the management approach is to provide for the operation of regionally significant **municipal water supply** infrastructure, while maintaining as far as practicable the natural character and ecological values of the Natural Stream Management Areas.

Where there are Wetland Management Areas within the Water Supply Management Areas, the management approach is to protect these scarce ecosystems. The degree to which **municipal water supply** activities affect wetlands is dependent on the type and scale of the activity and the type and size of the wetland. At present there is one wetland in the Water Supply Management Area, being the Hunua Road Dam Reservoir in the Hays Creek Water Supply Management area. This wetland occupies parts of the margins of the reservoir itself. Activities for **municipal water supply** are generally discretionary activities in this particular Wetland Management Area.

The water supply **dams** and their associated structures in the Waitakere and Hunua Ranges provide an important record of the region's history and development. The management of these areas for water supply purposes has paralleled the retention and regeneration of indigenous vegetation, so that both areas now contain nationally and regionally significant terrestrial and aquatic ecosystems, and are recognised as being outstanding natural landscapes within the context of the Auckland Region. They are also areas of cultural and historic significance and provide for the recreational benefit, use and enjoyment of the public within close proximity to the Auckland metropolitan area.

The Waitakere Water Supply Management Area forms part of the wider Waitakere Ranges Heritage Area (identified in the Waitakere Ranges Heritage Area Act 2008), which is recognised as being of national significance and having a number of natural, physical, social and cultural heritage features. One of the heritage features is "the operation, maintenance and development of the public water catchment and supply system that serves the needs of the people of Auckland."

Most of the land within the Waitakere and Hunua Water Supply Management Areas is owned by the Auckland Regional Council and is managed as part of its regional park networks.

### 3.5.3 Objectives

- 3.5.3.1** To enable the operation, maintenance, upgrading, and development of **municipal water supply** infrastructure so as to provide for the reasonably foreseeable needs of current and future generations, including within Water Supply Management Areas and identified Proposed Future Water Supply Areas.
- 3.5.3.1** To recognise and protect the natural character, ecological, heritage, recreational and amenity values of Natural Stream and Wetland Management Areas in Water Supply Management Areas while providing for the operation, maintenance, upgrading and development of **municipal water supply** infrastructure.

### 3.5.4 Policies

- 3.5.4.1** The operation, maintenance, upgrading and development of structures and activities for the storage, distribution and treatment of **municipal water supply** is appropriate in Water Supply Management areas, and may be appropriate within identified Proposed Future Water Supply Areas.
- 3.5.4.2** The operation, maintenance, upgrading and development of structures for **municipal water supply** and ancillary structures, equipment or works in Water Supply Management Areas and Proposed Future Water Supply Areas and any discharges of water from **dams**, pipelines or other water treatment infrastructure shall avoid, remedy

or mitigate adverse effects (including cumulative effects) on the natural character, ecological, heritage, recreational and amenity values of Natural Stream and Wetland Management Areas in Water Supply Management Areas.

- 3.5.4.3** The effects of activities for *municipal water supply* in *Permanent rivers and streams* in Water Supply Management Areas and Proposed Future Water Supply Areas shall also be assessed against the objectives and policies of Chapter 6: Water Allocation and Chapter 7: Beds of lakes and Rivers and Diversion of Surface Water, having regard to Objective 3.5.3.1 and Policy 3.5.4.1.
- 3.5.4.4** The operators of *municipal water supply* infrastructure shall be advised as soon as possible after lodgement of any applications for resource consents that have the potential to have adverse effects on the quality and quantity of water within Water Supply Management Areas or on the safe and efficient operation of the water supply infrastructure.
- 3.5.4.5** Additional Water Supply Management Areas or Proposed Future Water Supply Areas may be introduced into this Plan by way of a Plan Change/Variation.

## 3.6 Urban River and Stream Management Areas

### 3.6.1 Introduction

This management area applies to all rivers and streams within *Urban Areas* as defined by the Auckland Regional Policy Statement. *Urban rivers and streams* are highly variable depending on their size, distance from the sea, extent and type of development in the catchment, and the degree of physical alteration of the channel and adjacent floodplain. These factors largely determine their quality and use potential. In this Plan they are categorised by “reaches” that exhibit similar characteristics which are used to identify the overall stream quality along that reach. The proportion of impervious area is the primary catchment variable that is used in this Plan as a ‘default’ to define the type of a reach, while in highly disturbed *urban rivers and streams* the presence of an artificial stream bed is the key reach characteristic defining the stream type.

Additional characteristics that can influence the management of streams are riparian vegetation and barriers to fish passage, amenity, natural character, public access and stormwater conveyance values. Wherever possible these characteristics should be taken into account when managing *urban rivers and streams*.

For the purpose of management in this Plan, *urban rivers and streams* have been divided into six reach types.

- (1) Stream Mouths – and Tidal reaches of *Urban Rivers and Streams*
- (2) High Value Low Disturbance *Urban Rivers and Streams*
- (3) Moderately Disturbed *Urban Rivers and Streams*
- (4) Highly Disturbed *Urban Rivers and Streams*
- (5) Artificial or Concrete Channelised *Urban Rivers and Streams*
- (6) Piped *Urban Rivers and Streams*

These types are discussed in more detail in Section 3.6.2.3, but additional categorisation that includes a wider range of values is also possible.

The majority of these rivers and streams have a key role in protecting public safety by conveying stormwater away from *Urban Areas* and reducing flooding. However, many have been substantially altered by development, including land use development (buildings and roads), vegetation clearance, the creation of impervious areas and roads generating greater runoff, discharges (*stormwater*, *wastewater*, sediment and contaminants); structural alteration of natural channels (channelisation, piping,



*culverting* and concrete lining); and modification of the floodplain for development and to facilitate *drainage* and conveyance of flood waters.

Some *urban rivers and streams* currently retain a relatively high level of ecological and/or *amenity* function and use because stream reaches or entire sub-catchments are undeveloped or in parkland or reserves.

Management of *urban rivers and streams* is required at both a catchment scale and at a reach scale.

Catchment scale management actions include impervious area controls, controlling the quality and quantity of direct and diffuse discharges of *stormwater*, *wastewater* and sediment, enhancing and restoring riparian vegetation, and protecting and enhancing wetlands, floodplains and natural stream channels. Enhancements at the reach scale include riparian planting, management of stream channels, and providing for the passage of fish and other aquatic life.

There are a number of approaches that contribute to stream management including:

- Integrated catchment management planning, structure planning and stormwater and wastewater network resource consents;
- Controls through this Plan, including permitted activities and resource consents, for works and activities that are undertaken in a river or stream;
- Land use controls under district plans for stream channels and riparian margins;
- Non-regulatory activities including education, funding assistance and incentives and community enhancement projects.

The management of network stormwater and wastewater diversions and discharges in Chapter 5 recognises the importance of management at a catchment or sub-catchment basis, or at a network basis. It also recognises that stormwater may discharge from significant areas of impervious surfaces associated with regionally significant infrastructure. Management actions will need to be developed in the context of the overall Best Practicable Option at the catchment or network level. However, given that resources for improvement are often limited, it is important that the management of *urban rivers and streams* is also considered in the context of an overall district, catchment or network wide prioritization process, to deliver the greatest benefit to ecosystems and the community.

Integrated Catchment Management Plans (CMPs), structure plans and territorial authority stream classifications will be used as the principal tools to guide stream management when available. However if these management tools have not been developed, the *urban rivers and stream* types and policies set out in this chapter provide management guidance. When the extent of impervious area in a catchment changes because of further urban development, the type of *urban rivers and streams* may also change. This may necessitate a change to the management approach.

The *urban rivers and streams* framework is also referenced in Chapters 2.1, 6 and 7 of this Plan and will need to be considered in resource consent applications for activities controlled by these chapters.

## 3.6.2 Management Approach

### 3.6.2.1 Overall Approach

*Issue 2.2.2.1 of this Plan identifies the need to use resources to accommodate regional growth. It is noted within the issue text that "lakes, rivers and streams outside of Urban Areas are given a higher level of protection through Plan policies and rules than those within Urban Areas" and that "future development within Urban Areas... cannot occur without having environmental impacts." This issue is a key driver for the development of the following management approach seeking to balance competing demands on urban rivers and streams.*



Note that the status of rivers and streams outside of *Urban Areas* identified in Issue 2.2.2.1 also relates to the generally greater opportunities for enhancement and protection of those streams compared to rivers and streams within *Urban Areas*.

The broad management approach for *urban rivers and streams* in the Plan is to:

- (a) categorise *urban rivers and streams* on a reach scale using:
  - i. the methods in this Plan as a default; or
  - ii. more detailed assessments through *Integrated Catchment Management Plans* or other methods; and
- (b) manage *urban rivers and streams* at both a catchment and reach scale based on the categorisation, giving greater priority to more detailed categorisations or assessments.

### 3.6.2.2 River and Stream Reaches

For the purposes of this Plan, *urban rivers and streams* in Auckland are categorised by 'reach'. A reach is defined by the distance between significant changes in river and stream or catchment characteristics, e.g. where land use changes from residential to commercial, or the stream changes from an open channel to a piped section. For the purpose of this Plan, the minimum length of a reach is 100 metres. Longer reaches which are homogeneous with regard to channel type and quality may be used.

River and stream reaches that contain natural channels usually provide a larger variety and higher levels of ecosystem function than artificial channels. These natural channel rivers and streams have been divided into three categories using the catchment variable 'percent impervious area'. The proportion of impervious area in a catchment has been shown to be an important factor affecting ecosystem function in *urban rivers and streams*. "Artificial channels" are divided into two categories using the 'channel base material' and 'extent of piping' as the defining variables.

A reach-scale approach to assessment has been adopted to ensure that individual attributes are identified. However management methods may be applied on a catchment or reach basis as appropriate.

### 3.6.2.3 Urban River and Stream Types

Six river and stream management types have been defined and are described below. Figure 3.1 illustrates how they are assigned using reach and catchment scale attributes.

#### Type 1 – Stream Mouths and Tidal Reaches of *Urban Rivers and Streams*

This category includes the lower reaches of *urban rivers and streams* affected directly by tidal flow. The interface between rivers and streams and the marine *receiving environment* at the river and stream mouth are particularly important habitats for inanga spawning. Key spawning zones are grasses or native vegetation on banks around the lower and upper tidal zones.

This category is adjacent to the Coastal Marine Area. Objectives, policies and rules associated with Coastal Protection Areas 1 and 2 in the Auckland Regional Plan: Coastal (ARP: C) have the potential to affect the management of streams in this category. The provisions for network discharges in Chapter 20 of the ARP: C are also linked to the stormwater and wastewater discharge provisions of Chapter 5 of this Plan, including the preparation of *Integrated Catchment Management Plans* and network resource consents.

#### Type 2 – High Value Low Disturbance *Urban Rivers and Streams*

These reaches are relatively unaffected by urban development, characterised by a low

amount of impervious area (< 10 percent) in the catchment. Water quality and habitat value in these reaches would be expected to be high. However habitat may be affected by past land management and use. This quality of habitat is rare in **Urban Areas** and is valued for ecological function and **amenity** value.

#### Type 3 – Moderately Disturbed *Urban Rivers and Streams*

These reaches occur in catchments with moderate amounts of impervious area (10 – 25 percent), and have been affected by their surroundings, but are typically not highly modified. Natural values are somewhat degraded, however these reaches offer some of the best opportunities for restorative action. Moderately disturbed natural channels are likely to be important for **fish passage** and provide habitat for a diverse range of aquatic biota.

#### Type 4 – Highly Disturbed *Urban Rivers and Streams*

Type 4 **urban rivers and streams** have a higher proportion of impervious area (>25 percent) in the catchment, and have often suffered significant erosion. In many cases, the banks of the stream have been modified, but the channel bed is not deemed 'artificial'. Bank side modification may include concrete walls, gabions, and battering. These reaches have lower natural value, but may allow **fish passage** to higher quality upper reaches and have populations of more tolerant species present. Within this type a range of values may be present; higher stream quality will likely be represented by a greater complexity of habitat, morphology and vegetation.

#### Type 5 – Artificial or Concrete Channelised *Urban Rivers and Streams*

Where greater than 50 percent of the channel bed within a reach is constructed of artificial material it is most likely that the catchment is highly urbanised (and tends to have a high proportion of impervious area), and channel modification is the result of works to manage flooding and erosion. Often the natural floodplain has also been confined by development or infilling, and the opportunities for full riparian restoration works are limited, although planting to provide for shade is often feasible.

Type 5 streams tend to have higher and more uniform flow velocities than natural channels. High velocities restrict **fish passage** and the uniform channel shape also removes the features that fish and aquatic biota need for shelter such as pools, undercut banks, instream debris and bends. A smooth concrete base also limits the variety of channel substrata (e.g. rocks and woody debris) available to be colonised by plants and animals within the channel, which further limits habitat diversity and food sources. Generally Type 5 **Urban Rivers and Streams** have limited riparian cover and this results in higher water temperatures which adversely affect water quality for aquatic biota.

#### Type 6 – Piped *Urban Rivers and Streams*

Where more than 50 percent of a reach is piped, the reach can be categorised as a 'piped section'. Piped sections are usually located in highly urbanised areas and are/ were often installed for flood protection and to maximise the density of development. Piped reaches represent an almost complete loss of ecosystem function and provide little or no removal of contaminants. The lack of light precludes the establishment of plants and other aquatic biota. A smooth concrete base does not provide the protection needed by fish and other aquatic biota for breeding and resting. Piped reaches have little or no natural value, and represent the maximum degree of stream alteration.

Piped channels affect **fish passage** and the movement of other aquatic biota. Flows in a pipe tend to exhibit higher velocities than natural channels. This can be a barrier to **fish passage** if velocities exceed fish swimming ability. Channel length can also be a problem where no resting areas (low flow zones) exist. **Fish passage** can be restricted through a combination of stream velocity, drop structures, and **culvert** length.

### 3.6.3 Objectives

**3.6.3.1** To manage *urban rivers and streams* in a way that:

- (a) Maintains high values and enhances degraded values of *urban rivers and streams* in terms of in-stream, amenity, natural character and public access values;
- (b) Recognises the essential function of *urban rivers and streams* in conveying stormwater; and
- (c) Provides for the appropriate use and development of *urban rivers and streams* to accommodate existing development and future growth within *Urban Areas*.

### 3.6.4 Policies

**3.6.4.1** In preparing an *Integrated Catchment Management Plan*, a territorial authority should categorise *urban rivers and streams* within the catchment based on the quality of individual reaches and then identify and implement a management approach for those *urban rivers and streams*.

**3.6.4.2** In *Urban Areas* which have undergone urban development, *urban rivers and streams* categorisation shall be either:

- (a) The default as defined in Figure 3.1 of this Plan, or
- (b) As contained within a district plan, structure plan, or an *Integrated Catchment Management Plan*, or
- (c) Undertaken as part of a resource consent process.

**3.6.4.3** In *Urban Areas* which have yet to undergo urban development, the categorisation in Figure 3.1 of this Plan does not apply. An assessment of the quality of *urban rivers and streams* in these areas should include, but is not limited to the following matters:

- (a) The extent and quality of riparian vegetation (with greater value placed on larger areas of riparian vegetation and native vegetation);
- (b) Stream morphology (with greater value placed upon greater complexity);
- (c) The number and type of macro-invertebrate species present;
- (d) The number and type of native fish present (with greater value placed upon higher numbers of fish and greater variety of fish species);
- (e) The value of the stream in relation to the presence of flood flows;
- (f) The value of the stream in relation to natural character and amenity values;
- (g) Whether the river or stream provides a connection to an area of high in-stream value upstream.

**3.6.4.4** The management of *urban rivers and streams* shall recognise the categorisation of the rivers and streams and:

- (a) Provide for their use and development in a manner consistent with the growth projections developed under the Auckland Regional Growth Strategy and related Sector Agreements, and in particular provide for the conveyance of stormwater;

And where practicable

- (b) Avoid adverse effects on *urban rivers and streams* with high in-stream values;
- (c) Maintain and enhance public access;
- (d) Maintain high quality and enhance degraded natural character values;
- (e) Maintain and enhance amenity values;

- (f) Maintain and enhance fish passage having regard to the matters in Policy 2.1.4.7;
- (g) Maintain and enhance riparian vegetation;
- (h) Avoid, remedy or mitigate the adverse effects of erosion on the banks and bed;
- (i) Minimise modification of the bed and banks, particularly in those streams that have low levels of modification or high in-stream values.

**3.6.4.5** In addition to the matters in Policy 3.6.4.4 the management of *urban rivers and streams* in *Urban Areas* undergoing development shall:

- (a) Be consistent with any structure plan adopted into a district plan for the area;
- (b) Take opportunities to enhance in-stream, natural character, public access and amenity values.

**3.6.4.6** In managing *urban rivers and streams*, the highest priority is to maintain those *urban rivers and streams* with a large proportion of high quality reaches.

**3.6.4.7** Those effects on *urban rivers and streams* that are related to catchment wide factors (such as non-point source contaminants and hydrology) shall be managed as part of the Best Practicable Option determined in the relevant *Integrated Catchment Management Plan* or network resource consents.

### 3.6.5 Management Methods

A range of management methods will be required for *urban rivers and streams* including:

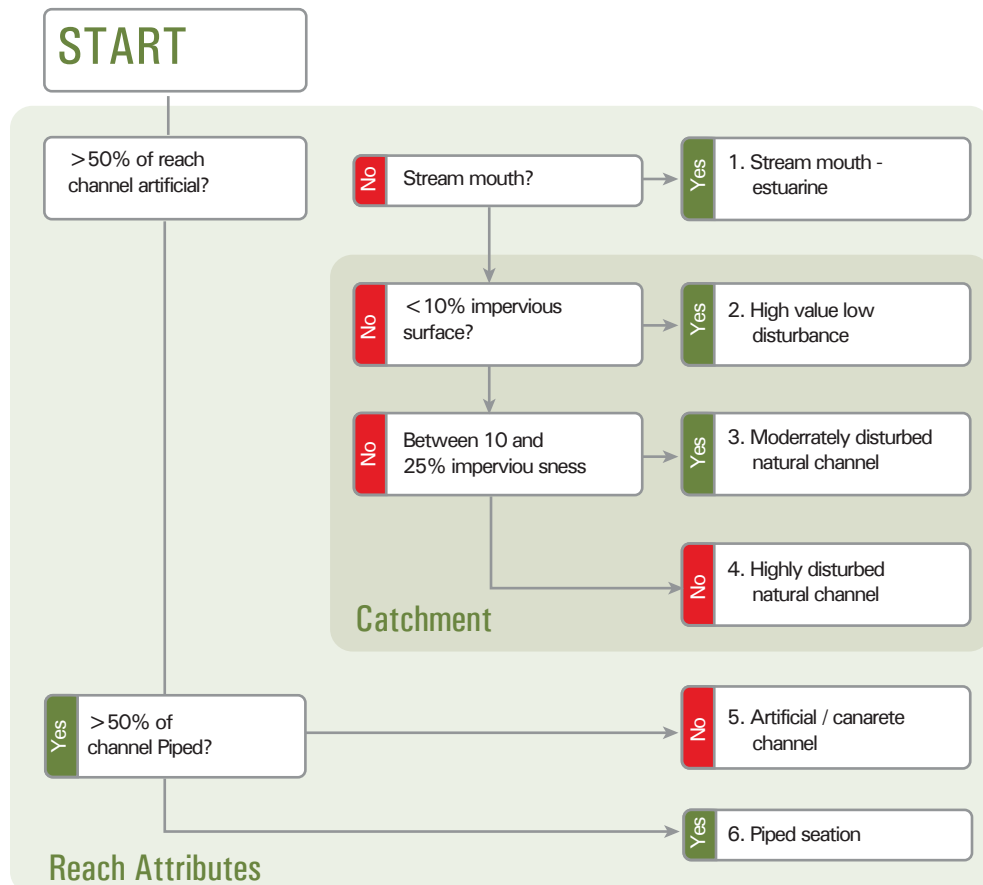
- Catchment scale methods to manage the adverse effects of impervious area on water quality and hydrology;
- Reach scale methods to manage the adverse effects on structural modifications and lack of riparian cover on habitat quality; and
- Site scale methods to manage the adverse effects of structures and activities.

The objectives and policies set out in Sections 3.6.3 and 3.6.4 provide a framework for the development of policies and actions which should be considered in the development of structure plans, *Integrated Catchment Management Plans* and the processing of resource consents.

TAs must inevitably prioritise the implementation of management actions, taking into account the resources that are available. A district or catchment wide prioritisation process could be used to ensure the greatest benefit to ecosystems and the community is achieved. Urban catchments with native bush, semi-rural land use, and in the early stages of urban development should receive the highest priority for implementation through local and district plans, catchment management plans, and *structure plans*. Alternatives to *culverting* and piping of *urban rivers and streams* should also be considered as part of development and *structure planning* processes and by resource consent applications for regionally significant infrastructure or other development affecting significant areas of land.

A Technical Publication called "Framework for the Assessment and Management of Urban Streams in the Auckland Region" has been developed and is available to assist in the implementation of these management areas (ARC TP 232 August 2004). Note that this document may be updated to reflect changing management methods over time.

Figure 3.1 Flow Chart for Assigning Urban River and Stream Types Described in Section 3.6.2.3.



## 3.7 Urban Lake Management Areas

### 3.7.1 Description

There are two urban **lakes** in the Auckland Region – Lake Pupuke and Western Springs Lake. Lake Pupuke is formed from an old volcano and is characterised by the absence of any streams flowing in and out of it, with the main source and discharge of water through **groundwater** flow. Western Springs similarly derives its water from **groundwater** flow, but it has an outlet, via a weir into Motions Creek.

Lake Pupuke is surrounded by residential and commercial development. Areas of publicly owned land are interspersed with many private sections fronting directly onto the **lake** shore. In comparison, Western Springs **Lake** is surrounded by public reserves.

Both **lakes** are important for their open space, recreational and **amenity** values.

The ARC Lakes Monitoring Programme has shown that Lake Pupuke has the second highest water quality of the seven **lakes** surveyed. However there are signs that this quality is deteriorating, which is mainly due to elevated levels of nutrients. Much of the nitrogen input comes from existing sediments on the **lake** bed, but other nutrient inputs come from discharges of **stormwater**, **wastewater overflows** as well as **fertiliser** runoff from surrounding private gardens and public reserve land.

The ARC does not have detailed information on the water quality of Western Springs Lakes, but it is known to be of lower quality than that of Pupuke. The main sources of contaminants for Western Springs is from faecal matter associated with the duck population.

### 3.7.2 Management Approach

The purpose of the Urban Lake Management Areas is to recognise the importance of the region's urban *lakes* for recreational and *amenity* purposes. In both *lakes*, effects on the *lake* margins and the quality of water entering the *lakes* is significantly influenced not only by the provisions of this plan, but also by district plan controls, management practices on publicly owned reserves and public education. For example, education of landowners with properties fronting Lake Pupuke on best management practices for the application of garden *fertiliser* will help to reduce levels of nutrients entering the *lake* by *surface water* flows.

The overall management approach of this plan is to maintain and where practicable enhance water quality for ecosystem health and *amenity* values. The emphasis is on avoiding further modification to the margins of Lake Pupuke by *reclamation* and shoreline protection works, minimising discharges of contaminants, maintaining the open nature of both *lakes* by controlling further structures within them and avoiding significant disturbance to the *lake* beds.

As both *lakes* are surrounded by urban development, both have been impacted by discharges of *stormwater* and *wastewater*. It is recognised that this may continue in the foreseeable future. The ability to reduce discharges of *stormwater* or *wastewater overflows* will be addressed as part of the overall *stormwater* and *wastewater network* management strategy.

## 3.8 High Use Stream Management Areas

### 3.8.1 Description

A number of streams in the Auckland Region are under pressure from demands for water *take*, or use by a number of users. The values of these streams are threatened by high use or *take* and they are identified as 'high use streams'. High Use Streams are all the streams within the following catchments and sub-catchments:

- Whangaripo Stream (a sub-catchment of the Hoteo River catchment);
- Mahurangi River;
- Waitoki, Waikahikatea and Waipapakura Streams (sub-catchments of the Kaukapakapa River catchment);
- Waimauku Stream and Kumeu River (sub-catchments of the Kaipara River catchment);
- Puhinui Stream in Manukau City;
- Taitaia Stream (a sub-catchment of the Wairoa River catchment);
- Hays Creek;
- Ngakoroa, Mauku and Waitangi Streams in Franklin District.

These rivers and streams are identified on the plan maps.

### 3.8.2 Management Approach

The purpose of this management area is to ensure that *taking* is enabled while maintaining the life-supporting capacity and amenity values of these streams. Accordingly, other than the ability to *take* water as permitted by section 14 of the RMA, the majority of *takes* will need to be carefully evaluated and managed, generally through the resource consent process, to ensure that the use, ecological and amenity values of these rivers and streams are maintained and where possible enhanced.

## 3.9 High Use Aquifer Management Areas

### 3.9.1 Description

*Aquifers* are important as direct sources of water supply for domestic, industrial and rural use. They are also the major contributors to the *base flow* of many streams, particularly in the southern parts of the region. As such, *aquifers* contribute to the overall quality and diversity of *surface water* bodies.

Some *aquifers* in the Auckland Region are under threat, being highly allocated (more than fifty per cent allocated and/or are major sources of spring and stream flow), and/or being adversely affected by over pumping, or are in areas of high potential growth where they are very likely to become highly allocated over the life of the Plan. These *aquifers* have been identified as High Use Aquifer Management Areas. In order to continue to meet existing and future water *take* demands and to provide *base flow* for surface streams, careful management of *water availability* within these *aquifers* is required. The management areas are:

- Kumeu Waitemata
- Omaha Waitemata
- Tomarata Waitemata
- Onehunga Volcanic
- Mt Wellington Volcanic
- Waiheke (all aquifers)
- Manukau City Waitemata
- Manukau Kaawa
- Clevedon East Waitemata
- Clevedon West Waitemata
- Franklin Volcanic comprising the following aquifers:
  - Bombay Volcanic
  - Glenbrook Volcanic
  - Pukekohe Central Volcanic
  - Pukekohe North Volcanic
  - Pukekohe South Volcanic
  - Pukekohe West Volcanic
- Franklin Kaawa Aquifer comprising the following sub zones:
  - Bombay-Drury Kaawa
  - Karaka Kaawa
  - Pukekohe Kaawa
  - Pukekohe West Kaawa

- Waiau Pa Kaawa
- Waiuku Kaawa
- Drury Sand
- Waiwera Geothermal
- Parakai Geothermal

*Note: The spatial extent of these aquifers is identified on the Management Area Maps. The areas on the ground surface under which these **aquifers** are located are identified on the Management Area Maps. However the 3-dimensional nature of **aquifers** is difficult to portray on a map. There may be more than one **aquifer** under the areas identified on the maps. Only the **aquifers** listed above are High Use Aquifer Management Areas. **Aquifers** not listed above, but located under these areas identified on the maps are not High Use Aquifer Management Areas.*

*All aquifers referred to in the Plan, including High Use Aquifer Management Areas are shown on Map Series 2.*

*Further geological description is provided below to provide plan users with more information on High Use Aquifer Management Areas:*

1. *Kumeu Waitemata refers to all aquifers below the ground surface shown on the maps.*
2. *Omaha Waitemata includes all rocks of the Waitemata Group, but does not include alluvium (Tauranga Group) or the underlying greywacke rocks (Waipapa Group).*
3. *Tomarata Waitemata refers to all aquifers below the ground surface.*
4. *Onehunga Volcanic and Mt Wellington Volcanic includes all rocks of the Auckland Volcanic Field within the area shown on the maps; it includes all aquifers below the ground surface and above the Waitemata Group rocks.*
5. *Waiheke refers to all aquifers.*
6. *Manukau City Waitemata includes all rocks of the Waitemata Group, but does not include overlying Tauranga Group or Kaawa Formation.*
7. *Manukau Kaawa includes all aquifers from the ground surface down to the Waitemata Group rocks.*
8. *Clevedon East Waitemata and Clevedon West Waitemata includes all rocks of the Waitemata Group, but does not include the underlying greywacke (Waipapa Group) or the overlying Tauranga Group or Kaawa Formation.*
9. *Franklin Volcanic includes all aquifers from the ground surface to the base of the South Auckland Volcanic Field but does not include the underlying Kaawa Formation or Waitemata Group.*
10. *Franklin Kaawa refers to Kaawa Formation only. It may be overlain by South Auckland Volcanic Field or Tauranga Group, which are not included. The underlying Waitemata Group is not included.*
11. *Drury sand includes Tauranga Group and Kaawa Formation and does not include overlying South Auckland Volcanic Field or underlying Waitemata Group.*
12. *Waiwera Geothermal and Parakai Geothermal refers to all aquifers below the ground surface.*

*Plan users are referred to Edbrooke (2001). Geology of the Auckland Area. 1:250,000 Geological Map 3. Institute of Geological and Nuclear Sciences, for further guidance.*



### 3.9.2 Management Approach

The purpose of this management area is to manage *aquifers* which are under threat by being highly allocated and/or being adversely affected by over pumping. These *aquifers* have been identified as High Use Aquifer Management Areas. In order to continue to meet existing and future water *take* demands and to provide *base flow* for surface streams, water taken from these *aquifers* needs to be carefully controlled and managed. Accordingly, the majority of *take* proposals will require some form of resource consent to ensure that these *aquifers* are sustained over time.

## 3.10 Quality Sensitive Aquifer Management Areas

### 3.10.1 Description

Quality Sensitive Aquifer Management Areas include those *aquifers* which, due to their geology, have the potential for contamination from the discharge of contaminants to land or into *groundwater*. These *aquifers* are shallow and unconfined and hence are susceptible to pollution from surface sources, such as excess *fertiliser* application or discharges of contaminants such as *stormwater* or *sewage*. The potential for contamination is highest in the volcanic *aquifers* where discharge to *aquifers* is most direct. *Protection* of both the quality and quantity of water within *aquifers* is therefore critical. They are important sources of water for rural and industrial purposes, as well as providing *base flow* to surface streams in some areas. There are two main groupings of Quality Sensitive Aquifers. The first are rural:

- Kaipara Sand
- Franklin Volcanic
- Awhitu Sand

The second group of *aquifers* underlies the city on the Auckland isthmus. Land uses include both residential development as well as areas of industry. They are known as the Auckland Isthmus Volcanics and include the Onehunga and Mt Wellington aquifers. These urban *aquifers* are used to dispose of *stormwater* from both roads and private property. Some *aquifers* such as Onehunga also provide municipal water supply.

### 3.10.2 Management Approach

The main purpose of this management area is to protect the quality of the water within the *aquifers*. Discharges of contaminants are discouraged where this is likely to have significant adverse effect on the quality of water within these *aquifers*. A discharge consent application will generally require a determination of the potential effects of the discharge on the *aquifer* concerned.

The Onehunga Aquifer needs particular attention because of its use for municipal water supply. The ARC will as far as is practicable in undertaking its monitoring and enforcements functions, regularly update the fire service and undertake regular industrial yard inspections to minimise the risk of chemical spills into the ground or stormwater drains in this catchment.

## 3.11 Industrial Air Quality Management Areas

### 3.11.1 Description

The Industrial Air Quality Management Areas apply to specific industrial areas within the Metropolitan Urban Limits as defined in the Auckland Regional Policy Statement. They overlay specific industrial zones within some district plans. These zones are generally the larger industrial areas catering for 'heavier' industrial activities. Auckland City, Manukau City and Papakura District Councils have specific provision within their District plans for the discharge of contaminants to air from heavy industry. These district plans support reduced *amenity* and are therefore suitable as areas to promote

industrial intensification. The Industrial Air Quality Management Areas apply to:

- Most of the Business 5, and all of the Business 6 zones within the Auckland City Isthmus Plan. The areas are, Penrose, Otahuhu, Onehunga and Avondale;
- The Business 6, and some Quarry zones in the Manukau City District Plan. These areas are, Otahuhu, Favona, Wiri, and East Tamaki;
- The 'Auckland International Airport' zone and the Mangere Waste Water Treatment Plant (including the Odour Boundary) as designated in the Manukau City District Plan;
- The Contact Energy Ltd power station site at Otara either side, and including part, of Highbrook Drive, Otara; and
- The Industrial 3 and 4 zones within the Papakura District Plan.

While the land designated for the Auckland International Airport has been included within the Industrial Air Quality Management Area it not appropriate for heavy industrial activities to be located within this area. The land has been included to provide for the continued operation and sustainable management of the Auckland International Airport and associated activities. The management approach for the Auckland International Airport land designation within the Industrial AQMA is to maintain levels of *amenity* while enabling 'airport' related activities as outlined in Designation 231 and the Airport Zone in the Operative Manukau District Plan.

Land designated in the Operative Manukau District Plan for the operation of Mangere Wastewater Treatment Plant (including the Odour Boundary) has also been classified as an Industrial Air Quality Management Area. This facility is regionally significant infrastructure and the land has been included to allow for the continued operation of the Mangere Wastewater Treatment Plant and associated activities. It is not appropriate that other industrial activities unrelated to wastewater treatment locate within this area or for the Odour Boundary area to be utilised for activities that may discharge contaminants into air.

The land owned by Contact Energy Ltd (contained in Certificates of Title NA 137B/367, NA 93A/818 and NA 137B/366, and including that part of Highbrook Drive between SH1 and Otara Lake), used for the generation of electricity, has also been classified as an Industrial Air Quality Management Area. The site provides for regionally significant infrastructure and has been included to allow for the continued generation of energy and associated activities. It is not appropriate that other industrial activities that discharge contaminants into air and which are unrelated to energy generation locate within this area.

The Industrial Air Quality Management Areas are shown on Map Series 1 and 1A.

### 3.11.2 Management Approach

The ARC has responsibility for managing the effects of the discharge of contaminants into air while the TAs of the Region have responsibility for managing the effects of the use and development of land.

The purpose of the Industrial Air Quality Management Areas is to integrate the management of land use planning, set out in the district plans, and air quality in terms of the ARC's responsibilities. The land use zonings established in the district plans are generally considered the appropriate locations for a range of industrial activities. Accordingly, to 'encourage' industrial activities to locate within these zones there is a 'less stringent' consenting and policy regime for activities that discharge contaminants into air within the Industrial Air Quality Management Areas.

This approach seeks to avoid issues of *reverse sensitivity* and conflicts between

incompatible and competing land uses. That is, the Industrial Air Quality Management Areas, in conjunction with the district plan provisions, seek to limit the establishment of activities sensitive to heavy industry within these areas. Activities sensitive to air discharges include residential and community facilities, which bring significant numbers of people, particularly children, sick or the elderly into the area, and other activities such as retail premises, offices, and car sales yards.

It is important to recognise that conflicts along boundaries where expectations of *amenity* levels are likely to differ need to be managed, taking into account, among other matters, the relevant underlying District Plan zone provisions.

The Plan recognises that there are discharges to air from existing industrial activities located outside the Industrial Air Quality Management Areas. These activities will be required to manage their effects in a manner that is commensurate with their receiving environment, including the underlying District Plan zoning, and the Air Quality Management Areas in which they are located.

The Air Quality Targets that apply to Industrial Air Quality Management Areas and All Areas are set out in Table 4.2 Auckland Regional Air Quality Targets of the Plan.

## 3.12 Urban Air Quality Management Areas

### 3.12.1 Description

The Urban Air Quality Management Areas include the majority of the highly populated areas of the Auckland Region and incorporate residential, commercial, light industrial and other sensitive land uses. The relatively high density of the urban area combined with a wide range of discharges of contaminants into air can result in significant adverse effects on air quality.

The Urban Air Quality Management Area applies to all of the air space within the **Urban Areas** as defined in the Regional Policy Statement, excluding the air space within the Industrial Air Quality Management Areas.

The **Urban Areas** consist of a range of land use zones including most business zones, and all mixed use and residential zones.

Within the Urban Air Quality Management Areas it is recognised that some areas may not be urbanised, in particular areas on the urban fringe and those identified for future urban growth in the district plans of the Region. These areas are usually referred to as Future Urban/Future Urban Development/ Urban Growth Special Area/Residential Expansion under the district plan.

In order to address this issue, discharges of contaminants into air from **outdoor burning**, land cultivation or the application of **fertiliser** or lime within Urban Air Quality Management Areas that do not have an operative urban zoning under the relevant district plan and where production land activities are still a permitted activity may be undertaken in accordance with the provisions relating to Rural Air Quality Management Areas in this Plan until the zoning is changed to operative urban zoning through the district plan statutory process.

The Urban Air Quality Management Areas are shown on Map Series 1 and 1A. Areas that are subsequently included within the MUL through future changes to the ARPS will be brought within the Urban Air Quality Management Area through a Variation or Change to Map Series 1 and 1A of the Plan either jointly with the Change by which the MUL is extended or if this is not possible then at the earliest practicable time thereafter.

### 3.12.2 Management Approach

The purpose of the Urban Air Quality Management Areas is to ensure a high level of *amenity* commensurate with the relevant provisions of the underlying District Plan zones and to protect human health, particularly for sensitive sectors of the population from the adverse effects of air discharges.

A wide range of activities that discharge contaminants to air are permitted within the Urban Air Quality Management Areas. This approach recognises that people need to be able to discharge contaminants into air from various activities such as *domestic heating*, restaurant cooking, *barbecues*, spray painting and lawn mowers. These Permitted Activities are subject to conditions that control aspects of the discharge including odour, dust, fumes, smoke, mists, haze, vapours, *hazardous air pollutants* and the over-spraying of paints and other substances.

Where proposed activities are known to have potentially significant adverse effects, either a resource consent is required or in some cases the activities are prohibited. An example of a Prohibited Activity within the Urban Air Quality Management Areas, primarily due to a reduction in *amenity* from smoke and odour, is the discharge of contaminants from *outdoor burning*.

It is important to recognise that conflicts along boundaries where expectations of *amenity* levels are likely to differ need to be managed, taking into account, among other matters, the relevant underlying District Plan Zone provisions.

The Air Quality Targets that apply to Urban Air Quality Management Areas and All Areas are set out in Table 4.2 Auckland Regional Air Quality Targets of the Plan.

## 3.13 Rural Air Quality Management Areas

### 3.13.1 Description

The Rural Air Quality Management Areas applies to all of the air space outside of the Urban, Industrial, and Coastal Marine Air Quality Management Areas. The Rural Air Quality Management Areas are shown in Map Series 1 and 1A and include Little Barrier and Great Barrier Islands.

### 3.13.2 Management Approach

The purpose of the Rural Air Quality Management Area is to enable 'rural' activities to exist whilst maintaining appropriate levels of *amenity*. Activities that may discharge contaminants into air include pastoral farming, horticulture, *intensive livestock farming*, forestry and quarrying. Many of these discharges into air are permitted activities subject to conditions which aim to protect human health and achieve an appropriate level of *amenity* for people who live and work within these areas.

One of the main differences between the provisions of the Rural and Urban Air Quality Management Areas is that *outdoor burning* of vegetation is permitted in rural areas. Discharges to air from the type of industrial activities expected within the Industrial Air Quality Management Area are generally not considered appropriate within the Rural Air Quality Management Area due to the potential adverse effects on human health and *amenity*. At the same time activities such as quarrying do not have a choice in terms of location in the same way that other industrial activities do because mineral extraction relies on the presence of natural resources. In some cases a resource consent would be required for discharges from industrial activities such as quarrying within the Rural Air Quality Management Areas.

It is important to recognise that conflicts along boundaries where expectations of *amenity* levels are likely to differ need to be managed.

The Air Quality Targets that apply to Rural Air Quality Management Areas and All Areas are set out in Table 4.2 Auckland Regional Air Quality Targets of the Plan.

## 3.14 Coastal Marine Air Quality Management Area

### 3.14.1 Description

The Coastal Marine Air Quality Management Area applies to the coastal marine area of the Auckland Region. The coastal marine area is defined in the Operative Regional Plan: Coastal. It includes all of the sea within the Auckland Region. Discharges of contaminants to land or water in the coastal marine area are covered by the Operative Regional Plan; Coastal. However discharges of contaminants into air from activities within the coastal marine area are covered in this plan (Proposed Auckland Regional Plan: Air, Land and Water).

### 3.14.2 Management Approach

There are few direct discharges of contaminants into air from the coastal marine area other than from marine vessels and dry dock activities. Due to this and the nature of the coastal marine area the management approach in this section of the plan is to maintain existing high levels of *amenity*. Unlike the other Air Quality Management Areas, there are no specific provisions that apply to the coastal marine area in this plan. The provisions that do apply are those applying to most discharges of contaminants into air in this Plan and the general objectives and policies of the Operative Auckland Regional Plan: Coastal.

It is important to recognise that conflicts along boundaries where expectations of *amenity* levels are likely to differ need to be managed.



## 4 Air Quality

### 4.1 Introduction and Principal Reasons

#### 4.1.1 Statutory Framework

Section 15 of the RMA controls the discharge of contaminants into air. Section 15(1) means that any discharge of a contaminant into air from any industrial or trade *premises* in the Auckland Region is allowed only if it is expressly authorised by a rule in this plan, a resource consent or by regulations.

Under Section 15(2) the opposite presumption applies to discharges of contaminants into air from any other source: that is, unless there is a relevant rule in this plan, discharges of contaminants into air from sources other than industrial or trade *premises* can take place without a resource consent from the regional council.

Therefore, without this plan, discharges of contaminants into air from industrial or trade *premises*, no matter how minor, require resource consents, while possibly significant discharges from other sources do not. A key function of this plan therefore will be to allow minor discharges into air from industrial and trade *premises* that are unlikely to have any significant adverse effects, and to regulate other discharges that may have significant adverse effects.

Air quality can also be affected by the use of land and by discharges of contaminants into air or onto land from that use. Section 31 of the RMA assigns the role of controlling any actual or potential effects of land use on the environment (including air) to *Territorial Authorities*. District plans may therefore contain provisions regulating land use to manage air quality. Such provisions must not be inconsistent with this plan.

The air quality provisions set out in Chapter 4 of this Plan apply to the entire Auckland Region, including the coastal marine area, and therefore this chapter forms part of the Auckland Regional Plan: Coastal. The general objectives and policies of the Auckland Regional Plan: Coastal should be considered when assessing the discharge of contaminants into air in the coastal marine area.

In addition, the provisions of the Resource Management (Marine Pollution) Regulations 1998 are relevant to discharges into air within the coastal marine area which occur as part of normal operations of ships or offshore installations. Regulation 16 provides that no rule may be included in an operative or proposed regional coastal plan, or a resource consent, relating to discharges which are the subject of regulations 9, 10 and 12-15. Regulation 15 provides that any person may discharge in the coastal marine area, a contaminant that is incidental to, or derived from, or generated during an operation listed in Schedule 4 as the normal operation of a ship or offshore installation. Schedule 4 lists, relevantly, ship propulsion, heat exchange systems and the incineration of *waste* or other matter generated from a ship or offshore installation.

#### 4.1.2 Scope of Chapter

This chapter deals with the discharge of contaminants into air from any type of activity. The primary activities addressed in this chapter are:

- Mobile Sources;
- Domestic Fires;
- Outdoor Burning;
- Other Discharges of Contaminants into Air; and
- Global Air Quality.

### 4.1.3 Factors Affecting Air Quality

Air pollution levels depend on the amount of pollution produced, the rate at which the pollution disperses and chemical reactions in the air. Air quality worsens in light wind conditions, as contaminants cannot be blown away. Monitoring indicates that the worst pollution occurs on virtually calm days and during cold winter days when contaminants are trapped close to the ground by an *inversion layer*. Under these conditions a brown haze can often be seen over the city.

Air pollution levels are affected by the weather and topography, so levels can vary considerably around the region. Contaminants can accumulate in sheltered valleys and also in the central business district, where tall buildings cause canyons which can trap contaminants.

### 4.1.4 Auckland Regional Air Quality Targets and The National Environmental Standards for Ambient Air Quality

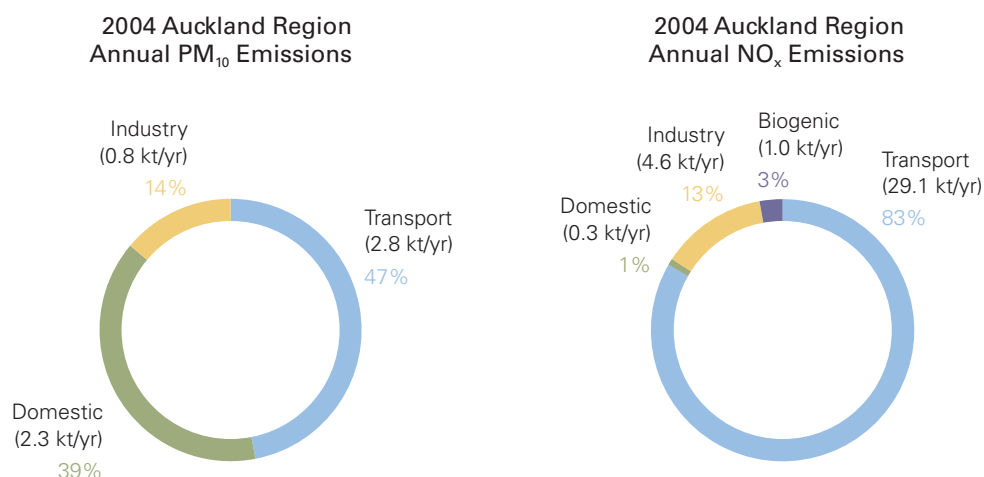
The management approach to protect human health in the Auckland Region from *ambient air pollution* has been to select key pollutants as indicators, by utilising the *National Environmental Standards for Ambient Air Quality* and setting additional complementary Auckland Regional Air Quality Targets. Table 4.1 sets out the *National Environmental Standards for Ambient Air Quality* and Table 4.2 specifies Auckland Regional Air Quality Targets.

The standards are quoted directly from the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics for Air Quality) Regulations 2004 (AQNES). The targets are based on Ministry for the Environment's *Ambient Air Quality Guidelines* (2002) and internationally recognised standards and guidelines.

The primary purpose of *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets is to provide a guaranteed level of protection for the health of all Aucklanders. Where ambient levels do not breach the standards or targets, efforts should be made to maintain good air quality and, if possible, reduce emissions. This is particularly important for those pollutants where 'no observable adverse effects levels' (NOAEL) have not been identified, such as particles less than 10 microns in diameter ( $PM_{10}$ ), particles less than 2.5 microns in diameter ( $PM_{2.5}$ ) and ozone ( $O_3$ ).

The major sources of *ambient air* pollution in the Auckland urban areas are motor vehicles and domestic fires. The 2004 Auckland Air Emissions Inventory gives the relative contributions of all sources; these are shown in the Figure 4.1.

Figure 4.1 Emissions of  $PM_{10}$  and  $NO_x$  in the Auckland Region (2004)





#### 4.1.4.1 National Environmental Standards for Ambient Air Quality

The *National Environmental Standards for Ambient Air Quality* list several *ambient air* pollutants and the concentration levels that must be complied with. The AQNES also includes a permissible number of exceedences of the concentration limit per year. Irrespective of this Plan these standards must be complied with throughout New Zealand; including the Auckland Region.

These standards have not been promulgated by ARC: they are national regulations under the RMA and can only be changed by the Ministry for the Environment by Gazette Notice. Should a Gazette Notice amend the AQNES, any consequential amendments to Table 4.1 will be made under Clause 16 of the First Schedule of the RMA without further formality.

Table 4.1 National Environmental Standards for Ambient Air Quality (from the AQNES)

All Areas	Contaminant	Standard	Averaging Time	Number of permissible exceedences per year
National Environmental Standards for Ambient Air Quality	Particles (PM <sub>10</sub> )	50mg/m <sup>3</sup>	24 hour	one
	Carbon monoxide (CO)	10mg/m <sup>3</sup>	8 hours (running mean)	one 8-hour period
	Nitrogen dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup>	1 hour	nine
	Ozone	150µg/m <sup>3</sup>	1 hour	zero
	Sulphur dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup>	1 hour	nine
	Sulphur dioxide (SO <sub>2</sub> )	570µg/m <sup>3</sup>	1 hour	zero

#### 4.1.4.2 Auckland Regional Air Quality Targets

The approach for managing *ambient air* quality pollutants in Auckland is completed by the Auckland Regional Air Quality Targets, which cover ambient pollutants or averaging periods that are not included within the *National Environmental Standards for Ambient Air Quality*. Unlike the AQNES, the targets do not include a permissible number of exceedences.

Table 4.2 Auckland Regional Air Quality Targets

All Areas	Contaminant	Target	Averaging Time
Auckland Regional Air Quality Targets	Particles (PM <sub>2.5</sub> )	25µg/m <sup>3</sup>	24 hour
	Particles (PM <sub>10</sub> )	20µg/m <sup>3</sup>	Annual
	Nitrogen dioxide (NO <sub>2</sub> )	100µg/m <sup>3</sup>	24 hour
	Carbon monoxide (CO)	30µg/m <sup>3</sup>	1 hour
	Sulphur dioxide (SO <sub>2</sub> )	120µg/m <sup>3</sup>	24 hour
	Ozone	100µg/m <sup>3</sup>	8 hour
	Lead	0.2µg/m <sup>3</sup>	3 month moving average calculated monthly
	Benzene (year 2002)	10 µg/m <sup>3</sup>	Annual
	Benzene (year 2010)	3.6 µg/m <sup>3</sup>	Annual
	1,3-Butadiene	2.4 µg/m <sup>3</sup>	Annual
	Formaldehyde	100 µg/m <sup>3</sup>	30 minutes
	Acetaldehyde	30 µg/m <sup>3</sup>	Annual
	Benzo(a)pyrene	0.0003 µg/m <sup>3</sup>	Annual
	Mercury (inorganic)	0.33 µg/m <sup>3</sup>	Annual
	Mercury (organic)	0.13 µg/m <sup>3</sup>	Annual
	Chromium VI	0.0011 µg/m <sup>3</sup>	Annual
	Chromium metal and Chromium III	0.11 µg/m <sup>3</sup>	Annual
	Arsenic (inorganic)	0.0055 µg/m <sup>3</sup>	Annual
	Arsine	0.055 µg/m <sup>3</sup>	Annual

#### 4.1.4.3 Air Quality Management using the National Environmental Standards for Ambient Air Quality and Auckland Regional Air Quality Targets

The standards and targets support the objectives and policies in this plan and aim to maintain air quality in areas of the Auckland Region where it is already good, and enhance air quality in areas of the Auckland Region where it is degraded or unacceptable and currently breaches the standards or targets.

Extensive monitoring of PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, O<sub>3</sub> and CO has been undertaken in the Auckland Region. This monitoring demonstrates that air quality is better in coastal and rural areas than in *urban areas*.

The air quality goals for the Auckland Region are:

- To maintain, and where necessary enhance, air quality so that no breaches of the *National Environmental Standards for Ambient Air Quality* (i.e. no more than the permissible number of exceedences) occur at any location within the Urban or Industrial Air Quality Management Areas.
- To maintain, and where necessary enhance, air quality so that no exceedences of the Auckland Regional Air Quality Targets occur at any location within the Urban or Industrial Air Quality Management Areas.
- To maintain *ambient air* quality in Coastal and Rural Air Quality Management Areas at current good or excellent levels.

The standards and targets are not intended to be an “allowable level to pollute up to”; they are minimum requirements. Air quality should be maintained where it is already better than the standards and targets, and enhanced where it does not meet the standards and targets, in accordance with Objective 4.3.2. The AQNES also requires

that air quality must be enhanced where it does not meet the standards; as the standards must be complied with.

In order for Auckland Region's *urban areas* to have no breaches of the standards or targets, NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> emissions from *domestic fires* and *mobile sources*, in particular motor vehicles, need to decrease significantly.

The standards and targets are intended to apply anywhere in the Air Quality Management Areas where members of the public may realistically be exposed for the relevant averaging period. For example, the standards and targets apply in areas that are representative of places where people live, work and play or might regularly be exposed. These may include worst case exposure situations such as the CBD, roadsides (including kerbsides and footpaths), Industrial Air Quality Management Areas, or in residential valleys subject to inversion conditions.

The ARC will monitor *ambient air* quality within the Air Quality Management Areas at monitoring sites that are considered to be representative of a range of exposure situations. For example to monitor compliance within the Urban Air Quality Management Areas monitoring will be undertaken at sites in the region which are considered to be typical of residential and commercial areas. These sites will also include a range of exposure situations such as residences close to busy roads or those in more isolated suburbs. Monitoring will be undertaken according to the recommendations in MfE's *Ambient Air Quality Guidelines* and MfE's Ambient Air Quality Good Practice for Monitoring and Data Management.

The regional air quality standards and targets will not be used as compliance conditions at the *boundary* of industrial sites. However, the standards and targets will be used as a matter for consideration in assessing any consent application that is likely to increase regional PM<sub>10</sub>, PM<sub>2.5</sub> or NO<sub>2</sub> *ambient air* quality levels, on a case by case basis. Motor vehicles and *domestic fires* are the principle sources of *ambient air* pollution in Auckland. Recognition will be given to the relative contribution any industry makes to the regional *ambient air* quality levels in this context.

#### 4.1.5 Air Quality Management Approach

The Air Quality chapter provides for the discharge of contaminants into air and addresses activities that have a significant actual or potential effect on air quality.

The discharges from these activities can be divided broadly into two categories:

- Discharges that have the potential to cause localised adverse effects.
- Discharges that have minor adverse effects when considered in isolation, but can have a significant cumulative or synergistic adverse effect on air quality.

The use of land can impact on the ability to manage the effects from the discharge of contaminants into air.

##### 4.1.5.1 Discharges with Primarily Localised Adverse Effects

Discharges from *outdoor burning*, the application of *agrichemicals*, and industrial *processes* have the potential to cause localised adverse effects. These discharges can be directly attributed to an individual source, and in the majority of cases these discharges have been regulated to some extent for many years.

The approach taken to manage localised adverse effects is to permit all discharges with minor or no adverse effects subject to conditions. Activities that have, or have the potential to have significant adverse effects are managed by specific rules in the plan. These include:

- *Outdoor burning*, which over the years has resulted in a high level of public complaints due to smoke and odour nuisance;

- The application of *agrichemicals* which can cause nuisance, damage to crops and human health effects;
- Activities including industrial *processes* which need to be carefully controlled due to:
  - i. The actual or potential human health effects from the discharge;
  - ii. The high potential for public complaints, in particular in relation to odour and dust nuisance; and
  - iii. The high risk associated with any uncontrolled discharge to air.

#### 4.1.5.2 Activities with Primarily Cumulative Adverse Effects

Motor vehicles and *domestic fires* are the two largest regional sources of air pollution in the Auckland Region. Although both sources have the potential to cause adverse effects such as smoke and odour on the local environment, their largest impact is the cumulative adverse effects they have on air quality and public health. In 2004 motor vehicles accounted for 47% of total ambient PM<sub>10</sub> levels in Auckland with *domestic fires* accounting for 39% annually and 64% in winter.

Volatile organic compounds (VOCs) are becoming an increasing problem with the largest source also being motor vehicles but there are a number of uncontrolled sources, such as ventilation and displacement from bulk storage tanks.

The approach taken to manage discharges with cumulative adverse effects from motor vehicles, *domestic fires* and *greenhouse gases* and *ozone depleting substances* is to generally permit these discharges and to encourage best practice and educate the community on methods to minimise any discharges. For some of these activities minimising the discharge of contaminants into air through regulation is more effectively undertaken at a national level rather than on a regional level.

A key method of minimising the discharge of contaminants into air is through the adoption of energy efficient activities. The key areas where this can occur are *domestic heating* and the use of the private motor vehicle. Reducing these discharges into air by educating the community and promoting best practice can have significant co-benefits for very little or no cost to the consumer.

Management of emissions from motor vehicles and *domestic fires* is a relatively new area in New Zealand, and it is only relatively recently that monitoring has identified a significant air quality problem resulting from these emissions in the Auckland Region. Based on the results of *ambient air* quality monitoring and the Auckland Regional Emissions Inventory, we know that significant reductions in motor vehicle and domestic fire emissions will be required in order to meet the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets. In addition, particular measures need to be taken to avoid the formation of photochemical smog in the region. The formation of smog is a complex reaction between volatile organic compounds (VOCs) and nitrous oxides in the presence of UV light. As Auckland is "VOC-sensitive" any measures that reduce cumulative VOC emissions should result in reduced smog formation.

The most appropriate measures to manage emissions from motor vehicles and *domestic fires* have not been fully evaluated. A number of methods to manage these emissions have been proposed in this Plan, however these provisions are seen as a starting point. These measures rely primarily on gradual improvement over time, supporting existing measures, and improved public awareness. In addition to these measures the development of an Auckland Regional Air Quality Management Strategy will enable a better understanding of impacts on air quality from cumulative sources and enable us to take further actions and assess the results of these actions.

#### 4.1.5.3 Adverse Effects on Air Quality due to Land Use

Adverse effects from air quality can be exacerbated by land use. Population growth within the Auckland Region is intensifying pressure on competing and incompatible land uses. The inappropriate location of activities that discharge contaminants into air and the inappropriate location of parties sensitive to those activities (*reverse sensitivity*) can aggravate any adverse effects from the discharge of contaminants into air. The Air Quality Management Areas described in Chapter 3 are intended to help address this issue. However, it is recognised that there are existing activities that discharge contaminants into air, particularly within the Urban Air Quality Management Areas, that may have adverse effects that need to be managed. Integrated management between the ARC and TAs is necessary so that the effects from competing and incompatible land uses and discharges into air are considered in the decision-making process.

#### 4.1.6 Regional Air Quality Management Strategy

In order to meet the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets it is likely that further measures to reduce emissions from motor vehicles and *domestic fires* will be required. The purpose of the Auckland Regional Air Quality Management Strategy will be to quantify the reductions that are required as accurately as possible, to evaluate the options, including costs and benefits, and to specify actions. This process will involve the following steps:

- Ongoing *ambient air* quality and meteorological monitoring at sites that are representative of Urban, Rural and Industrial Air Quality Management Areas;
- Regular review of the Auckland Regional Emissions Inventory, which identifies key sources and how they change over space and time;
- Atmospheric dispersion modelling studies and exposure assessments to determine the spatial extent and frequency of areas where pollution levels exceed target values and their impacts;
- Analysis of current trends and projection for future trends in emissions;
- Analysis of the options for improving air quality and their cost effectiveness; and
- Determining community views on the desirable level of air quality and the options for improving it.

Measures to improve regional air quality are likely to involve a wide range of participation from stakeholders and the wider community. The Auckland Regional Air Quality Strategy will be developed in partnership with key stakeholders to ensure that actions identified through the strategy are practicable, efficient and effective. The Air chapter of this plan may be reviewed in 2006 to determine progress towards the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets to consider whether further regional rules relating to motor vehicles, *domestic fires* or other sources are required.

#### 4.1.7 Mobile Sources

*Mobile sources*, in particular motor vehicles, are the largest source of air pollution in the Auckland Region. The Auckland Regional Emissions Inventory suggests that motor vehicles are responsible for 70-80% of total emissions discharged into Auckland Region's air. Emissions from vehicles include carbon dioxide, carbon monoxide, nitrous oxides, particulate and *hazardous air pollutants* such as benzene.

Vehicle emissions are linked to a number of health effects including cardiovascular and

respiratory diseases such as angina, asthma and lung cancer. A recent (2002) Ministry of Transport study estimates that air pollution is responsible for 486 premature deaths in the Auckland Region, with 253 premature deaths attributable to PM<sub>10</sub> emissions from vehicles. A Ministry for the Environment (2003) report estimates that there are 435,000 restricted activity days per year in the Auckland Region attributable to the adverse effects of motor vehicle emissions.

Parts of the Auckland Region experience relatively frequent (46 days in 1999) breaches of acceptable *ambient air* quality levels for carbon monoxide and nitrogen dioxide close to busy roads. These breaches are attributable to motor vehicle emissions and usually occur during periods of calm weather and vehicle congestion.

Breaches of acceptable levels for particulate matter have also been recorded at peak traffic sites as well as sites further away from busy roads. Motor vehicle emissions are a significant contributor to these high particulate levels, along with domestic fire and industrial emissions. The particulate emissions from motor vehicles largely result from diesel vehicles, and these emissions are increasing as a consequence of the increasing number of diesel vehicles on our roads.

Elevated ozone concentrations are measured downwind of central Auckland's *urban areas*. There is the potential for breaches of acceptable levels of ozone to occur in the Auckland Region under certain weather conditions, particularly if vehicle emissions continue to increase.

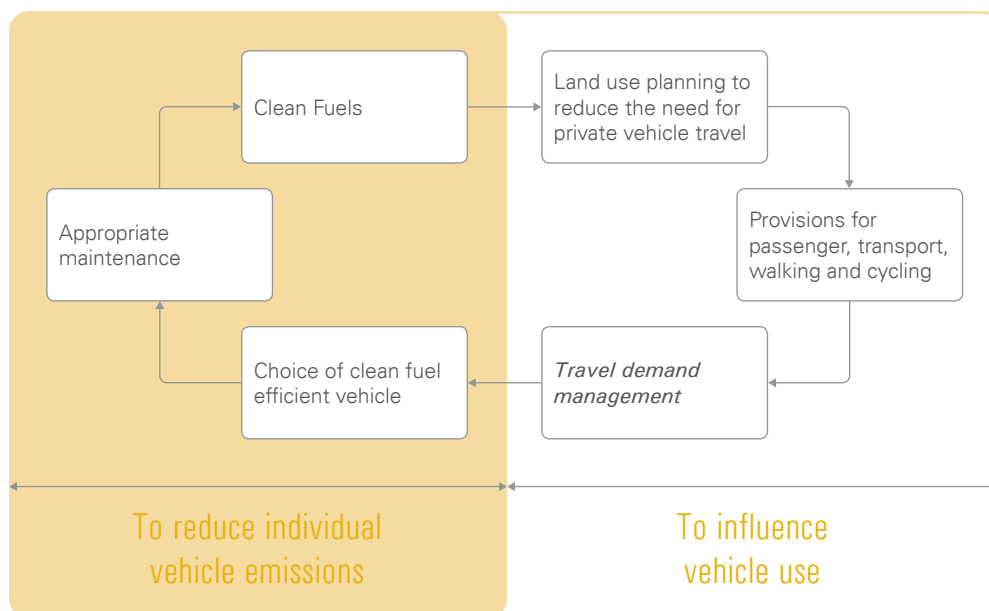
The Auckland Regional Growth Strategy (1999) recognises that a doubling of the Region's population by the year 2050 will have major impacts on the transport system and that major transport improvements are needed. It also recognises that these will have significant environmental and community implications. Car use is growing by around 4% per annum and vehicle use, especially under congested conditions, is a major source of pollution.

Reducing or managing vehicle pollution requires a comprehensive strategy that addresses all of the elements illustrated below. The Auckland Regional Growth Strategy envisages a shift in land-use patterns toward a more compact urban form which focuses growth along passenger transit corridors and main arterial roads. The key elements of the Auckland Regional Land Transport Strategy (2003) (RLTS) (a key tool for implementing the Auckland Growth Strategy) include:

- Passenger transport investment in bus, ferry and rail. Key projects outlined in the RLTS 2003 include completion of the North Shore Busway, Rail Rapid Transit in the Western, Southern and Isthmus Rail Corridors and an extension to Manukau City Centre, and high quality ferry services linking coastal suburbs adjacent to the Waitemata Harbour with the Downtown Ferry Terminal;
- Completion of major roading projects within the Region's main transport corridor; and
- *Travel demand management* (TDM) measures to reduce the need for vehicle travel by influencing and changing travel behaviour - when, how or whether a person travels. Key TDM projects include developing initiatives to encourage ride-sharing (car pooling), supporting travel planning programmes and implementing strategies to improve walking and cycling in the region.

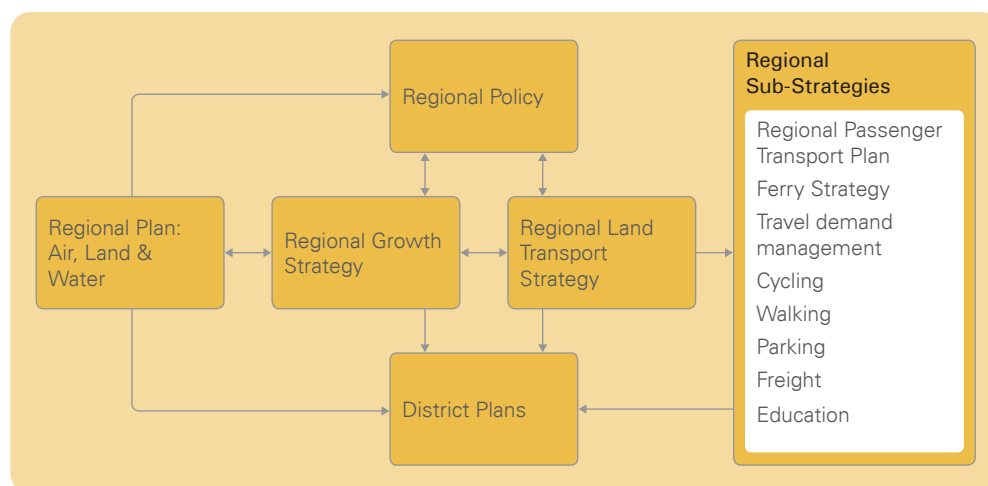
These land use and transport management measures are particularly important because any improvements in individual vehicle emissions may be offset by growth in vehicle usage and congestion. A modern car with clean fuel and emission control systems can still produce more pollution under congested conditions than a 10-year-old car driving in uncongested conditions. Figure 4.2 below shows the elements of a comprehensive vehicle pollution strategy and how all the different motor vehicle, transport and land use issues interrelate. Figure 4.3 sets out measures to influence vehicle use in the Auckland Region.

Figure 4.2 Elements of a comprehensive vehicle pollution control strategy



*Note: Travel Demand Management includes: flexible working hours, tele-working, ride sharing, parking controls, road pricing, integrated traffic management, education and marketing.*

Figure 4.3 Policy environment that influences vehicle use in the Auckland Region



There are few mandatory controls on motor vehicles at present in spite of a rapid growth in numbers. Individual vehicle emissions will reduce over time as more vehicles with clean technology (such as catalytic converters) enter the fleet. However the rate of fleet turnover is slow and, as illustrated by Figure 4.2, clean fuels and good vehicle maintenance are also critical for vehicle emission control. There are currently no requirements for used imported, or in-use vehicles, to have operating emission control equipment, or to meet any maintenance or emissions standards. Central government regulations require that "sulphur free" petrol and diesel be available by 2010. This date could feasibly be brought forward.

Any improvements in average vehicle emissions may be offset by continued growth in motor vehicle travel and increasing congestion. Even though these growth pressures will be greater in the Auckland Region than in most other parts of New Zealand, measures to improve motor vehicle emissions are likely to be more efficiently and effectively implemented at a national level. However, it is recognised that the Plan may not be able to rely on central government regulation and gradual improvement in the Region's vehicle fleet emissions to improve regional air quality. Therefore, in order to meet the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets further regional or local measures to reduce vehicle emissions may be required.

One of the main purposes of the Auckland Regional Air Quality Management Strategy will be to address motor vehicle emissions. It is likely that conflicting priorities in respect of motor vehicles will be identified, and will need to be addressed through the development of the strategy.

#### 4.1.8 Domestic Fires

Approximately one third of all houses in the Auckland metropolitan area and one half of houses in the Auckland Region's rural areas have *domestic fires*. Many of these are open fireplaces (as opposed to dual burners). *Domestic fires*, both solid fuel burning appliances and open fireplaces (e.g. brick fireplaces), are the second largest contributor to the Auckland Region's air pollution and are the largest source of fine particulate during winter. The Auckland Regional Emissions Inventory estimates that on an average winter day 20 tonnes of fine particulate, 140 tonnes of carbon monoxide and 60 tonnes of *hydrocarbons* pour out of our chimneys. Furthermore, it is likely that *domestic fires* significantly degrade visibility. In some areas, such as Henderson and Albany, adverse meteorology and complex topography can increase the localised effects of *domestic fires*.

*Domestic fires* primarily affect regional *ambient air* quality, however, some contaminants such as odour and smoke cause localised nuisance. Smoke from *domestic fires* also contains formaldehyde, volatile organic compounds and polycyclic aromatic *hydrocarbons*. These compounds can adhere to the fine particulate that are inhaled deeply into our lungs and some may pose a cancer risk with prolonged exposure.

Fine particulate pollution at residential monitoring sites reaches levels that sometimes exceed acceptable *ambient air* quality levels during winter. In 2001, PM<sub>10</sub> levels in Mt Eden, Henderson and Takapuna reached 'Alert' levels. In order to meet the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets, a reduction in emissions from *solid fuelled domestic fires* in *urban areas* will be required.

Efficient *domestic fires* and well-insulated houses can significantly reduce discharges of contaminants into air. Alternative forms of heating such as solar power may be a more effective means of heating and therefore should be encouraged.

This plan combines regulatory and non-regulatory means to achieve this reduction. Under the rules of this plan the discharge of contaminants into air from *domestic fires* is a permitted activity, provided that the discharge does not result in significant adverse effects (as described in Rule 4.5.1). From 1 September 2005 the rules require that any new or replacement *solid fuelled domestic fires* in Urban, Coastal Marine and Industrial Air Quality Management Areas be installed in accordance with best practice and manufactured to achieve a particulate emission rate of 4.0 g/kg of fuel burned for appliances without catalytic combustors and 2.25 g/kg for appliances with catalytic combustors in a manner consistent with the requirements of AS/NZS 4013:1999 Domestic Solid Fuel Burning Appliances – Method for Determination of Flue Gas Emissions, or a functional equivalent test method for batch-fed appliances. The ARC will hold a list of approved functional equivalent test methods. This standard includes a maximum allowable appliance particulate emission factor and effectively defines Best Practicable Option for appliance manufacture. Therefore this plan endorses the standard.



The rules will effectively mean that new domestic fire installations in Urban, Coastal Marine and Industrial Air Quality Management Areas unable to comply with a particulate emission rate of 4.0 g/kg of fuel burned for appliances without catalytic combustors and 2.25 g/kg for appliances with catalytic combustors (such as open fires that exhaust straight up through a chimney and have no double burning capacity) will not be permitted from 1 September 2005. *Open fires* even when well operated, are only about 15% efficient and produce much higher levels of pollution than well designed solid fuelled appliances, which are between 50 and 70% efficient.

#### 4.1.9 Outdoor Burning

*Outdoor burning* and the use of backyard and *single chamber incinerators* are a major source of air pollution in the Auckland Region. The Auckland Regional Emissions Inventory estimates that every year more than 110 tonnes of fine particulate, 600 tonnes of carbon monoxide and 200 tonnes of *hydrocarbons* pour into the air from outdoor fires. Burning of some materials, in particular plastic, rubber, other synthetic materials and heavy metals, can also produce *hazardous air pollutants* such as known *carcinogens*, highly *toxic compounds* such as dioxins, and potentially *mutagenic* and *teratogenic* contaminants. When materials are burnt in the open or in *backyard incinerators* the fire is not hot enough, and does not have sufficient oxygen, to destroy these *hazardous air pollutants*. As well as producing harmful pollutants these fires can also be a nuisance to neighbours (odour, smoke, ash, and soiling of surfaces). Every year in the Auckland Region TAs receive approximately 3000 complaints regarding *outdoor burning* and the use of backyard and *single chamber incinerators*.

*Outdoor burning* is not appropriate in *urban areas* where neighbours are generally close and alternatives such as rubbish collections and *composting* are available. In the farming environment large quantities of materials (for example *green waste(s)*, dead on-farm animal stock, bale wrap, *agrichemical* containers, used oil, tyres, etc) need to be disposed of somewhere. In rural areas because properties are generally large and the population is well dispersed, the burning of some materials including vegetation can be carried out without causing significant adverse effects if best practice is followed. However, the burning of other materials that can result in the production of *hazardous air pollutants* is not appropriate in any location and suitable disposal options need to be used.

The approach in this plan is generally to prohibit outdoor burning and the use of backyard and single chamber incinerators within the Urban and Industrial Air Quality Management Areas and the Coastal Marine Air Quality Management Area, and to permit outdoor burning and the use of backyard and single chamber incinerators in the Rural Air Quality Management Areas. Currently, Auckland City Council and Manukau City Council severely restrict outdoor burning.

There are some circumstances when the discharge of contaminants into air cannot be avoided. These include: the Ministry of Agriculture and Forestry requiring material to be burnt; controlled burning associated with emergency fire training and/or investigation by the NZ Fire Service; circumstances such as required by administrators of the Health Act (1956) where there are no practicable alternatives to burning; or for controlled public displays for celebration purposes such as Guy Fawkes bonfires.

The management of fires including *outdoor burning* is regulated by several pieces of legislation. These pieces of legislation define roles and responsibilities for several agencies in the control and management of fires. The New Zealand Fire Service and the TAs in accordance with the Rural Forest and Fires Act 1977 and the Local Government Act 1974 have jurisdiction over the spread of fire and related safety issues. TAs also have health responsibilities under the Health Act 1956. The RMA, which repealed the Clean Air Act 1972, provides for the consideration of adverse effects from the discharge of contaminants into air from fires, in particular nuisance. All the TAs in the Auckland Region

created *outdoor burning* bylaws under the Clean Air Act 1972, therefore the rules in this plan replace these bylaws. The Ministry for the Environment has developed a National Environmental Standard (NES) for Dioxin in accordance with Sections 43 and 44 of the RMA.

#### 4.1.10 Other Discharges of Contaminants into Air

Many activities or groups of activities such as *industrial or trade processes*, *waste management processes* and production land activities (including *intensive livestock farming*) discharge contaminants into the environment. These discharges can have varying adverse effects on air quality, including odour, dust, particulate, ash and reduced visibility due to smoke or haze. These effects need to be managed and controlled if they become noxious, dangerous, offensive or objectionable.

While these activities contribute to cumulative effects on regional air quality, the focus of this section is on managing the actual or potential effects of activities on their immediate environment. These issues are distinct from the more widespread effects of activities such as motor vehicles and *domestic fires*. The effects from industrial *processes* are often best managed by appropriate location and by adopting the Best Practicable Option, including the application of suitable control technology and appropriate on-site management techniques.

The rules for these types of activities are separated into specific activity classes to make it easier to use the plan. The individual activities for which the plan proposes specific rules are:

- Combustion activities;
- Incineration and cremation;
- Drying and kiln processes;
- Dust generating activities;
- Waste processes;
- Food, animal or plant matter processes;
- Chemical processes;
- Ventilation, displacement or dispensing of *motor fuels*;
- Metallurgical processes; and
- Production land activities and *intensive livestock farming*.

Some of these activities are also dealt with in Chapter 5, Discharges to Land or Water, in particular discussion on the management of adverse effects from *landfills* and contaminated sites.

#### 4.1.11 Global Air Quality

Global air quality is an issue for the Auckland Region as some local and regional activities contribute to an effect on global air quality while changes in global air quality may affect the Auckland Region. There are two main global air quality issues of relevance to the Auckland Region:

- *Greenhouse gas* emissions and their contribution to climate change and its effects; and

Destruction of the *ozone layer* by *ozone depleting substances*.

#### 4.1.11.1 Greenhouse Gases

*Greenhouse gases* have been found to contribute to climate change as noted by the Intergovernmental Panel on Climate Change (IPCC). Although anthropogenic effects on climate have been difficult to distinguish from natural background climate variability and change, in 2001 the IPCC concluded that 'most of the warming observed over the last 50 years is attributable to human activities' and 'human influences will continue to change atmospheric composition throughout the 21<sup>st</sup> century'.

The Kyoto Protocol will commit New Zealand to returning our emissions of *greenhouse gases* back to 1990 levels, on average, or to take responsibility for mitigation of emissions in excess of 1990 levels, over 2008 – 2012 and to show 'demonstrable progress' on meeting these levels by 2005, including ratification of the Kyoto Protocol. Central government is a party to the Kyoto Protocol and therefore has primary responsibility for controlling greenhouse gas emissions within New Zealand.

New Zealand is a minor contributor of global greenhouse gas emissions, but has a unique greenhouse gas emission profile with a very high ratio of non-CO<sub>2</sub> greenhouse gas emissions to CO<sub>2</sub>. However, in the last decade our CO<sub>2</sub> emissions from the energy and industrial sectors increased at a greater rate than non-CO<sub>2</sub> emissions. Over the next decade CO<sub>2</sub> is likely to become the major greenhouse gas in New Zealand. The burning of *fossil fuels* produces most of Auckland Region's CO<sub>2</sub> emissions. Transport (motor vehicles) is the main sector responsible for these emissions followed by industry and electricity generation.

#### 4.1.11.2 Ozone Depleting Substances

Life on earth depends on the protective properties of the stratospheric *ozone layer*. *Ozone depleting substances* adversely affect the stratospheric *ozone layer* by reducing the overall thickness of the layer and causing holes to occur in it. Depletion of the *ozone layer* increases the levels of ultraviolet radiation (UV-B) reaching the earth. UV-B can cause eye, skin and DNA damage to humans and other animals and can retard plants and algal growth. Central government is a party to the international agreement known as the Montreal Protocol on Substances that Deplete the Ozone Layer. Central government therefore has primary responsibility for controlling the use of *ozone depleting substances*.

The Ozone Layer Protection Act 1996 and associated regulations is New Zealand's principal tool for implementing its obligations under the Montreal Protocol. This Act (and its predecessor) has phased out most *ozone depleting substances*. Provided suitable replacements can be found which ensure adequate quarantine and pre-shipment treatment of imported and exported goods, methyl bromide will be phased out by 2005 and hydrochlorofluorocarbons (which generally replaced the use of chlorofluorocarbons) will be phased out by 2015.

## 4.2 Issues

**4.2.1** Poor air quality can seriously affect human health, *amenity* and the environment. Air pollution in some areas of the Auckland Region is already exceeding acceptable levels for health and *amenity*. At the current rate of growth it is likely that air pollution levels will worsen and the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets will not be achieved unless there are very significant reductions in emissions from *mobile sources*, in particular motor vehicles, and *domestic fires*.

**4.2.2** Air quality in the Auckland Region is primarily affected by the cumulative impact of discharges into air from a range of individual sources, in particular emissions from motor vehicles and *domestic fires*. These discharges cause adverse effects on human health, *amenity* and the environment, in particular reduced visibility, photochemical smog, brown hazes and secondary aerosols. With continuing population growth in

the region the use of motor vehicles and *domestic fires* is increasing and cumulative impacts from these sources is likely to worsen.

- 4.2.3** Individual activities that discharge contaminants into air in the Auckland Region, such as *outdoor burning*, the application of *agrichemicals*, *intensive livestock farming* and industrial *processes*, if not adequately managed, may cause localised adverse effects on human health, *amenity* and the environment.
- 4.2.4** Adverse effects on air quality can be exacerbated by land use, such as the inappropriate location of activities that are discharging contaminants into air or the inappropriate location of parties sensitive to activities that discharge contaminants into air (*reverse sensitivity*). Population growth within the Auckland Region is intensifying pressure on competing and incompatible land uses.
- 4.2.5** *Mobile sources*, in particular the private motor vehicle, are the Auckland Region's largest contributor to regional air pollution. Ambient levels of particulate, carbon monoxide and nitrogen dioxide due to motor vehicles are already unacceptable. The current rate of growth in vehicle travel and congestion, the age of the vehicle fleet, the lack of requirements to continue to use or maintain air emission reduction equipment on motor vehicles, poor quality diesel fuel, and low passenger transport use mean that the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets are unlikely to be met. Discharges of contaminants from motor vehicles also have adverse effects on stormwater quality.
- 4.2.6** *Domestic fires* are the Auckland Region's second largest contributor to regional air pollution causing adverse effects such as brown hazes and secondary aerosols. *Domestic fires*, particularly in urban residential areas, also cause localised adverse effects such as odour and smoke.
- 4.2.7** *Outdoor burning* in the *urban areas* of the Auckland Region causes significant localised nuisance such as odour or smoke. Furthermore, the *outdoor burning* of some types of *waste* anywhere in the region can discharge large quantities of *toxic substances* into the air. *Outdoor burning* in certain circumstances by particular organisations such as emergency service providers is however necessary to provide for the safety and wellbeing of a community. Other organisations such as Ministry of Agriculture and Forestry, and those who administer the Health Act (1956) may also need to have material destroyed by *outdoor burning*.
- 4.2.8** Activities that discharge contaminants into air such as industrial *processes* and *waste* management activities can discharge potentially *hazardous air pollutants* and reduce *amenity*, in particular through odour, dust and visible emissions. Activities such as chemical reactions which may lead to explosive risk or discharge of hazardous pollutants may place people or the environment at considerable risk, while the probability of this occurring is generally low.
- 4.2.9** The discharge of contaminants into air in the Auckland Region impact on national and global air quality. Similarly, global air quality impacts on the Auckland Region. The two major global issues of significance to the Auckland Region are climate change, through the discharge of *greenhouse gases*, and the destruction of the *ozone layer* through the discharge of *ozone depleting substances*.

## 4.3 Objectives

- 4.3.1** To maintain air quality in those parts of the Auckland Region that have excellent or good air quality and enhance air quality in those parts of the Region where it is poor or unacceptable.

(This Objective relates to Issues 4.2.1, 4.2.2, 4.2.3 and 4.2.5 to 4.2.8)

- 4.3.2** To avoid, remedy or mitigate significant adverse effects from the discharge of contaminants into air on human health, *amenity* and the environment. In particular:
- (a) To achieve the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets (given in Tables 4.1 and 4.2);
  - (b) To maintain or enhance existing *amenity* within the Urban Air Quality Management Areas; and
  - (c) To maintain existing levels of *amenity* within Industrial and Rural Air Quality Management Areas and the Coastal Marine Air Quality Management Area.
- (This Objective relates to Issues 4.2.1 to 4.2.8)*
- 4.3.3** To avoid, remedy or mitigate the cumulative and synergistic impacts of discharges into air from individual sources, in particular from *mobile sources* and *domestic fires* in *urban areas*.
- (This Objective relates to Issues 4.2.1, 4.2.2, 4.2.5, 4.2.6 and 4.2.8)*
- 4.3.4** To avoid or minimise competing and incompatible land uses that aggravate any adverse effects from discharges of contaminants into air.
- (This Objective relates to Issues 4.2.1 and 4.2.3 to 4.2.8)*
- 4.3.5** To avoid *reverse sensitivity* conflict from the discharge of contaminants into air where sensitive activities that have differing air quality expectations are located in close proximity to activities that discharge contaminants into air.
- (This Objective relates to Issues 4.2.1 and 4.2.3 to 4.2.8)*
- 4.3.6** To minimise the discharge of contaminants into air from *mobile sources* while enabling sustainable development and protecting the health and social well being of the people of the Auckland Region.
- (This Objective relates to Issues 4.2.1, 4.2.2 and 4.2.5)*
- 4.3.7** To minimise the discharge of contaminants into air from *domestic fires* in *urban areas* while protecting the health and social well being of the people of the Auckland Region.
- (This Objective relates to Issues 4.2.1, 4.2.2, 4.2.3 and 4.2.6)*
- 4.3.8** To avoid adverse effects of odour, smoke and *hazardous air pollutants* from *outdoor burning*.
- 4.3.9** To minimise the adverse effects from *outdoor burning* of vegetation and dead on-farm animal stock in rural areas and controlled burning by emergency service providers providing for community safety and wellbeing.
- (This Objective relates to Issues 4.2.1, 4.2.3, 4.2.4 and 4.2.7)*
- 4.3.10** To avoid significant adverse effects on human health and the environment arising from the discharge of contaminants into air from individual sources including industrial *processes*, *waste* management activities and *intensive livestock farming*.
- (This Objective relates to Issues 4.2.1, 4.2.3, 4.2.4 and 4.2.8)*
- 4.3.11** To encourage the reduction of the discharge into air of *greenhouse gases* and *ozone depleting substances* in accordance with central government legislation or policy while enabling sustainable development and protecting the health and social well being of the people of the Auckland Region.
- (This Objective relates to Issue 4.2.9).*

## 4.4 Policies

### General

- 4.4.1** To have regard to the Objectives and Policies of Chapters 2.1, 2.2 and 2.3 in assessing any resource consent to discharge contaminants into air.  
*(This Policy relates to Objectives 4.3.1 to 4.3.11)*
- 4.4.2** The relevant provisions of the Auckland Regional Plan: Coastal shall be considered in the assessment of any proposal to discharge contaminants into air within the Coastal Marine Air Quality Management Area.  
*(This Policy relates to Objectives 4.3.1 to 4.3.11. See also the following Objectives of the Regional Plan: Coastal 3.3.1, 3.3.2, 4.3.1, 4.3.2, 5.3.1, 5.3.2, 5.3.3, 6.3.1, 6.3.2, 8.3.1, 9.3.1, 9.3.2, 10.3.1, 10.3.2 and 10.3.3)*
- 4.4.3** Significant adverse effects from the discharge of contaminants into air from any source shall be avoided; where this is not practicable for the cumulative effects from small sources, the effects of such discharges shall be minimised.  
**Explanation:**  
*Although many adverse effects can be avoided, for some activities for example motor vehicles and **domestic fires**, it is only practicable to minimise the discharge.*  
*(This Policy relates to Objectives 4.3.1, 4.3.2, 4.3.3, 4.3.6 and 4.3.7)*
- 4.4.4** The discharge of contaminants into air that significantly compromises the Auckland Region's ability to meet the **National Environmental Standards for Ambient Air Quality** and the Auckland Regional Air Quality Targets shall be considered inappropriate.  
**Explanation:**  
In assessing individual activities that discharge contaminants into air consideration will be given to their impact on and relevant contribution to the **National Environmental Standards for Ambient Air Quality** and the Auckland Regional Air Quality Targets.  
*(This Policy relates to Objectives 4.3.1, 4.3.2, 4.3.3, 4.3.6 and 4.3.7)*
- 4.4.5** The discharge of contaminants into air shall be considered inappropriate where:
- It causes, or is likely to cause, noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash, beyond the **boundary** of the **premises** on which the discharge is occurring; or
  - It causes, or is likely to cause, noxious, dangerous, offensive or objectionable visible emissions; or
  - It is a **hazardous air pollutant** and causes, or is likely to cause, adverse effects on human health or the environment, beyond the **boundary** of the **premises** on which the discharge is occurring; or
  - It causes, or is likely to cause, spray beyond the **boundary** of the **premises** on which the discharge is occurring (overspray) from the application of paint or powder coatings.
- Explanation:**  
*It is considered that to avoid significant adverse effects, activities should comply with this policy and this is the basis for permitting most activities on the proviso that they meet the conditions of Rule 4.5.1.*  
*A discussion on the terms 'noxious', 'dangerous', 'offensive' and 'objectionable' appears below Rule 4.5.1.*  
*(This Policy relates to Objectives 4.3.1, 4.3.2, 4.3.3, 4.3.6, 4.3.7, 4.3.8 and 4.3.11)*

- 4.4.6** In assessing noxious, dangerous, offensive or objectionable adverse effects from odour, dust, particulate, smoke or ash and visible discharges, consideration will be given to the Frequency, Intensity, Duration, Offensiveness and Location (FIDOL) of the discharge.

**Explanation:**

*FIDOL factors will be considered in combination, as no single FIDOL factor determines how noxious, dangerous, offensive or objectionable odour or dust is. 'Location' includes the receiving environment – part of this assessment includes the relevant provisions of the underlying District Plan zones. For example a low frequency, high intensity odour or dust event may be objectionable, as may be a high frequency, low intensity odour or dust event. If the odour or dust is assessed as being offensive or objectionable, the discharger may be asked to take whatever action is necessary to avoid, remedy or mitigate the effects of the discharge and/or provide further information. Where circumstances warrant, enforcement action may be taken in the form of an abatement notice, infringement notice, enforcement order, application of prosecution pursuant to the Resource Management Act 1991.*

*(This Policy relates to Objectives 4.3.4, 4.3.5, 4.3.7, 4.3.8 and 4.3.10)*

- 4.4.7** To avoid or minimise adverse effects from competing and incompatible land uses, including **reverse sensitivity**, activities shall:
- (a) Locate within the Air Quality Management Area suitable to the nature of the activity; and/or
  - (b) Manage the effects of their discharges of contaminants into air in a manner that is commensurate with the receiving environment (including the relevant provisions of the underlying District Plan zones); and/or
  - (c) Maintain adequate separation distances.

**Explanation:**

*Where sensitive land uses are not sufficiently separated from air discharges, amenity conflicts may occur and quality of life in the sensitive area may be compromised or may not meet expectations. For some activities, even with good pollution control technology and sound practice, there may still be unintended or accidental emissions that must be anticipated and allowed for. Provision of an adequate buffer distance allows for the segregation of noxious, dangerous, offensive or objectionable activities from other sensitive land uses. In some instances existing activities not located in Industrial Air Quality Management Areas that discharge contaminants into air may be able to avoid adverse effects on neighbouring sensitive land uses through the adoption of adequate control equipment. However a greater level of control would be expected than if the activity were located in an Industrial Air Quality Management Area; more stringent assessment criteria would be used in an assessment of effects because of the sensitivity of the receiving environment.*

*(This Policy relates to Objectives 4.3.2, 4.3.4, 4.3.5, 4.3.8 and 4.3.10)*

- 4.4.8** Potential conflicts between incompatible land uses along the boundaries of Air Quality Management Areas shall be minimised. This should be undertaken through the use of zoning and development controls in District Plans and the provision of buffer distances or notional boundaries where necessary for activities requiring air discharge consents.

**Explanation:**

*When assessing applications for discharges into air by activities located on the boundaries of Air Quality Management Areas, setbacks from boundaries of the establishment of a notional boundary may be required to ensure that conflicts between incompatible land uses are minimised and that the amenity of adjacent sensitive land uses are minimised and that the amenity of adjacent sensitive land uses*



*is maintained. When rural land is released for new urban development, the potential for reverse sensitivity must be taken into account. Development controls should be utilised so that the new development adjacent to existing uses in Rural or Industrial Air Quality Management Areas does not cause conflicts between the existing land use and the new development.*

*(This Policy relates to Objectives 4.3.2, 4.3.4, 4.3.5, 4.3.8 and 4.3.10)*

- 4.4.9** The Best Practicable Option shall be employed in accordance with the definition in Section 2 of the RMA to avoid or minimise significant adverse effects from the discharge of contaminants into air.

**Explanation:**

*Guidance on the Best Practicable Option for some discharges of contaminants into air is provided in various publications and relevant codes of practice.*

*(This Policy relates to Objectives 4.3.1, 4.3.3 and 4.3.6 to 4.3.11)*

- 4.4.10** A precautionary approach shall be adopted where there is scientific uncertainty and a significant risk of serious effects or irreversible harm to the environment from any proposal to discharge contaminants into air.

**Explanation:**

*A precautionary approach is likely to be used for any proposal to discharge contaminants into air where the relative contributions of sources of contaminants into air or the nature or extent of the adverse effects are uncertain.*

*(This Policy relates to Objectives 4.3.1 to 4.3.11)*

- 4.4.11** The use of clean burning fuels and the efficient use of energy shall be encouraged.

*(This Policy relates to Objectives 4.3.2, 4.3.3 and 4.3.7 to 4.3.11)*

- 4.4.12** The discharge of contaminants into air from **outdoor burning**, land cultivation or the application of **fertiliser** or lime in an Urban Air Quality Management Area

- a) Where the land does not have an operative urban zoning under a district plan; and
- b) Where production land activities are permitted activities under the relevant district plan

may be undertaken in accordance with the provisions relating to Rural Air Quality Management Areas until the zoning is changed to an operative urban zoning through district plan statutory processes.

**Explanation:**

*In some Urban Air Quality Management Areas there are areas that have been identified for future urban growth or expansion in district plans but are currently used predominantly for production land activities. This policy enables these activities to continue until the underlying zoning is changed to an operative urban zoning through district plan statutory processes under the First Schedule of the RMA.*

- 4.4.13** The discharge of contaminants into air from burning of **wastes** that discharge **hazardous air pollutants** shall be avoided.

*(This Policy relates to Objectives 4.3.2, 4.3.3 and 4.3.7 to 4.3.10)*

- 4.4.14** In assessing the effects of discharges of contaminants into air, all activities that discharge contaminants into air undertaken on that **premises** shall be considered.

**Explanation:**

*This enables assessment of all discharges of contaminants into air from a **premise** to ensure that cumulative adverse effects are considered.*

*(This Policy relates to Objectives 4.3.3, 4.3.8 and 4.3.10)*



**4.4.15** In assessing the effects of discharges of contaminants into air, particular regard shall be had to:

- (a) Adverse effects on the environment, including *amenity*, human health and property;
- (b) The methods to avoid or minimise adverse effects on the environment;
- (c) The location of the activity and the proximity of other activities sensitive to the discharges;
- (d) Any cumulative adverse effects on the environment; and
- (e) Adverse effects on aircraft stability and/or safety from large-scale combustion sources assessed as a Discretionary Activity under Rule 4.5.32.

**Explanation:**

*Regard shall also be had to any relevant technical publications, industry codes of practice, national guidelines or regulations.*

*(This Policy relates to Objectives 4.3.1 to 4.3.10)*

**Mobile Sources**

**Explanation:**

*The policies that follow are intended to provide guidance in assessing the effects from transport projects such as transport networks, new roads and alternatives to private motor vehicles on air quality. The primary methods for implementing these policies will be through land use planning procedures and transport strategies. Alternatives to the private motor vehicle can significantly reduce discharges of contaminants into air.*

**4.4.16** Any land use proposals with transportation effects, and any new transport projects or proposals for redeveloping transport infrastructure which have the potential to adversely affect air quality, should be assessed at a level considered appropriate for the size and scale of the project or proposal, and shall consider the following:

- (a) Effects on human health;
- (b) Effects on regional and local air quality; and
- (c) Any alternatives or methods to mitigate effects on air quality or minimise the discharge of contaminants into air.

*(This Policy relates to Objectives 4.3.1 to 4.3.6 and 4.3.10)*

**4.4.17** In the management of the road network, *road controlling authorities* shall consider adverse effects on air quality.

*(This Policy relates to Objectives 4.3.1 to 4.3.6 and 4.3.10)*

**4.4.18** Measures to reduce emissions of contaminants into air from individual motor vehicles shall be encouraged.

*(This Policy relates to Objectives 4.3.1 to 4.3.6, 4.3.10 and 4.3.11)*

**4.4.19** The development of passenger transport, ridesharing, cycling, walking, tele-working and other measures to reduce the need to use motor vehicles to move people and goods around the Auckland Region shall be encouraged and supported.

*(This Policy relates to Objectives 4.3.1 to 4.3.4, 4.3.6, 4.3.10 and 4.3.11)*

**Domestic Fires**

**Explanation:**

*AS/NZS 4013:1999 (Domestic Solid Fuel Burning Appliances – Method for determination of flue gas emission) includes a maximum allowable appliance particulate emission factor of 4.0 g/kg of fuel burned for appliances without catalytic*

*combustors and 2.25 g/kg for appliances with catalytic combustors and effectively defines Best Practicable Option for domestic fire manufacture. Correctly installing and operating a domestic fire significantly reduces any discharge of contaminants into air.*

- 4.4.20** Any discharge of contaminants into air from new **solid fuelled domestic fires** in Urban, Coastal Marine and Industrial Air Quality Management Areas shall discharge at a particulate emission rate of no more than 4.0 g/kg of fuel burned (for appliances without catalytic combustors) and 2.25 g/kg (for appliances with catalytic combustors) determined using the New Zealand Standard AS/NZS 4013:1999 (Domestic Solid Fuel Burning Appliances – Method for determination of flue gas emission) or a functional equivalent test method for batch-fed appliances on the list of approved methods held by the ARC.

*(This Policy relates to Objectives 4.3.1 to 4.3.4, 4.3.7 and 4.3.10)*

- 4.4.21** The correct installation and operation of efficient and effective **domestic fires** shall be encouraged.

*(This Policy relates to Objectives 4.3.1 to 4.3.4, 4.3.7, 4.3.10 and 4.3.11)*

### **Outdoor Burning**

#### **Explanation:**

*Outdoor burning can cause significant nuisance in populated areas but may be required where there are no practicable alternatives.*

- 4.4.22** The disposal of materials by **outdoor burning** or in a single chamber or **backyard incinerator** is inappropriate in Urban, Industrial and Coastal Marine Air Quality Management Areas.

*(This Policy relates to Objectives 4.3.1 to 4.3.5, 4.3.8 and 4.3.10)*

- 4.4.23** The disposal of materials (except vegetation and dead on-farm animal stock) by **outdoor burning** or in a single chamber or **backyard incinerator** is inappropriate in Rural Air Quality Management Areas and in the Waiheke Outdoor Burning Area.

*(This Policy relates to Objectives 4.3.1 to 4.3.5, 4.3.8 and 4.3.10)*

- 4.4.24** The discharge of contaminants into air from outdoor burning shall generally be considered appropriate where the adverse effects are minimised and where:
- (a) The Ministry of Agriculture and Forestry, and designated authorities under the Health Act (1956) requires that the material be burnt; or
  - (b) The fire is for the purpose of **Emergency Service Training and/or Investigation**; or
  - (c) There are no practicable alternatives to burning; or
  - (d) The fire is for the purpose of a controlled public display for a celebration.

*(This Policy relates to Objectives 4.3.1 to 4.3.5, 4.3.8 and 4.3.10)*

### **Other Activities That Discharge Contaminants Into Air**

- 4.4.25** Significant adverse effects, in particular effects on human health, and/or reduced **amenity**, from the discharge into air of odour, dust, particulate, smoke, ash, **hazardous air pollutants**, overspray or visible emissions in an Urban Air Quality Management Area shall be considered inappropriate.

*(This Policy relates to Objectives 4.3.1 to 4.3.10)*

- 4.4.26** The discharge of contaminants into air from **outdoor burning**, land cultivation or the application of **fertiliser** or lime in an Urban Air Quality Management Area:
- (a) Where the land does not have an operative urban zoning under a district plan; and

- (b) Where production land activities are permitted activities under the relevant district plan

may be undertaken in accordance with the provisions relating to Rural Air Quality Management Areas until the zoning is changed to an operative urban zoning through district plan statutory processes.

**Explanation:**

*In some Urban Air Quality Management Areas there are areas that have been identified for future urban growth or expansion in district plans but are currently used predominantly for production land activities. This policy enables these activities to continue until the underlying zoning is changed to an operative urban zoning through district plan statutory processes under the First Schedule of the RMA.*

- 4.4.27** In assessing the effects of discharges into air of odour, dust, particulate, smoke, ash, **hazardous air pollutants**, overspray or visible emissions in an Industrial Air Quality Management Area recognition shall be given to the nature of activities usually associated with industrial **processes** and the intrinsic character of industrial areas, and that a lower level of **amenity** can be expected than that expected in Urban Air Quality Management Areas.

*(This Policy relates to Objectives 4.3.1, 4.3.2, 4.3.4, 4.3.5, 4.3.8 and 4.3.10)*

- 4.4.28** In assessing the effects of discharges into air of odour, dust, particulate, smoke, ash, hazardous air pollutants, overspray or visible emissions in a Rural Air Quality Management Area recognition shall be given to the nature of activities associated with the primary production sector and the rural character of rural areas.

*(This Policy relates to Objectives 4.3.1 to 4.3.10)*

- 4.4.29** The discharge of contaminants into air from waste management processes in the Auckland Region shall be minimised by:

- (a) Minimising the quantity of **waste** generated; and
- (b) Reusing and recycling **waste** materials.

*(This Policy relates to Objectives 4.3.2, 4.3.4, 4.3.5, 4.3.10 and 4.3.11)*

- 4.4.30** The discharge of contaminants into air from a waste management process shall generally be considered appropriate where:

- (a) The **process** is located outside an Urban Air Quality Management Area; and
- (b) The **process** encourages the reduction, reuse or recycling of **waste** materials that may discharge contaminants into air; and
- (c) The **composting** of **waste** is fully enclosed
- (d) Or, notwithstanding (a) to (c) above, it is within an existing notional odour boundary determined through designation or an instrument registered against a land title.

**Explanation:**

*While the production of **waste** is discouraged, it does occur and needs to be managed appropriately. If **waste management processes** are not managed in accordance with best practice, they can cause significant adverse effects on air quality, particularly odour. It is recognised that in suitable locations and with adequate environmental controls **recycling stations** and **refuse transfer stations** may be appropriate in Urban Air Quality Management Areas.*

*(This Policy relates to Objectives 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.10 and 4.3.11)*

### Global Air Quality

#### *Explanation:*

*Global air quality is impacted on by discharges from all over New Zealand and therefore to enable consistency is more appropriately addressed at a national level.*

- 4.4.31** Central government legislation and policy to manage emissions of **greenhouse gases** and the use of **ozone depleting substances** that can be implemented effectively at least cost to the general public and industry in the Auckland Region will be supported and promoted.

*(This Policy relates to Objectives 4.3.2, 4.3.3, 4.3.6, 4.3.7, 4.3.10 and 4.3.11)*

## 4.5 Rules

#### *Notes:*

1. *The rules in this chapter of the Plan do not apply to electromagnetic radiation (EMR) or the generation of electromagnetic fields (ELF).*
2. *If a **premises** has on site more than one controlled, restricted discretionary, discretionary or non-complying activity specified in the Rules contained in Chapter 4 – Air Quality of this plan, a single application may be made for all specified activities undertaken on that **premises**.*
3. *Permitted activities subject to the rules in this section will also be subject to Rule 4.5.1 with the exception of Rule 4.5.3, and restricted discretionary activities subject to the rules in this section will also be subject to the matters the ARC has restricted its discretion over.*

### General Permitted Activity Rule

- 4.5.1** Unless provided for otherwise in this plan, activities that discharge contaminants into air are Permitted Activities, subject to the following conditions:

- (a) That beyond the **boundary** of the **premises** where the activity is being undertaken there shall be no noxious, dangerous, offensive or objectionable odour, dust, particulate, smoke or ash; and
- (b) That there shall be no noxious, dangerous, offensive or objectionable visible emissions; and
- (c) That beyond the **boundary** of the **premises** where the activity is being undertaken there shall be no discharge into air of **hazardous air pollutants** that does, or is likely to, cause adverse effects on human health, **ecosystems** or property; and
- (d) That beyond the **boundary** of the **premises** where the discharge into air of **agrichemicals** or paint or powder coatings is being undertaken there shall be no drift or overspray from the application.

#### *Explanation:*

##### **1. NOXIOUS, DANGEROUS, OFFENSIVE AND OBJECTIONABLE EFFECTS**

*Policies 4.4.5 and 4.4.6 and Rule 4.5.1 use the terms “noxious,” “dangerous,” “offensive,” and “objectionable.” These terms are also included in Section 17 of the Resource Management Act 1991. They are not defined in the Definitions to this Plan because of the need to take account of case law precedent as it develops, i.e. the Plan cannot override interpretations decided by the judiciary. However, the following notes are intended to provide some guidance for interpreting these terms:*

- a. **NOXIOUS, DANGEROUS** – The Concise Oxford Dictionary defines “noxious” as “harmful, unwholesome.” At the time of writing this Plan, the term “noxious” did not appear to have been defined or considered in case law pertaining to the

Resource Management Act 1991. Noxious effects may include significant adverse effects on the environment (e.g. on plant and animal life) even though the effects may not be dangerous to humans.

“Dangerous” is defined as “involving or causing exposure to harm.” Dangerous discharges include those that cause, or are likely to cause adverse physical health effects, such as discharges containing **toxic concentrations of chemicals**.

- b. **OFFENSIVE, OBJECTIONABLE** – The Concise Oxford Dictionary defines “Offensive” as “... giving or meant to give offence ... disgusting, foul-smelling, nauseous, repulsive ...” “Objectionable” is defined as “open to objection, unpleasant, offensive.” Case law has established that what may be offensive or objectionable under the Resource Management Act 1991 cannot be defined or prescribed except in the most general of terms. Each case will depend upon its own circumstances. Key considerations include:
  - (i) *Location of an activity and sensitivity of the receiving environment* – What may be considered offensive or objectionable in an Urban Air Quality Management Area area, may not necessarily be considered offensive or objectionable in a Rural Air Quality Management Area;
  - (ii) *Reasonableness* – Whether or not an activity is ‘offensive’ or ‘objectionable’ should be determined by a ‘reasonable ordinary person who is representative of the community at large and is neither hypersensitive nor insensitive’, deciding whether the activity is disgusting, nauseous, repulsive or otherwise objectionable.
  - (iii) *Existing uses* – It is important to consider what lawfully established activities exist in an area, i.e. if a new activity requires a permit, the effect of existing discharges of contaminants into air should be considered.

Each investigation of a complaint concerning noxious, dangerous, offensive or objectionable discharges will depend upon the specific circumstances.

In responding to a complaint relating to a breach of condition concerning odour or dust (for a resource consent or permitted activity rule), what may be “offensive or objectionable” will generally be determined by a Council officer, or officers who have experience in odour and dust assessment. In such assessments, officers will generally follow relevant case law principles and take into account the FIDOL factors (Frequency, Intensity, Duration, Offensiveness, and Location). This approach aims to promote consistency in the assessment of odour and dust.

## 2. DISCHARGE OF HAZARDOUS AIR POLLUTANTS

Hazardous Air Pollutants are substances that have the potential to cause significant adverse effects on human health, ecosystems or the environment. Whether a discharge is permitted is dependent on the concentration in the air of the particular substance(s) beyond the boundary of the premises. The concentration at which adverse effects are likely to be caused can differ greatly between different substances.

### General Discretionary Activity Rule

#### 4.5.2

The discharge of contaminants into air that does not comply with Rule 4.5.1 and is not covered by any other rule in this section of the plan is a Discretionary Activity.

#### **Explanation:**

This rule is intended to apply to activities that have not been provided for throughout this section of the plan. Compliance with Rule 4.5.1 will generally be enforced, rather

*than requiring resource users to go through the process of obtaining a consent for activities that are not likely to have more than minor adverse effects on the environment. However some activities may not be able to comply and will therefore require a discretionary resource consent.*

### Mobile Sources

#### Permitted Activities

- 4.5.3** The discharge of contaminants into air created by motor vehicle, aircraft, train, vessel and lawnmower engines including those located on industrial or trade **premises** is a Permitted Activity.

#### *Explanation:*

*Mobile sources such as mobile generators or crushing plants and outdoor burning on mobile sources such as ships are not included in Rule 4.5.3 because of their controllable adverse effects and the need to be treated in the same way as similar stationary sources.*

*Motor vehicle engine emissions are regulated by Central Government. Complimentary regional measures may be considered through the development of the Regional Air Quality Management Strategy. However any regional rules would be promulgated by means of a Variation or Plan Change thus enabling consultation and due process of the Resource Management Act.*

### Domestic Fires

Note 1: Clauses 22, 23 and 24 of the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics) Regulations 2004 (the NES) also have requirements that must be complied with for woodburners on properties of less than 2 hectares. These requirements are in addition to those given in this Plan and are relevant to Rules 4.5.5, 4.5.7 and 4.5.8.

In summary the NES states that woodburners (as defined in the NES) installed after 1 September 2005 on sites of less than 2 hectares must comply with an particulate emission limit of 1.5g/kg of fuel burned and a thermal efficiency of no less than 65%.

The complete wording of the NES can be found at [www.mfe.govt.nz](http://www.mfe.govt.nz)

#### Permitted Activities

- 4.5.4** The discharge of contaminants into air from **domestic fires** fuelled by natural gas or liquid **fossil fuels** is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.5** The discharge of contaminants into air from **solid fuelled domestic fires** installed, replaced (for existing **domestic fires**) or retrofitted (into existing buildings) in Rural Air Quality Management Areas given in Map Series 1 and 1A is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.6** The discharge of contaminants into air from **solid fuelled domestic fires** installed before 1 September 2005 is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.7** The discharge of contaminants into air from **solid fuelled domestic fires** installed, replaced (for existing **domestic fires**) or retrofitted (into existing buildings) in Urban, Coastal Marine and Industrial Air Quality Management Areas on or after 1 September 2005 is a Permitted Activity, subject to the following conditions:
- (a) The **domestic fire** shall be manufactured to comply with a particulate emission

rate of no more than 4.0 g/kg of fuel burned (for appliances without catalytic combustors) and 2.25 g/kg of fuel burned (for appliances with catalytic combustors) calculated by averaging the particulate emissions for high, medium, and low burn rates;

- (b) The discharge into air shall be through a flue system installed so that:
- i The minimum height of the flue system within 3 m from the highest point of the roof shall be 600 mm above that point; and
  - ii The minimum height of the flue system further than 3 m from the highest point of the roof shall be 1000 mm above roof penetration; and
  - iii No part of any building shall lie in or above a circular area described by a horizontal radius of 3 m about the flue system exit; and
  - iv There shall be no penetration of flue gases through nearby windows or other openings, fresh air inlets, mechanical ventilation inlets or exhausts, or the like; and
- (c) Conditions (a) to (c) of Rule 4.5.1.

**Explanation:**

*Determination of the particulate emission rate shall be by the New Zealand Standard AS/NZS 4013:1999 (Domestic solid fuel burning appliances – Method for determination of flue gas emissions) or a functional equivalent test method for batch fed appliances on the list of approved methods held by the ARC.*

*Guidance on correct stack installation specifications including diagrammatic illustration and methods for minimising penetration of flue gases through nearby window or other building inlets are provided in Section 4.9.1 of the New Zealand Standard AS/NZS 2918:2001 (Domestic solid fuel burning appliances – Installations). Figure 4.9 (Minimum Height of Flue System Exit) from AS/NZS 2918:2001 (Domestic solid fuel burning appliances – Installations) has been reproduced in Schedule 6 with permission from Standards New Zealand to provide further guidance.*

*In general, to minimise the discharge of contaminants into air from **domestic fires** and to comply with Rule 4.5.1 a fire should:*

- *Use wood that is **dry and well seasoned** and not use **waste/fuels** that are prohibited (see Rules 4.5.9 and Rules 4.5.10) such as wood which is painted, or treated; and*
- *Have sufficient air supply to allow the fire to burn brightly (Burn Bright, Burn Right).*

***Domestic fires** that will comply with Rule 4.5.7 include solid fuel burning appliances, and commercially designed open fireplaces with double burning capacity. **Domestic fires** that will not comply with Rule 4.5.7 currently include most potbellies, coal ranges and brick open fireplaces.*

**Prohibited Activities**

**4.5.8** The discharge of contaminants into air from **domestic fires** that do not comply with Rules 4.5.4, 4.5.5, 4.5.6 or 4.5.7 is a Prohibited Activity.

**4.5.9** The discharge of contaminants into air from the burning of **waste** in **domestic fires** is a Prohibited Activity, including but not limited to:

- (a) **Refuse;**
- (b) Wood that is painted, tanalised (treated with copper, chrome and arsenic) or treated with preservatives or impregnated with chemicals (including chipboard);



- (c) Organic materials including **green waste(s)** and vegetation but excluding wood, paper, and **fossil fuels**; and
- (d) Plastic, rubber, paint, used (**waste**) oil, motor oil, and solvents.

**4.5.10** The discharge of contaminants into air from a domestic fire burning fuel with a sulphur content exceeding 0.5 per cent (by weight) or burning wood with a moisture content exceeding 25% (by dry weight) is a Prohibited Activity.

**Explanation:**

*Most commercially available liquid fuels contain significantly less than 0.5 per cent sulphur, and most of the coalfields within the North Island produce low sulphur coal, i.e. less than 0.5 per cent sulphur.*

**Outdoor Burning**

**Explanation:**

*This section of the plan does not cover accidental fires (such as house fires) or the use of explosives, for example fireworks, and explosives for the blasting of rock.*

Rules 4.5.13, 4.5.18 and 4.5.20 include the burning of buildings and other materials for investigating the effects of fires and training firefighters in responding to fires, and generally applies to such parties as the New Zealand Fire Service, New Zealand Navy and airport fire response services.

**Permitted Activities**

**4.5.11** The discharge of contaminants into air from the outdoor combustion of natural gas, liquid **fossil fuels**, solid fuels or untreated wood where the fuel has a sulphur content of less than 0.5 per cent (by weight), for the purpose of heating or cooking is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

**Explanation:**

*This rule permits the operation of fires for cooking and heating, including **barbeques**, **umus**, **hangis**, **domestic smokehouses** and other **ethnic cooking fires**, and **braziers** and **outdoor heaters**, but excludes large fires, for example **bonfires**.*

**4.5.12** Within the Rural Air Quality Management Area, Urban Air Quality Management Areas which do not have an operative urban zoning under the relevant district plan, and the Waiheke Outdoor Burning Area given in Map Series 1 and 1A, the discharge of contaminants into air from the **outdoor burning** or burning within a backyard or **single chamber incinerator**, of untreated wood, paper, vegetation (including **green waste(s)**), and no more than 1.5 tonnes per day of dead on-farm animal stock is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

**Explanation:**

*The Waiheke Outdoor Burning Area has been included within Rule 4.5.12 as the Auckland City (Hauraki and Gulf Islands Section) District Plan 1996 land use zoning is intended to preserve the predominantly **rural character** of the area and is not intended for urban development.*

*In general to minimise the discharge of contaminants into air from **outdoor burning** and burning within a backyard or **single chamber incinerator**, to comply with Rule 4.5.1 a fire should generally:*

- *Use wood or vegetation which is **dry and well seasoned**;*
- *Be located as far as practicable from adjacent **premises**;*
- *Be supervised;*
- *Be located at least 3 metres from any combustible material including buildings, fences, hedges and trees;*
- *Be undertaken in accordance with any instructions provided by the manufacturer if vegetation has been treated or sprayed by an **agrichemical**; and*



- *Be undertaken in suitable weather conditions, for example, in accordance with the New Zealand Fire Service's Rural Fire Weather Index System.*

**4.5.13** The discharge of contaminants into air from the burning of any material for the purpose of *Emergency Service Training and Investigation* activities is a Permitted Activity, subject to Rule 4.5.1 (a), (b) and (d) and the following conditions:

- All adjacent neighbours shall be notified at least 48 hours prior to the fire being lit; and
- The ARC and the relevant *Territorial Authority/ies* shall be notified at least 7 days in advance of the following information:
  - the location of the fire
  - the duration of the fire
  - contact details of the person/s overseeing the fire; and
- The New Zealand Fire Service or the Auckland Airport Fire Service (in the case of fires at Auckland International Airport) shall be in attendance for the duration of the fire and the lighting, burning and subsequent extinguishing of the fire shall be undertaken under the supervision and direction of the New Zealand Fire Service or the Auckland Airport Fire Service; and
- The fire is not in an Urban or Coastal Air Quality Management Area.

#### Restricted Discretionary Activities

**4.5.14** The discharge of contaminants into air from the outdoor combustion of natural gas, liquid *fossil fuels*, solid fuels or untreated wood where the fuel has a sulphur content of less than 0.5 per cent (by weight), for the purpose of heating or cooking that does not comply with Rule 4.5.11 is a Restricted Discretionary Activity.

**4.5.15** Within the Rural Air Quality Management Area, Urban Air Quality Management Areas which do not have an operative urban zoning under the relevant district plan, and the Waiheke Outdoor Burning Area given in Map Series 1 and 1A, the discharge of contaminants into air from the *outdoor burning* or burning within a backyard or *single chamber incinerator*, of untreated wood, paper, vegetation (including *green waste(s)*), and no more than 1.5 tonnes per day of dead on-farm animal stock that does not comply with Rule 4.5.12 is a Restricted Discretionary Activity.

**4.5.16** Within the Rural Air Quality Management Area, Urban Air Quality Management Areas which do not have an operative urban zoning under the relevant district plan, and the Waiheke Outdoor Burning Area given in Map Series 1 and 1A, the discharge of contaminants into air from the *outdoor burning* or burning within a backyard or *single chamber incinerator*, of more than 1.5 tonnes per day of dead on-farm animal stock is a Restricted Discretionary Activity.

#### *Explanation:*

*While the outdoor burning of stock as a method of disposal is discouraged, it may be necessary in emergency situations.*

**4.5.17** Outside the Rural Air Quality Management Areas given in Map Series 1 and 1A, the discharge of contaminants into air from *outdoor burning* or burning within a backyard or *single chamber incinerator*, for the purpose of:

- Controlled public displays for celebrations (e.g. Guy Fawkes bonfires); and
- Disposing of any material required to be burnt by Ministry of Agriculture and Forestry, and designated authorities under the Health Act (1956)

is a Restricted Discretionary Activity.

- 4.5.18** The discharge of contaminants into air from the burning of any material for the purpose of *Emergency Service Training and Investigation* activities which does not comply with Rule 4.5.13 is a Restricted Discretionary Activity.

#### Matters for Discretion

- 4.5.19** The ARC shall restrict the exercise of its discretion to the following matters in assessing applications under Rules 4.5.14, 4.5.15, 4.5.16, 4.5.17 and 4.5.18:

- (a) The location of the fire;
- (b) The need for the fire and consideration of alternatives;
- (c) The quantity and type of material to be burnt and any effects arising from the fire;
- (d) The methods to control and minimise the discharge from the fire;
- (e) The length of time the fire will burn;
- (f) Monitoring; and
- (g) The duration and review of the consent.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Explanation:

Restricted Discretionary applications to discharge contaminants into air from *outdoor burning* (Fire Permits) are unlikely to be notified, unless they are for long-term burning activities, extremely large fires or occur in sensitive locations.

Fire permits are required under various legislation and where practicable the issuing of one combined permit will be encouraged.

#### Prohibited Activities

- 4.5.20** The discharge of contaminants into air from the burning of *waste* (excluding untreated wood, paper, vegetation (including *green waste(s)*) and dead on-farm animal stock in Rural Air Quality Management Area, Urban Air Quality Management Areas which do not have an operative urban zoning under the relevant district plan, and the Waiheke Outdoor Burning Area and excluding *Emergency Service Training and/or Investigation* provided for in Rules 4.5.13 and 4.5.18) by *outdoor burning*, or in a backyard or *single chamber incinerator*, including but not limited to:

- (a) Municipal, commercial, institutional, domestic or industrial *wastes*;
- (b) *Refuse*;
- (c) Wood that is painted, tanalised (treated with copper, chrome and arsenic) or treated with preservatives or impregnated with chemicals (including chipboard);
- (d) Plastic (e.g. *agrichemical* containers and silage wrap), rubber (e.g. tyres), paint, used (*waste*) oil, motor oil, solvents and bituminous materials;
- (e) *Sewage* sludge or screenings;
- (f) Coated or covered metal cable, motor vehicles or parts of motor vehicles or any other mixture or combination of metals and combustible substances;

- (g) Pathological, clinical or veterinary **wastes**;
- (h) Solid, liquid or gaseous chemical **wastes**; and
- (i) Construction or demolition **waste**

is a Prohibited Activity.

**4.5.21** The discharge of contaminants into air from the burning of any material by **outdoor burning**, or burning in a backyard or **single chamber incinerator** within the Urban, Industrial and Coastal Marine Air Quality Management Areas shown in Map Series 1 and 1A, excluding activities specified in Rules 4.5.11, 4.5.12, 4.5.17 and 4.5.18 is a Prohibited Activity.

**4.5.22** The discharge of contaminants into air from the outdoor combustion of a fuel with a sulphur content equal to or greater than 0.5 per cent (by weight) is a Prohibited Activity.

**4.5.23** The discharge of contaminants into air from the use of road seal burners is a Prohibited Activity.

#### **Other Activities That Discharge Contaminants Into Air (Rules 4.5.24 – 4.5.122)**

##### **Explanation:**

*The rules in this section of the Plan relate to the following activities:*

- *Combustion Activities – Rules 4.5.25 - 4.5.32*
- *Incineration and Cremation – Rules 4.5.33 - 4.5.36*
- *Drying and Kiln Processes – Rules 4.5.37 - 4.5.43*
- *Dust Generating Activities – Rules 4.5.44 - 4.5.70*
- *Waste Processes – Rules 4.5.71 - 4.5.89*
- *Food, Animal or Plant Matter Processes – Rules 4.5.90 - 4.5.93*
- *Chemical Processes – Rules 4.5.94 - 4.5.99*
- *Ventilation, Displacement or Dispensing of Motor Fuels – Rules 4.5.100 - 4.5.103*
- *Metallurgical Processes – Rules 4.5.104 - 4.5.114 and*
- *Production Land Activities and Intensive Livestock Farming – Rules 4.5.115 - 4.5.122.*

#### **Restricted Discretionary Activities - Matters for Discretion**

**4.5.24** The ARC shall restrict the exercise of its discretion to the following matters in assessing applications under Rules 4.5.30, 4.5.31, 4.5.33, 4.5.37, 4.5.56, 4.5.57 to 4.5.61, 4.5.78 to 4.5.82, 4.5.90, 4.5.102, 4.5.103, 4.5.106 to 4.5.108, and 4.5.119:

- (a) The requirement to discharge and consideration of alternatives; and
- (b) The quantity, quality and type of discharge and any effects arising from that discharge; and
- (c) The methods to minimise the discharge and to avoid, remedy or mitigate any adverse effects of the discharge; and
- (d) The location of the discharge; and
- (e) Monitoring; and
- (f) The duration and review of the consent.

**Explanation:**

*In assessing the methods to minimise the discharge and to avoid, remedy or mitigate any adverse effects of the discharge under Rule 4.5.24(c), the considerations will include the adequacy of control measures, if any, for the collection, containment, management and treatment of the discharge, as well as the type and adequacy of any control equipment and preparation of management plans.*

**Non notification**

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Explanation:**

*Rule 4.5.24 applies to all restricted discretionary activities provided for in this chapter except for **outdoor burning** activities which are provided for by Rule 4.5.19.*

**Other Activities that Discharge Contaminants into Air  
– Combustion Activities**
**Explanation:**

*Rules 4.5.25 to 4.5.32 shall not apply to the discharges associated with the combustion of fuel to heat domestic or residential **premises** as they are addressed in Rules 4.5.4 to 4.5.10.*

*Rules 4.5.25 to 4.5.32 shall not apply to the discharges associated with the combustion of fuel to provide emergency power generation to **premises** during mains power unavailability as this is a permitted activity covered by Rule 4.5.1.*

*The Permitted Activity status levels represent large appliances in industry for the purpose of raising heat or energy for on-site use. Dispersion modelling has found that ground level concentrations are likely to be less than 10 % for NO<sub>x</sub> from gas-fired appliances, and less than 10 % for SO<sub>2</sub> from diesel and coal fired appliances, of the ambient guidelines, provided that the Permitted Activity conditions are met.*

**Permitted Activities****Explanation:**

*Combustion of **landfill** gas is primarily for controlling **landfill** gas odours and for the purpose of this Plan is covered under Rules 4.5.78, 4.5.86, 4.5.87 and 4.5.89.*

*Combustion activities permitted by Rules 4.5.26 to 4.5.29 must comply with Civil Aviation Rules for aircraft safety, in particular the limits set out in Part 77 (Objects and Activities Affecting Navigable Airspace) summarised below:*

- (1) Where the discharge occurs in close proximity to an aerodrome, the efflux must not penetrate the obstacle limitation surfaces protecting the aerodrome at a velocity in excess of 4.3 metres per second; or*
- (2) Where the discharge is not in close proximity to an aerodrome, the efflux must not be discharged at a velocity that exceeds 4.3 metres per second higher than 60 metres above ground level.*

*For further information regarding compliance with Civil Aviation Rules please contact the Civil Aviation Authority of New Zealand. Copies of the official rule and amendments as signed by the Minister of Transport may be obtained from the Civil Aviation Authority or may be downloaded from the official web site at: [www.caa.govt.nz](http://www.caa.govt.nz).*

- 4.5.25** The discharge of contaminants into air from the combustion of natural gas or liquefied petroleum gas not exceeding a ***total generating capacity*** of 1 MW (megawatt) is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.26** The discharge of contaminants into air from the combustion of natural gas or liquefied petroleum gas exceeding a ***total generating capacity*** of 1MW (megawatt) and not exceeding a ***total generating capacity*** of 22 MW (megawatts) for the purpose of raising heat or energy is a Permitted Activity, subject to the following conditions:
- (a) Conditions (a) to (c) of Rule 4.5.1; and
  - (b) The discharge of products of combustion shall be through a stack, the height of which shall be determined in accordance with the procedures set out in the "Guidelines for Estimating Chimney Heights for Small to Medium Size Fuel Burning Equipment" published by the Environment Protection Authority of New South Wales, February 1993; and
  - (c) The stack shall be designed so that, under normal operating conditions which give rise to maximum emissions, the discharge velocity from the stack is greater than 15 metres per second; and
  - (d) There shall be no visible emissions resulting from the combustion ***process*** other than heat haze and clean steam during normal operations; and
  - (e) Rain excluders shall not impede the upward discharge of combustion gases.
- 4.5.27** The discharge of contaminants into air from the combustion of diesel, or light or heavy fuel oil, excluding ***waste*** oil, not exceeding a ***total generating capacity*** of 10 MW (megawatts), for the purpose of raising heat or energy is a Permitted Activity, subject to conditions (a) to (e) of Rule 4.5.26 and the discharge is minimised to the extent practicable.
- 4.5.28** The discharge of contaminants into air from the combustion of coal, not exceeding a ***total generating capacity*** of 5 MW (megawatts), for the purpose of raising heat or energy is a Permitted Activity, subject to the following conditions:
- (a) Conditions (a) to (e) of Rule 4.5.26; and
  - (b) The sulphur content of the coal does not exceed 0.5 per cent (by weight); and
  - (c) An adequate particulate control measure such as bag filter or electrostatic precipitator shall be used.
- 4.5.29** The discharge of contaminants into air from the combustion of wood not exceeding a ***total generating capacity*** of 5 MW (megawatts) for the purpose of raising heat or energy is a Permitted Activity, subject to the following conditions:
- (a) Conditions (a) to (e) of Rule 4.5.26; and
  - (b) The wood is not painted, tanalised (treated with copper, chrome and arsenic) or treated with preservatives or impregnated with chemicals (including chipboard); and
  - (c) The wood has a moisture content of less than 25 per cent by weight (dry basis); and
  - (d) An adequate particulate control measure such as bag filter or electrostatic precipitator shall be used.

#### Restricted Discretionary Activities

- 4.5.30** The discharge of contaminants into air from the combustion, excluding flaring, of any other gaseous, liquid or solid fuel not exceeding a ***total generating capacity*** of 5 MW (megawatts) for the purpose of raising heat or energy, that complies with conditions (a) to (e) of Rule 4.5.26 is a Restricted Discretionary Activity.

- 4.5.31** The discharge of contaminants into air through a bag filter or electrostatic precipitator system from the combustion of coal or wood exceeding a *total generating capacity* of 5 MW (megawatts) but not exceeding a *total generating capacity* of 20 MW for the purpose of raising heat or energy, that complies with the conditions of Rule either 4.5.28 or Rule 4.5.29 is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rules 4.5.30 and 4.5.31.*

#### Discretionary Activity

- 4.5.32** The discharge of contaminants into air from the combustion, excluding flaring, of fuel for the purpose of raising heat or energy that does not comply with or is not covered by Rules 4.5.25 to 4.5.31 is a Discretionary Activity.

#### *Explanation:*

*Combustion of landfill gas is primarily for controlling landfill gas odours and for the purpose of this Plan is covered under Rules 4.5.78, 4.5.86, 4.5.87 and 4.5.89.*

*For Rule 4.5.32 see also Policies 4.4.1 - 4.4.15 and 4.4.25 - 4.4.30*

#### **Other Activities That Discharge Contaminants Into Air – Incineration and Cremation**

#### Restricted Discretionary Activity

- 4.5.33** The discharge of contaminants into air through an afterburner from the cremation of human or animal remains, excluding the burning of animal remains covered by Rules 4.5.12, 4.5.15 and 4.5.16 is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) The crematorium shall be designed so that, before discharge to atmosphere, all emissions from the crematorium chamber shall be contained and shall pass through an afterburner; and
- (b) The afterburner shall be capable of maintaining all gases passing through it at a minimum temperature of 850 degrees Celsius, in greater than 6% oxygen, for a design residence time of at least 2 seconds; and
- (c) The afterburner shall have a temperature probe installed to continuously monitor and record the temperature of the *waste* gases in the afterburner. The stack shall have an opacity meter installed to continuously monitor and record the opacity of the discharge. All *process* monitoring equipment shall be fitted with audible alarms; and
- (d) The consent applicant shall provide a manufacturer guarantee or certification by an independent chartered professional engineer that design of the afterburner system is adequate to meet the criteria specified in (a), (b), and (c) above.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rule 4.5.33.*

#### Discretionary Activities

- 4.5.34** The discharge of contaminants into air from the cremation of human or animal remains that does not comply with Rule 4.5.33 is a Discretionary Activity.
- 4.5.35** The discharge of contaminants into air from any *process* that includes the destruction of municipal, commercial, institutional, domestic or industrial *wastes* by burning in an incinerator (excluding backyard and *single chamber incinerators* which are covered by Rules 4.5.11 to 4.5.23), including but not limited to:

- (a) *Refuse*;
- (b) Paper;
- (c) Vegetation (including *green waste(s)*);
- (d) Crates, pallets or other wood *wastes*;

- (e) Wood that is painted, tanned (treated with copper, chrome and arsenic) or treated with preservatives or impregnated with chemicals (including chipboard);
- (f) Plastic (e.g. *agrichemical* containers), rubber (e.g. tyres), paint, used (*waste*) oil, motor oil, solvents and bituminous materials;
- (g) *Sewage* sludge or screenings;
- (h) Coated or covered metal cable, motor vehicles or parts of motor vehicles or any other mixture or combination of metals and combustible substances;
- (i) Pathological, clinical or veterinary *wastes*;
- (j) Solid, liquid or gaseous chemical *wastes*;
- (k) Construction or demolition *waste*; or
- (l) Chlorinated organic chemicals

is a Discretionary Activity.

- 4.5.36** The discharge of contaminants into air from the flaring of *gaseous products*, excluding *landfill* gas, and including, but not limited to, biogas and *waste* gaseous petrochemical products is a Discretionary Activity.

*For Rules 4.5.34 – 4.5.36 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

#### **Other Activities that Discharge Contaminants into Air – Drying and Kiln Processes**

##### **Restricted Discretionary Activity**

- 4.5.37** The discharge of contaminants into air through an afterburner from the drying, curing or baking of any solvent-based coating onto any surface by the application of heat at a solvent application rate exceeding a total on-site capacity of 20 kilograms per hour is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rule 4.5.37*

##### **Discretionary Activities**

- 4.5.38** The discharge of contaminants into air from any *process* that includes the drying, curing or baking of any solvent-based coating onto any surface by the application of heat at a solvent application rate exceeding a total on-site capacity of 20 kilograms per hour that is not covered by Rule 4.5.37 is a Discretionary Activity.
- 4.5.39** The discharge of contaminants into air from any *process* that includes the baking of ceramics, bricks or tiles with a total on-site capacity of more than 5 tonnes per day is a Discretionary Activity.
- 4.5.40** The discharge of contaminants into air from the drying, curing or baking of any substance (excluding food *processes* and those *processes* covered by Rules 4.5.37 and 4.5.38) that on heating at a rate exceeding a total on-site capacity of 500 kW (kilowatts) releases dust, odour or *hazardous air pollutants* is a Discretionary Activity.
- 4.5.41** The discharge of contaminants into air from any *process* that includes the manufacture of synthetic wood or paper board (including hardboard, plywood or fibre board), by drying, curing or pressing wood, paper or wood or paper products through the application of heat is a Discretionary Activity.
- 4.5.42** The discharge of contaminants into air from any *process* that includes the pulping of wood, paper or wood or paper products by mechanical or chemical *processes*, or the associated *processes* of bleaching or chemical or by-product recovery including



recycled paper pulping is a Discretionary Activity.

*For Rules 4.5.38 – 4.5.42 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

#### Prohibited Activity

- 4.5.43** The discharge of contaminants into air from any **process** that includes the pulping of wood or wood products by the Kraft Process is a Prohibited Activity.

#### **Other Activities that Discharge Contaminants into Air – Dust Generating Activities**

#### Permitted Activities

- 4.5.44** The discharge of contaminants into air from the storage, handling, redistribution, or repackaging of minerals, ores and/or aggregates is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.45** The discharge of contaminants into air from the storage of coal outdoors where the total on-site outdoor storage capacity is not more than 2 tonnes is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.46** The discharge of contaminants into air from **cleanfills** is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.47** The discharge of contaminants, namely dust, into air from land cultivation or the application of **fertiliser** or lime in Rural Air Quality Management Areas and Urban Air Quality Management Areas which do not have an operative urban zoning under the relevant district plan, not covered by any other rule in the Plan is a Permitted Activity, subject to conditions (a) and (c) of Rule 4.5.1.

#### **Explanation:**

*When best practice is undertaken, the discharge of contaminants from **fertiliser** application does not normally result in the discharge of hazardous air pollutants beyond the boundary at sufficient levels to cause, or likely to cause adverse effects on human health, ecosystems or property. Therefore it is anticipated that most applications of fertiliser can be carried out as a permitted activity.*

- 4.5.48** The discharge of contaminants, namely dust, into air from unsealed public roads is a Permitted Activity, subject to conditions (a) and (c) of Rule 4.5.1.

#### **Explanation:**

*To minimise the discharge of dust into air associated with motor vehicle movements on unsealed public roads, standard dust suppression measures such as the application of water and appropriate grading should be used by the relevant **road controlling authority**.*

- 4.5.49** The discharge of contaminants into air from **earthworks** or from the construction, maintenance or repair of roads (road works) is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

#### **Explanation:**

***Earthworks** and road works usually require consent from either ARC or TAs for landuse activities or discharges of contaminants onto or into land or water. It is not intended that consent be also required for discharges of contaminants into air.*

*Compliance with this rule will generally be enforced rather than requiring resource users to go through the process of obtaining a consent for activities that are not likely to have more than minor adverse effects on the environment. However some activities may not be able to comply and will therefore require a restricted discretionary consent under Rule 4.5.56.*



- 4.5.50** The discharge of contaminants into air from the temporary crushing of concrete, masonry products, minerals, ores and/or aggregates with a mobile crusher at a rate not exceeding a total on-site capacity of 60 tonnes per hour is a Permitted Activity subject to the following conditions:
- (a) Conditions (a) to (c) of Rule 4.5.1; and
  - (b) The crusher plant shall be fitted with a effective watering system so that dust emissions are minimised; and
  - (c) Temporary crushing plants located on development sites shall only crush material originating from and to be utilised at the development site.

- 4.5.51** The discharge of contaminants into air from the *open-cast extraction*, or quarrying, or mining, or crushing, or screening or *processing* of minerals, ores and/or aggregates (including coal and coal products) at a rate not exceeding 5 tonnes per hour from any one of these activities is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

**Explanation:**

*To minimise the discharge of dust into air from dust generating activities, including earthworks or road works, in Rules 4.5.44 – 4.5.48, 4.5.49, 4.5.50 and 4.5.51 adequate dust suppression measures should be in place such as the following:*

- *A Dust Management Plan detailing methods for minimising and monitoring dust emissions;*
- *Retain shelter belts;*
- *Erect temporary windbreaks;*
- *Keep piles, including stockpiles, adequately watered, covered or protected, to prevent windblown dust;*
- *Enclose any conveying equipment or have adequate dust minimisation;*
- *Cease dust generating operations, e.g. vehicle movements, in windy or dry conditions;*
- *Water exposed surfaces, including by water carts or sprinkler systems, in windy or dry conditions; and*
- *Undertake early revegetation/surfacing of exposed soils.*

- 4.5.52** The discharge of contaminants into air from *dry abrasive blasting* within a permanent facility (*abrasive blasting* booth) that uses *abrasive material* for blasting containing less than 5 % dry weight free silica is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) Before discharge to atmosphere, all emissions from the *abrasive blasting* booth shall pass through a fabric filter or dry filtration system capable of achieving a discharge rate for particulate of 30 milligrams per cubic metre, corrected to 0 degrees Celcius, 1 atmosphere pressure and a dry gas basis; and
- (c) A differential pressure gauge shall be installed across the fabric filter and the *processing* monitoring equipment shall be fitted with audible alarms; and
- (d) The control equipment shall be certified by an independent chartered professional engineer to demonstrate that the control equipment is adequate to meet the criteria specified in (b) and(c) above; and
- (e) All work areas and surrounding areas shall be kept clean and substantially free of accumulations of deposited blasting material and other debris; and

- (f) **Abrasive material** used for the blasting shall contain less than 2 % by dry weight dust able to pass a 0.15 mm sieve.

*Note: When carrying out **dry abrasive blasting** consideration should also be given to the Health and Safety Regulations set out in the Health Act 1956.*

**4.5.53** The discharge of contaminants to air from **vacuum blasting** that uses **abrasive material** for blasting containing less than 5% dry weight free silica is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) Material collected by the vacuum device shall pass through a fabric filter or other collection system capable of achieving a non-visible discharge; and
- (c) All work areas and surrounding areas shall be kept clean and substantially free of accumulations of deposited **abrasive blasting** material and other debris.

**4.5.54** The discharge of contaminants to air from **sweep blasting** that uses **abrasive material** for blasting containing less than 5% dry weight free silica is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) All work areas and surrounding areas shall be kept clean and substantially free of accumulations of deposited **abrasive blasting** material and other debris.

#### Controlled Activity

**4.5.55** The discharge of contaminants into air from the **open-cast extraction**, or quarrying, or mining, or crushing, or screening or **processing** of minerals, ores and/or aggregates (including coal and coal products) at a rate exceeding 5 tonnes per hour but not exceeding 200 tonnes per hour from any one of these activities is a Controlled Activity, subject to the following standards and terms:

- (a) The **premises** are located outside an Urban Air Quality Management Area given in Map Series 1 and 1A and are a minimum of 200 metres from any dwelling on a neighbouring property or residentially zoned area; and
- (b) There are procedures in place to ensure that the operations are undertaken in such a way as to maintain dust emissions at the minimum practicable level, in particular:
  - i The techniques used to drill, blast and excavate rock;
  - ii The management of all haulage road and open yard areas;
  - iii All crushing, screening and transfer operations;
  - iv The construction and management of stockpiles; and
  - v All removal of **overburden** prior to quarrying and rehabilitation in non-working areas; and
- (c) There is access to sufficient water to allow dust suppression measures to be implemented; and
- (d) Measures to suppress dust through the application of water are adequately provided for through water carts, sprinkler systems and water sprays; and
- (e) The consent applicant shall provide the consent authority with a management plan outlining all methods of managing dust emissions, including identification of future areas and the extent of extraction;

The ARC will have control over the following matters:

- i The methods of the discharge and any effects arising from the methods chosen; and

- ii The adequacy of the control measures proposed for the collection, containment and treatment, and monitoring of any discharge; and
- iii The duration of the consent; and
- iv Monitoring the consent.

#### Non notification

Applications for controlled activity consent under Rule 4.5.55 shall be considered without public notification in accordance with Section 95A(3) of the RMA, where the consent applicant has obtained written approval of the owners and occupiers of all *adjoining properties*, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

- 4.5.56** The discharge of contaminants into air from *earthworks* or from the construction, maintenance and repair of roads (road works) that does not comply with Rule 4.5.49 is a Restricted Discretionary Activity.

#### Non notification

Applications for restricted discretionary activity consent under Rule 4.5.56 shall be considered without notification in accordance with Section 95A(3) of the RMA, where the consent applicant has obtained the written approval of the owners and occupiers of all *adjoining properties*, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### *Explanation:*

In order to minimise dust emissions, earthworks or road works that require a restricted discretionary activity consent under Rule 4.5.56 will be required to provide a Dust Management Plan and may be required to undertake video or total suspended particulate monitoring.

- 4.5.57** The discharge of contaminants into air, through a bag filter system, from
- (a) The manufacture of asphalt paving mix; or
  - (b) The mixing of cement powder with other materials to manufacture concrete or concrete products at a rate exceeding a total production capacity of 110 tonnes per day

is a Restricted Discretionary Activity.

- 4.5.58** The discharge of contaminants into air from the temporary crushing of concrete, masonry products, minerals, ores and/or aggregates with a mobile crusher at a rate not exceeding a total on-site capacity of 60 tonnes per hour that does not comply with Rule 4.5.50 or at a rate exceeding a total on-site capacity of 60 tonnes per hour is a Restricted Discretionary Activity.

- 4.5.59** Outside the Urban Air Quality Management Areas given in Map Series 1 and 1A the discharge of contaminants into air from the storage of coal or coal products outdoors where the storage capacity is less than 2 tonnes and does not comply with Rule 4.5.45, or is more than 2 tonnes and not more 500 tonnes is a Restricted Discretionary Activity.

- 4.5.60** The discharge of contaminants into air from the *remediation of a premises*

contaminated by hazardous material that does not comply with Rule 4.5.1 is a Restricted Discretionary Activity.

- 4.5.61** The discharge of contaminants into air from any dry abrasive, vacuum or *sweep blasting process* that uses *abrasive material* for blasting containing no more than 5 per cent dry weight free silica that does not comply with Rule 4.5.52, Rule 4.5.53 or Rule 4.5.54 is a Restricted Discretionary Activity.

**Explanation:**

*A region-wide consent may be issued for mobile abrasive blasting operators that have a good previous history of operation. It should be noted that wet blasting and wet abrasive blasting are subject to Permitted Activity Rule 4.5.1. Any discharges to land or water from this activity should refer to the rules in Chapter 5.*

*Note: Rule 4.5.24 lists the matters for discretion relating to Rules 4.5.57 to 4.5.61.*

**Non notification**

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Discretionary Activities**

- 4.5.62** The discharge of contaminants into air from the mixing of cement powder with other materials to manufacture concrete or concrete products at a rate exceeding a total production capacity of 110 tonnes per day or from the manufacture of asphalt paving mix that does not comply with Rule 4.5.57 is a Discretionary Activity.
- 4.5.63** The discharge of contaminants into air from any *process* that includes *open-cast extraction* or quarrying or mining or crushing or screening, or *processing* of minerals, ores and/or aggregates including coal or coal products at a rate that exceeds 200 tonnes per hour from any one of these activities or at a rate exceeding 5 tonnes per hour but not exceeding 200 tonnes per hour from any one of the activities that does not comply with Rule 4.5.55 is a Discretionary Activity.
- 4.5.64** The discharge of contaminants into air from any *process* that includes the storage of coal or coal products outdoors where the storage capacity is less than 2 tonnes and is in an Urban Air Quality Management Area as given in Map Series 1 and 1A and does not comply with Rule 4.5.45 or is more than 2 tonnes and is within an Urban Air Quality Management Area as given in Map Series 1 and 1A or the storage capacity is more than 500 tonnes is a Discretionary Activity.
- 4.5.65** The discharge of contaminants into air from any *process* that includes the:
- (a) Sintering, calcining or roasting of metal ores in preparation for smelting;
  - (b) Burning of calcium or calcium magnesium carbonates to produce calcium or magnesium oxides or hydroxides (including lime manufacturing);
  - (c) Expansion or exfoliation of minerals; or
  - (d) Dehydration of gypsum
- is a Discretionary Activity.
- 4.5.66** The discharge of contaminants into air from any *process* that includes the manufacture and/or melting of glass or glass products, including vitrification, with a production capacity of greater than 1 tonne per day is a Discretionary Activity.
- 4.5.67** The discharge of contaminants into air from any *process* that includes the manufacture of glass or mineral wool is a Discretionary Activity.

- 4.5.68** The discharge of contaminants into air from any **process** that includes the manufacture of cement or cement products from raw materials is a Discretionary Activity.

*For Rules 4.5.62 – 4.5.68 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

**Non-complying Activity**

- 4.5.69** The discharge of contaminants into air from any wet or dry abrasive, vacuum or **sweep blasting process** that uses **abrasive material** for blasting containing more than 5 per cent dry weight free silica is a Non-complying Activity.

**Prohibited Activity**

- 4.5.70** The discharge of contaminants into air from any **process** that includes the extraction, **processing** or storage of asbestos or the manufacture of products containing asbestos unless the activity is undertaken for the express purpose of contaminated site **remediation** or the removal of asbestos from existing structures or the reconditioning or replacing of asbestos-containing friction linings to brake or clutch assemblies and is carried out in accordance with relevant legislation is a Prohibited Activity.

**Explanation:**

*Disposal of asbestos to land and remediation of asbestos contaminated land is provided for in the Discharges to Land and Water and Land Management Chapter of this plan.*

**Other Activities that Discharge Contaminants into Air – Waste Processes**  
**Permitted Activities**

**Explanation:**

*Waste processes can result in the emission of offensive odours therefore separation distances between dwellings, roads, sensitive land uses, etc are recommended in order to minimise effects beyond the boundary of the property where the waste process is being undertaken.*

- 4.5.71** The discharge of contaminants into air from the treatment of raw **sewage**, excluding **municipal sewage**, that was generated on-site is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.72** Within the Rural Air Quality Management Areas given in Map Series 1 and 1A, the discharge of contaminants into air from the disposal of not more than 10 tonnes per day of treated **sewage solids** or septage to ground is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.
- 4.5.73** The discharge of contaminants into air from any facility that is for the primary purpose of pumping or transfer or storage of raw or partially treated **sewage** is a Permitted Activity, subject to the following conditions:
- (a) Conditions (a) to (c) of Rule 4.5.1 and
  - (b) The storage of **sewage** shall be within an enclosed tank of less than 4,000 m<sup>3</sup>, or
  - (c) The storage of **sewage** shall be within an enclosed tank of between 4,000m<sup>3</sup> and 10,000m<sup>3</sup> that is fitted with an effective odour control system, such as a bio-filter.
- 4.5.74** Subject to conditions (a) to (c) of Rule 4.5.1, the discharge of contaminants into air from the **composting of refuse, waste**, organic materials or **green wastes** where either:
- (a) The **composting operation** is fully enclosed and where the total **processing** capacity on-site at any one time is not more than 100 cubic metres;
  - (b) The **composting operation** occurs within an Urban Air Quality Management Area given in Map Series 1 and 1A and the **composting operation** is not fully enclosed and where the total **processing** capacity on-site at any one time is not more than 10 cubic metres; or

- (c) The *composting operation* occurs outside an Urban Air Quality Management Area given in Map Series 1 and 1A and the *composting operation* is not fully enclosed and either:
- i The raw materials are only *green waste* and the total *processing* capacity on-site at any one time is not more than 100 cubic metres; or
  - ii The raw materials include *refuse, waste* or organic materials other than *green waste* (e.g. manure or foodscraps) and the total *processing* capacity on-site at any one time is not more than 50 cubic metres

is a Permitted Activity

**4.5.75** The discharge of contaminants into air from a *green waste* collection station, or *refuse* transfer station with a total capacity on-site of not more than 30 cubic metres of *refuse* and/or not more than 500 cubic metres of *green waste* is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1;
- (b) *Green waste* is kept on-site for no more than three days from the date of receipt; and
- (c) No shredding of *green waste* occurs.

**4.5.76** The discharge of contaminants into air from a *recycling station* is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) No *refuse* or *green waste* is collected on-site.

#### Controlled Activities

**4.5.77** The discharge of contaminants into air from a *green waste* collection station or *refuse transfer station* with a total capacity on-site of more than 30 cubic metres of *refuse* and/or not more than 500 cubic metres of *green waste* is a Controlled Activity, subject to the following standards and terms:

- (a) The *premises* are either:
  - i Located within an Industrial Air Quality Management Area given in Map Series 1 and 1A and:
    - (1) Have a minimum separation distance of 300 metres from any residentially zoned area; or
    - (2) A minimum notional odour *boundary* of 300 metres through designation or an instrument registered against the land title of the owners of any residential property within 300 metres of the activity. Such designation or registered instrument shall provide a restriction on the owners and occupiers of such land from complaining about any offensive or objectionable odour generated by the activity in respect of that property; or
  - ii Located within a Rural Air Quality Management Area given in Map Series 1 and 1A and:
    - (1) Has a minimum of 300 metres from any dwelling on a neighbouring property or residentially zoned area; or

- (2) A minimum notional odour **boundary** of 300 metres through designation or an instrument registered against the land title of the owners of any residential property within 300 metres of the activity. Such designation or registered instrument shall provide a restriction on the owners and occupiers of such land from complaining about any offensive or objectionable odour generated by the activity in respect of that property;
- (b) The station shall be designed to ensure that litter and dust is kept to a practicable minimum and with sufficient capacity to hold all **waste** materials received on site indoors or under cover (except **green wastes**); and
- (c) All access and transfer areas shall be sealed and designed with sufficient room for the movement of vehicles within the yard area; and
- (d) The consent applicant shall develop clear protocols specifying:
  - i Acceptance criteria for materials delivered to the site; and
  - ii Odour, dust and litter mitigation; and
  - iii Storage, handling and disposal of all types of **refuse** accepted on the site; and
  - iv No shredding of **green waste**.
- (e) The consent applicant shall produce an operations plan outlining the protocols developed in accordance with (d) above and measures to mitigate or prevent adverse effects beyond the **boundary** of the **premises**.

The ARC will exercise control over the following matters:

- i The methods of the discharge and any effects arising from the methods chosen;
- ii The adequacy of the control measures proposed for the collection, containment and treatment, and monitoring of any discharge;
- iii The duration of the consent; and
- iv Monitoring the consent.

#### Non notification

Applications for controlled activity consent under Rule 4.5.77 shall be considered without public notification in accordance with Section 95A(3) of the RMA, where the consent applicant has obtained written approval of the owners and occupiers of all **adjoining properties**, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

- 4.5.78** The discharge of contaminants into air from a landfill that ceased receiving waste materials (closed landfill) after 1 October 1991, and contained at least 200,000 tonnes of waste materials at time of closure, is a Restricted Discretionary Activity.

*Note: Also refer to rules for **landfills** contained in Chapter 5 Discharges to Land and Water and Land Management.*

- 4.5.79** The discharge of contaminants into air from the **composting of refuse, waste**, organic materials, or **green wastes** where the **composting operation** is fully enclosed and where the total **processing** capacity on-site at any one time is more than 100 cubic metres and not more than 1000 cubic metres is a Restricted Discretionary Activity.

- 4.5.80** The discharge of contaminants into air from a **green waste(s)** collection station or **refuse transfer station** with a total capacity on-site of more than 30 cubic metres of **refuse** in an Urban Air Quality Management Area and/or more than 500 cubic metres



of **green waste(s)** in an Urban Air Quality Management Area or does not comply with either Rule 4.5.75 or Rule 4.5.77 is a Restricted Discretionary Activity.

#### Non notification

Applications for restricted discretionary activity consent under Rules 4.5.79 or 4.5.80 shall be considered without notification in accordance with Section 95A(3) of the RMA, where the consent applicant has obtained the written approval of the owners and occupiers of all **adjoining properties**, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Explanation:

*Materials that will be recycled are not to be included in the 30 cubic metre limit.*

**4.5.81** The discharge of contaminants into air from a **recycling station** that does not comply with Rule 4.5.76 is a Restricted Discretionary Activity.

**4.5.82** The discharge of contaminants into air from any facility that is for the primary purpose of pumping or storage or transfer of raw or partially treated **sewage** that does not comply with Rule 4.5.73 is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rules 4.5.78 to 4.5.82.*

#### Discretionary Activities

**4.5.83** The discharge of contaminants into air from any **process** that includes the treatment of **municipal sewage** or **sewage** generated on-site that does not comply with Rule 4.5.71 is a Discretionary Activity.

**4.5.84** The discharge of contaminants into air from any **process** that includes the disposal of **sewage solids** or septage to ground where:

- (a) More than 10 tonnes per day of treated **sewage solids** or septage is disposed of to ground;
- (b) Outside the Rural Air Quality Management Areas given in Map Series 1 and 1A, no more than 10 tonnes per day of treated **sewage solids** or septage is disposed of to ground; or
- (c) Within the Rural Air Quality Management Areas given in Map Series 1 and 1A, no more than 10 tonnes per day of treated **sewage solids** or septage is disposed of to ground that does not comply with Rule 4.5.72, is a Discretionary Activity.

**4.5.85** The discharge of contaminants into air from any **process** that includes the **composting** of **refuse, waste**, organic materials, or **green wastes** where either:

- (a) The **composting operation** does not comply with Rules 4.5.74 or 4.5.79;
- (b) The **composting operation** is fully enclosed and the total **processing** capacity on-site at any one time is more than 1000 cubic metres;
- (c) The **composting operation** occurs within an Urban Air Quality Management Area given in Map Series 1 and 1A and is not fully enclosed and the total **processing** capacity on-site at anyone time is more than 10 cubic metres; or
- (d) The **composting operation** occurs outside an Urban Air Quality Management Area and is not fully enclosed and, either:
  - i The raw materials are only **green waste(s)** and the total **processing** capacity on-site at any one time is more than 100 cubic metres; or
  - ii The raw materials include **refuse, waste**, or organic materials other than **green waste(s)** (e.g. manure or feedscraps) and the total **processing** capacity on-site at any one time is more than 50 cubic metres, is a Discretionary Activity.



**4.5.86** The discharge of contaminants into air from any **premises** that includes the disposal of **waste** materials to **landfill** (including domestic and industrial **wastes**) where the **landfill** was issued with a resource consent or an application has been lodged to discharge contaminants into air prior to 1 January 2002 and the **landfill** is still receiving waste provided the footprint and contours of the **landfill** remain unchanged is a Discretionary Activity.

**4.5.87** The discharge of contaminants into air from any **premises** that includes the disposal of **waste** materials to **landfill** (including domestic and industrial **wastes**) where either:

- (a) The **landfill** operation is able to maintain a minimum separation distance of one kilometre between the **landfill** footprint and the nearest dwelling located in the **urban area** and zoned for residential activities as defined at the time this Plan became operative; or
- (b) The **landfill** operation is able to maintain a minimum notional odour **boundary** of one kilometre through designation or an instrument registered against the land title of any residential property within one kilometre of the **landfill** footprint for the **active life of the landfill**. Such designation or instrument shall provide a restriction on the owners and occupiers of such land from complaining about any offensive or objectionable odour generated by the **landfill** in respect of that property,

is a Discretionary Activity

**4.5.88** The discharge of contaminants into air from any **process** that includes the treatment of industrial, chemical, pathological or **hazardous waste** materials (excluding **municipal sewage**) prior to disposal which are not generated on the **premises** is a Discretionary Activity.

*For Rules 4.5.83 – 4.5.88 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

#### Non-complying Activity

**4.5.89** The discharge of contaminants into air from any **process** that includes the disposal of **hazardous waste** materials to **landfill**, or the disposal of **waste** materials which are not generated on-site to **landfill** that does not comply with either Rule 4.5.86 or Rule 4.5.87 is a Non-complying Activity.

#### Explanation:

*Rules 4.5.71, 4.5.72, 4.5.83 and 4.5.84 exclude solid and liquid **wastes** including wash water from animal sources such as poultry farms and piggeries. Rules 4.5.74, 4.5.79 and 4.5.85 exclude the spreading of manure or litter over production land.*

#### Other Activities that Discharge Contaminants into Air – Food and Animal or Plant Matter Processes

##### Restricted Discretionary Activities

**4.5.90** The discharge of contaminants into air from the fermentation of plant matter for the purpose of producing alcoholic beverages at a rate that exceeds 25 million litres per year is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rule 4.5.90*

##### Discretionary Activities

**4.5.91** The discharge of contaminants into air from any of the following **processes**

- (a) flour or grain milling;
- (b) deep fat or oil frying;
- (c) curing by smoking;

(d) roasting or drying of berries, grains or plant matter; or

(e) the refining of sugar.

at a rate exceeding 250 kg per hour of product is a Discretionary Activity.

**4.5.92** The discharge of contaminants into air from the manufacture of yeast or starch is a Discretionary Activity.

**4.5.93** The discharge of contaminants into air from any *process* that includes the following:

- (a) The treatment of abattoir *wastes*, or abattoir *waste* water on the *premises*;
- (b) The rendering, reduction or drying of animal matter through the application of heat;
- (c) The preservation of animal hides or skins or the removal of hair, wool or feathers (including tanneries and fellmongeries) by chemical or heat treatment;
- (d) Wool scouring operations or dag crushing;
- (e) The drying of milk products to produce milk powders;
- (f) The manufacture of animal casings;
- (g) The extraction, distillation or purification of animal or vegetable fats and oils;
- (h) Carpet manufacturing; or
- (i) Petfood manufacture by the application of heat,

is a Discretionary Activity.

*For Rules 4.5.91 – 4.5.93 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

#### **Other Activities that Discharge Contaminants into Air – Chemical Processes**

##### **Discretionary Activities**

##### *Explanation:*

*This section of the plan excludes discharges into air from small laboratory scale and home hobby operations.*

*Note: Chemical processes include every part of a process as specified in the definition of 'industrial and trade processes' in Section 2 of the RMA.*

**4.5.94** The discharge of contaminants into air from chemical *process* activities that are not provided for by another rule in this chapter, including any of the following:

- (a) The bodying of oils or manufacture of monomers, synthetic resins, varnishes, plastics or adhesives;
- (b) The storage, manufacture or use of acrylates;
- (c) The production of soap, grease, or surface active agents;
- (d) The synthesis or extraction of organic chemicals, including synthesis, extraction, blending or formulation of *agrichemicals*, or plant hormones;
- (e) The production of inorganic chemicals, including concentration of acids or anhydrides, ammonia or alkalis;
- (f) The production or blending of *fertilisers*, including the granulation of single or mixed *fertilisers*;
- (g) Solvent manufacture or recovery;
- (h) Distillation, refining or other *processing* of petroleum or petrol products;
- (i) Total or partial disposal of solid or liquid substances by chemical decomposition;
- (j) Dry distillation of coal or lignite;

- (k) Production of metals or nonmetals by a wet *process* or by means of electrical or mechanical energy;
  - (l) Production, *processing* or treatment of organic or inorganic compounds;
  - (m) The separation, dewatering through the application of heat or distillation of *hydrocarbons* (including used (*waste*) oil);
  - (n) The use of bitumen in the manufacture of products other than roading mix;
  - (o) The carbonising or destructive distillation of *hydrocarbons* where the solid, liquid or *gaseous products* are recovered;
  - (p) The gasification of any hydrocarbon by partial combustion with air or oxygen or reaction with steam;
  - (q) The manufacture of explosives;
  - (r) The manufacture of paints, inks or powder coatings;
  - (s) Industrial gas manufacturing; or
  - (t) The manufacture of semiconductors,
- is a Discretionary Activity

**Explanation:**

*Any chemical **process** not covered in Rule 4.5.94 is unlikely to comply with Rule 4.5.1 and will therefore most likely be assessed under Rule 4.5.2 or 4.5.98.*

**4.5.95** The discharge of contaminants into air from any *process* that includes the manufacture of fibreglass products with a production capacity of more than 5 tonnes per day or the use of resins at a rate exceeding 200 kilograms per hour is a Discretionary Activity.

**4.5.96** The discharge of contaminants into air from any *process* that includes the use of diisocyanates, methylene chloride or organic plasticisers at a rate exceeding a total of 100 kilograms per hour is a Discretionary Activity.

**4.5.97** The discharge of volatile organic compounds (including solvents) into air at a rate exceeding 20 kilograms per hour or 10 tonnes per year (excluding the ventilation, displacement or dispensing of *motor fuels* covered by Rules 4.5.100 to 4.5.103) is a Discretionary Activity.

**4.5.98** The discharge of *hazardous air pollutants* into air that does not comply with Rule 4.5.1 and is not provided for by any other rule in the Plan is a Discretionary Activity.

*For Rules 4.5.94– 4.5.98 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

**Prohibited Activity**

**4.5.99** The discharge of contaminants into air from nuclear power generation is a Prohibited Activity.

**Other Activities That Discharge Contaminants Into Air  
– Ventilation, Displacement And Dispensing Of Motor Fuels**

**Permitted Activities**

**4.5.100** The discharge of volatile organic compounds (including solvents) into the air from:

- (a) The ventilation or displacement of air or vapour from storage tanks containing *motor fuels* installed prior to 1 January 2007;
- (b) The ventilation or displacement of air or vapour from *motor fuel* tankers (excluding petrol vapour);

- (c) The ventilation or displacement of air or petrol vapour from *motor fuel* tankers prior to 1 July 2008; or
  - (d) The dispensing of *motor fuels*;
- is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

**4.5.101** The discharge of volatile organic compounds (including solvents) into air from the ventilation or displacement of air vapour from storage tanks containing *motor fuels* where tanks are installed, or replaced (for existing tanks) on or after 1 January 2007 is a Permitted Activity, subject to the following conditions:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) That from 1 July 2008 petrol vapour arising from storage tank filling is captured from each installed or replaced petrol tank.

#### Restricted Discretionary Activities

**4.5.102** The discharge of volatile organic compounds (including solvents) into air from:

- (a) The ventilation or displacement of air or vapour (including petrol vapour) from:
  - (i) Storage tanks containing *motor fuels*; or
  - (ii) *Motor fuel* tankers, or
- (b) The dispensing of *motor fuels*

that does not comply with Rules 4.5.100 or 4.5.101 is a Restricted Discretionary Activity.

**4.5.103** The discharge of contaminants into air from a premise storing more than one million litres of petrol on-site is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rules 4.5.102 and 4.5.103.*

#### Other Activities That Discharge Contaminants Into Air – Metallurgical Processes

##### Permitted Activities

**4.5.104** The discharge of contaminants into air from the melting of any metal or metal alloy used in the *process* of welding, or jewellery manufacture is a Permitted Activity subject to conditions (a) to (c) of Rule 4.5.1.

**4.5.105** The discharge of contaminants into air from the mechanical shredding of scrap indoors (including the mechanical removal of plastic or rubber covering from cable) is a Permitted Activity, subject to conditions (a) to (c) of Rule 4.5.1.

##### Restricted Discretionary Activities

**4.5.106** The discharge of contaminants into air from the melting of any metal or metal alloy with a melting capacity of no more than 1 tonne per hour is a Restricted Discretionary Activity.

**4.5.107** The discharge of contaminants into air from electroplating is a Restricted Discretionary Activity.

**4.5.108** The discharge of contaminants into air from the melting of any metal or metal alloy used in the *process* of welding or jewellery manufacture that does not comply with Rule 4.5.104 is a Restricted Discretionary Activity.

*Note: Rule 4.5.24 lists the matters for discretion relating to Rules 4.5.106 to 4.5.108.*

### Discretionary Activities

- 4.5.109** The discharge of contaminants into air from the mechanical shredding of scrap outdoors (including the mechanical removal of plastic or rubber covering from cable), or indoors that does not comply with Rule 4.5.105 is a Discretionary Activity.
- 4.5.110** The discharge of contaminants into air from any *process* that includes heating in a furnace or other appliance of any metal or metal alloy for the purpose of removing grease, oil or any other non-metallic contaminant (including such operations as drum reconditioning and the removal by heat of plastic or rubber covering from cables) is a Discretionary Activity.
- 4.5.111** The discharge of contaminants into air from any *process* that includes the extraction, including electrochemical methods of reduction, of any metal or metal alloy from its ore, oxide or other compounds is a Discretionary Activity.
- 4.5.112** The discharge of contaminants into air from any *process* that includes the manufacture of steel, the refining of any metal, or the modification of any alloy in the molten state is a Discretionary Activity.
- 4.5.113** The discharge of contaminants into air from the melting of any metal or metal alloy with a melting capacity of more than 1 tonne per hour is a Discretionary Activity.
- 4.5.114** The discharge of contaminants into air from galvanizing is a Discretionary Activity.

*For Rules 4.5.109 – 4.5.114 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

### Other Activities That Discharge Contaminants Into Air – Production Land Activities And Intensive Livestock Farming Permitted Activities

- 4.5.115** The discharge of contaminants into air from the disposal of livestock and *offal*, using *offal holes* or shallow trenches, or the manufacture or storage of silage is a Permitted Activity, subject to conditions (a) of Rule 4.5.1.
- 4.5.116** The discharge of contaminants into air from any *process* that includes the *intensive livestock farming* of not more than 10,000 *poultry*, subject to conditions (a) to (c) or Rule 4.5.1.

### Controlled Activities

- 4.5.117** The discharge of contaminants into air from the *intensive livestock farming* indoors of more than 25 *pig equivalents* where the discharge was lawfully established or authorised prior to 21 October 2001 is a Controlled Activity, subject to the following standards and terms:
- (a) Conditions (a) to (c) of Rule 4.5.1; and
  - (b) Any change in the activity shall not change the character or increase the scale or intensity of any adverse effects of the activity on the environment; and
  - (c) The activity shall have no verified complaints of objectionable effects of odour or particulate matter that has resulted in enforcement action being taken against the discharger in the two years prior to the consent application; and
  - (d) A management plan, which accurately records all management, operational and monitoring procedures, methodologies and contingency plans necessary to comply with condition (a).

The ARC will exercise control over the following matters:

- i The methods of discharge and any effects arising from the methods chosen; and

- ii The adequacy of the control measures proposed for the collection, containment and treatment, and monitoring of any discharge; and
- iii The monitoring of the consent; and
- iv The duration of the consent.

Rule 4.5.117 will become operative in the southern half of the Auckland Region (Auckland City Council, Manukau City Council, Franklin District Council, Papakura District Council) 6 months from the date that the rule becomes operative, and in the northern half of the Auckland Region (Rodney District, Waitakere City Council and North Shore City Council) 1 year from the date that the rule becomes operative.

**4.5.118** The discharge of contaminants into air from any *process* that includes the *intensive livestock farming* of more than 10,000 *poultry* that was lawfully established or authorised prior to 21 October 2001 is a Controlled Activity, subject to the following standards and terms:

- (a) Conditions (a) to (c) of Rule 4.5.1; and
- (b) Any change in the activity shall not change the character or increase the scale or intensity of any adverse effects of the activity on the environment; and
- (c) The activity shall have no verified complaints of offensive or objectionable effects that have resulted in enforcement action being taken by the ARC in respect of the activity in the two years prior to the consent application; and
- (d) A management plan, which accurately records all management, operational and monitoring procedures, methodologies and contingency plans necessary to comply with condition (a).

The ARC will exercise control over the following matters:

- i The methods of discharge and any effects arising from the methods chosen; and
- ii The adequacy of the control measures proposed for the collection, containment and treatment, and monitoring of any discharge;
- iii The monitoring of the consent; and
- iv The duration of the consent.

Rule 4.5.118 will not apply in the southern half of the Auckland Region (Auckland City Council, Manukau City Council, Franklin District Council, Papakura District Council) until 6 months from the date that the rule becomes operative, and in the northern half of the Auckland Region (Rodney District Council, Waitakere City Council and North Shore City Council) until 1 year from the date that the rule becomes operative.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

**4.5.119** The discharge of contaminants into air from any *process* that includes the *intensive livestock farming* of more than 10,000 but not more than 180,000 *chickens* that commenced operation on or after 21 October 2001 is a Restricted Discretionary Activity subject to the following standards and terms:

- (a) The **premises** (measured from the exhaust vents closest to the neighbouring property) shall be located a minimum of 400m from the property boundary or notional property boundary. The notional property boundary shall be established through an instrument registered against the land title or any neighbouring property within the buffer area. Such registered instrument shall provide a restriction on the owners and occupiers of such land from complaining about any offensive and objectionable odours or dust within the buffer area generated by the intensive livestock **chicken** farm.
- (b) A Management Plan for the activity detailing:
  - (i) Environmental objectives and targets, use of best practicable options, performance reviews, checklists.
  - (ii) Shed management details including ventilation and litter management.
  - (iii) Drinker and feeding systems operation.
  - (iv) Harvest and cleanout, dead bird management.
  - (v) Waste management and litter disposal.
  - (vi) Complaints system and management including schedule of neighbouring properties and contact phone list.

*Note: Rule 4.5.24 lists the matter for discretion relating to rule 4.5.119.*

Rule 4.5.119 will not apply in the southern half of the Auckland Region (Auckland City Council, Manukau City Council, Franklin District Council, Papakura District Council) until 6 months from the date that the rule becomes operative, and in the northern half of the Auckland Region (Rodney District Council, Waitakere District Council and North Shore City Council) until 1 year from the date that the rule becomes operative.

### Notification

Applications for a restricted discretionary activity under Rule 4.5.119 shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA, and except where an existing operation has verified complaints of offensive or objectionable effects beyond the boundary of the property in the two years prior to the resource consent application.

### Discretionary Activities

- 4.5.120** The discharge of contaminants into air from any **process** that includes the **intensive livestock farming** indoors of more than 25 **pig equivalents** and does not comply with Rule 4.5.117 is a Discretionary Activity.

#### **Explanation:**

*Rule 4.5.120 is intended to apply to large-scale indoor piggery operations rather than to small hobby farms.*

- 4.5.121** The discharge of contaminants into air from any **process** that includes **intensive livestock farming of poultry** on site and does not comply with Rule 4.5.116, Rule 4.5.117 or Rule 4.5.119 is a Discretionary Activity.

Rule 4.5.121 will not apply in the southern half of the Auckland Region (Auckland City Council, Manukau City Council, Franklin District Council, Papakura District Council) until 6 months from the date that the rule becomes operative, and in the northern half of the Auckland Region (Rodney District Council, Waitakere City Council and North Shore City Council) until 1 year from the date the rule becomes operative.

*For Rules 4.5.120 and 4.5.121 see also Policies 4.4.1 – 4.4.15 and 4.4.25 – 4.4.30*

### Non-complying Activity

**4.5.122** The discharge of contaminants into air from any *process* that includes cattle *feedlots* is a Non-complying Activity.

## 4.6 Other Methods

**4.6.1** The ARC will, in partnership with key stakeholders and the community:

- (a) Develop, implement, monitor and review an Auckland Regional Air Quality Management Strategy to identify specific actions to be undertaken in relation to motor vehicles and *domestic fires* by ARC, key stakeholders and the community; and
- (b) Implement, monitor and review the Air Quality Environmental Education and Action Plan to ensure the most effective and efficient education and advocacy methods are carried out.

**4.6.2** The ARC will monitor current air quality levels and progress towards the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets by various methods including:

- (a) Ambient and meteorological monitoring;
- (b) Emission inventories and urban air shed models;
- (c) Surveys; and
- (d) Transport indicators, for example congestion, vehicle kilometres travelled and fuel consumption,

and the results of monitoring will be regularly published and publicised.

**4.6.3** The ARC will review progress towards achieving the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets by 2006 and if the standards and targets are not likely to be met will consider whether further measures are required to manage discharges of contaminants into air, in particular in relation to motor vehicles and *domestic fires*.

**4.6.4** The ARC may review the Auckland Regional Air Quality Targets in 2006, in particular to consider lower targets for PM<sub>10</sub> and PM<sub>2.5</sub>, which are known to cause significant adverse health effects at the target levels.

**4.6.5** The ARC will consult with TAs to ensure that land use provisions of district plans are aligned with the objectives, policies and rules of this plan. This will include reviewing resource consent applications and district plan reviews, changes and variations to ensure that adequate separation distances are maintained between industrial and rural (e.g. *intensive livestock farming*) activities and sensitive land uses to minimise the effects of *reverse sensitivity*.

**4.6.6** The ARC will, in partnership with other organisations, encourage the adoption of the best practical option for activities that discharge contaminants into air by:

- (a) Promoting the development and use of appropriate industry codes of practice and guidance documents to encourage best practice and effective methods to minimise the discharge of contaminants into air;
- (b) Supporting the development and distribution of education material relating to effective methods of minimising the discharges of contaminants into air;
- (c) Reducing compliance costs for those activities that adopt best practice; and
- (d) Encouraging the use of new technologies that minimise the discharge of contaminants into air.



- 4.6.7** The ARC will liaise with other agencies responsible for administering regulatory requirements relating to discharges into air to ensure that a consistent approach is adopted by those agencies and that the jurisdictional boundaries are clearly defined.

#### **Mobile Sources**

- 4.6.8** The ARC will, through the Regional Growth Strategy and Regional Land Transport Strategy processes, facilitate and encourage integration of transport issues by promoting integrated land use and transport planning which reduces the need for motor vehicle travel.

- 4.6.9** The ARC will, in partnership with other organisations, promote measures to reduce the reliance on the private motor vehicle and other measures to minimise discharges into air from *mobile sources*, including:

- (a) Measures to manage travel demand and influence driver behaviour;
- (b) The use of alternatives, for example passenger transport, walking, cycling, and teleworking;
- (c) Measures to reduce emissions from in service vehicles, including vehicle maintenance;
- (d) The frequent replacement of fleet vehicles;
- (e) The use of less polluting and more efficient vehicles; and
- (f) The use of alternative fuels with lesser adverse environmental effects than petrol and diesel.

- 4.6.10** The ARC will advocate that central government manage the level of individual vehicle emissions by specifying:

- (a) Improved fuel specifications;
- (b) Appropriate emission standards for new and used imported vehicles;
- (c) Age limits on imported vehicles (excluding those of historical interest); and
- (d) Appropriate measures to manage emissions from in service vehicles, including in relation to grossly polluting vehicles.

- 4.6.11** The ARC will develop emission standards and 'best practicable options' to ensure that, through its tender and contracting process, passenger transport vehicles used on contracted services have the lowest practicable emission levels.

#### **Explanation:**

*'Best Practicable Options' in this context include: turning idling engines off, training bus operators, and regular maintenance of vehicles.*

- 4.6.12** In developing the Regional Air Quality Management Strategy the ARC will, in partnership with other organisations, investigate the feasibility of regional and local initiatives to avoid, remedy or mitigate the effects of air pollution from motor vehicles in order to achieve the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets. Examples of local or regional options include:

- (a) Regional or 'public transport' fuel specifications or standards;
- (b) Regional emission requirements;
- (c) Voluntary programmes or incentives to reduce vehicle emissions, for example through retrofit of catalytic converters onto older vehicles;
- (d) The use of remote sensing to identify highly polluting vehicles that do not meet regional emissions requirements;

- (e) Measures to encourage use of fuels with lesser environmental effects, particularly for high mileage fleet vehicles; and
- (f) Improved management of the impacts on air quality from land use planning of sensitive activities, growth areas and busy roadways.

**4.6.13** The ARC will develop guidelines for assessing the air quality effects of discharges to air from land transport.

**4.6.14** The ARC will encourage and support *Territorial Authorities* to consider air quality along with other major policy areas such as safety, environmental sustainability and accessibility. (This may be achieved in part through the Ministry of Transport's Environmental Capacity Framework which enables people managing transport to evaluate the environmental impacts of transport management decisions).

#### **Domestic Fires**

**4.6.15** The ARC will, in partnership with TAs and other organisations including the New Zealand Home Heating Association, promote the adoption of operational best practice for *domestic fires* by:

- (a) Providing and supporting the distribution of education material relating to safe, efficient and effective use of *domestic fires*;
- (b) Encouraging the use of clean burning fuels and providing and supporting the distribution of educational material relating to the appropriate use of wood;
- (c) Providing and maintaining a list of solid fuel burning appliances that comply with Rule 4.5.7 and providing TA staff with advice notes on the application of this list to the building consent process; and
- (d) Supporting the correct installation (by *trained installers*) of *domestic fires* in accordance with the Building Act 1991, relevant New Zealand Standards and manufacturers specifications and instructions by providing training seminars or presenting training information at professional institute members' meetings.

**4.6.16** The ARC will, in partnership with other organisations including the Energy Efficiency Conservation Authority (EECA), promote and advocate:

- (a) Alternative methods of sustainable *domestic heating*, such as active solar heating;
- (b) Methods that reduce the requirement for additional *domestic heating*, such as insulation and passive solar heating;
- (c) Efficient and effective heating of dwellings; and
- (d) Replacement of existing *open fires* and older solid fuel heating appliances, with efficient, low emission *domestic fires* (i.e. that comply with Rule 4.5.7).

#### **Outdoor Burning**

**4.6.17** The ARC will, in partnership with other organisations including the New Zealand Fire Service and TAs, promote and advocate the adoption of operational best practice for *outdoor burning* by supporting the distribution of education material relating to the safe and efficient use of outdoor fires.

**4.6.18** The ARC will promote and advocate alternative methods for the disposal of vegetation and other *wastes*, for example, *composting*, mulching and recycling.

**4.6.19** The ARC will encourage *Territorial Authorities* to incorporate kerbside collections for compostable kitchen and garden *waste* into recycling collections.

**4.6.20** The ARC will consult with other organisations including TAs and relevant industry groups to ensure that practicable alternative methods for the disposal of vegetation and other *wastes* are available.

### Other Activities That Discharge Contaminants Into Air

- 4.6.21** The ARC will liaise with the relevant TA in circumstances where there is the potential for discharge of *landfill* gas from a *landfill* as described in Rule 4.5.78 to provide appropriate provisions within the relevant District Plan.

### Global Air Quality

- 4.6.22** The ARC will advocate that central government provide:
- (a) Clear emission reduction targets for sectors emitting *greenhouse gases* and *ozone depleting substances*;
  - (b) Internationally acceptable alternatives to methyl bromide;
  - (c) An equitable target setting system for individual discharges of *greenhouse gases*;
  - (d) Incentives for the efficient production, use and transmission of energy;
  - (e) Positive reinforcement systems for the development of renewable energy generation facilities and co-generation plants;
  - (f) Positive reinforcement systems for reducing any greenhouse gas emissions including CO<sub>2</sub> and methane;
  - (g) If carbon sinks become part of central government policy, further information on the following:
    - i *Remediation* options for *greenhouse gases* particularly through the development of carbon sinks;
    - ii The implications of forest planting on future generations, particularly with respect to land-use priorities, and the definition of perpetuity; and
    - iii The carbon sink abilities of plantation forests compared with other land uses such as indigenous vegetation and pasture.
  - (h) Encouragement for the recovery, re-use and recycling of ozone-depleting substances and the use of alternatives where appropriate.
- 4.6.23** The ARC will, in consultation with the appropriate expert organisations and central government, assess the potential effects of climate change on the Auckland Region.

## 4.7 Anticipated Environmental Results

The two key anticipated environmental results for air quality in the Auckland Region are minimisation of adverse effects on human health (including cardiovascular and respiratory diseases such as angina, asthma and lung cancer), fewer restricted activity days and premature deaths associated with motor vehicle emissions, and improved *amenity* for people. Significant adverse effects on human health should not occur provided the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets are achieved and *hazardous air pollutants* are not discharged at significant levels. However, it should be recognised that there is no known safe level of particulate, therefore it is recognised that it may be necessary to review the targets for PM<sub>10</sub> and PM<sub>2.5</sub>. Significant changes to the management of *mobile sources* and *domestic fires* are required to enable the *National Environmental Standards for Ambient Air Quality* and the Auckland Regional Air Quality Targets to be met.

Adverse effects on *amenity* such as odour, dust, and visible emissions depend on levels of public acceptability that can differ across the region. It is anticipated that acceptable levels of *amenity* can occur when activities are adequately managed and controlled and are located in appropriate areas. Complaints can be used as a measure of any improvements made in *amenity* levels. It is anticipated that regional visibility, which is also an *amenity* issue, will be improved in conjunction with achieving the *National Environmental Standards for Ambient Air Quality* and the Auckland

Regional Air Quality Targets as regional visibility is primarily a consequence of other primary pollutants.

Some of the more specific anticipated environmental results to be achieved by the Air Quality Chapter of this plan include:

- (a) ***National Environmental Standards for Ambient Air Quality*** and the Auckland Regional Air Quality Targets for particulate, carbon monoxide, nitrogen dioxide, and ozone are met by decreasing the quantity and increasing the quality of discharges of contaminants into air from individual motor vehicles. A holistic approach to managing the environmental effects of transport is achieved, including by optimising the management of the roading network.
- (b) Cumulative effects from ***domestic fires*** in ***urban areas*** are minimised by reducing discharges from individual fires so that the ***National Environmental Standards for Ambient Air Quality*** and the Auckland Regional Air Quality Targets for particulate, and carbon monoxide will be achieved, and localised adverse effects from ***domestic fires*** such as odour and smoke are prevented.
- (c) Adverse effects on ***amenity*** from ***outdoor burning*** are avoided in ***urban areas***, and minimised in rural areas.
- (d) Adverse effects from the discharge of contaminants into air from individual sources such as industrial ***processes***, ***waste*** management activities and production land activities are minimised by reducing the quantity and improving the quality of any ***hazardous air pollutants*** or noxious, dangerous, offensive or objectionable odour, particulate, smoke, dust, ash or visible emissions.
- (e) A positive contribution is made by the Auckland Region towards any national efforts to minimise the discharge of ***greenhouse gases*** and ***ozone depleting substances*** into air in accordance with central government legislation and/or statutory policy.

## 4A Agrichemicals – Application and Use

### 4A.1 Introduction and Principal Reasons

#### 4A.1.1 Statutory Framework

Section 15 of the RMA controls the discharge of contaminants into air, or onto or into land or water.

Refer to Sections 4.1.1 and 5.1.1 of the Plan for further information on the statutory framework for *agrchemical* use.

#### 4A.1.2 Scope Of Section

This section deals with the discharge of contaminants into air, or onto or into land or water through the use of *agrchemicals*.

#### 4A.1.3 Agrichemical Use

When *agrchemicals* are used in accordance with the manufacturer's label recommendations and/or industry codes of practice, the risks of contamination of soils, *groundwater*, *surface water*, or *agrchemical spray drift* are greatly reduced. Potential adverse effects on human health and the environment can arise from overflows and spillage while sprays are being mixed or spray tanks are being filled and *agrchemical spray drift*.

*Agrichemicals* are used by most primary producers, and in many domestic or amenity situations for weed, pest and disease control. When used correctly, *agrchemicals* can make a positive contribution to sustainable land use. People have the right to use *agrchemicals* provided that they do not result in adverse effects on other people, the environment or property, and are used safely and responsibly in accordance with best practice. Equally, other people who may be affected in the event of accidental or unintentional *agrchemical spray drift* have a right to know what *agrchemicals* are to be used or have been used and be able to take precautionary measures.

There are currently no clear regulations controlling the application or effects of *agrchemicals*. The approach in this plan is to avoid significant adverse effects by permitting the use and discharge of *agrchemicals*, subject to conditions. This approach relies strongly on the provisions of New Zealand Standard NZS 8409: 2004 Management of Agrichemicals. The New Zealand Standard has been developed through extensive consultation with industry and other stakeholders and effectively defines Best Practicable Option for the management of *agrchemicals*. Therefore, this plan endorses the standard.

This plan promotes and requires appropriate *applicator* training, as it is an important method of reducing the potential for *agrchemical spray drift*.

### 4A.2 Issues

**4A.2.1** Inappropriate application of *agrchemicals*, particularly where *agrchemical spray drift* occurs, can cause significant adverse effects on human health and the environment. Poor *agrchemical* storage, handling, spill management and application practices may have adverse effect(s) on *groundwater* and *surface water* quality by introducing contaminants to soil.

### 4A.3 Objectives

**4A.3.1** To be consistent with Objectives 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5 and 5.3.1 in Chapters 4 and 5 of the Plan.

- 4A.3.2** To avoid significant adverse effects on human health and the environment and to protect the quality of air, land and water in the Auckland Region from the inappropriate storage, handling, spill management and application of **agrchemicals**.

## 4A.4 Policies

### Use of Agrichemicals

#### *Explanation:*

NZS 8409: 2004 Management of Agrichemicals effectively defines the Best Practicable Option for appropriate **agrchemical** application practice.

*Undertaking consultation with any person who is likely to be directly affected by the application of **agrchemicals** allows precautionary measures to be undertaken by that person to reduce any adverse effects from the application of **agrchemicals** that may occur.*

- 4A.4.1** Policies 4.4.1- 4.4.4 and 4.4.6 - 4.4.10 and 4.4.14 – 4.4.15 and 4.4.25 – 4.4.28 inclusive shall be considered in the assessment of any proposal to discharge contaminants into air from the application of **agrchemicals**.
- 4A.4.2** Policies 5.4.1 - 5.4.3 inclusive shall be considered in the assessment of any proposal to discharge contaminants onto or into land or water from the application of **agrchemicals**.
- 4A.4.3** To ensure **agrchemicals** are stored and handled in accordance with good management practices, as described in New Zealand Standard 8409: 2004 Management of Agrichemicals so as to avoid or minimise contamination of land, **groundwater**, **surface waters** and non-target areas.
- 4A.4.4** The discharge of contaminants into air, or onto or into land or water from the application of **agrchemicals** shall comply with the mandatory requirements set out in:
- (a) Section 2 Management of Agrichemicals;
  - (b) Section 4 Storage and Supply of Agrichemicals;
  - (c) Section 5 Use of Agrichemicals;
  - (d) Section 6 Disposal of Agrichemicals and Containers;
  - (e) Appendix L General Storage Requirements;
  - (f) Appendix M Notification and Signage for Application of Agrichemicals;
  - (g) Appendix Q Application Equipment; and
  - (h) Appendix S Disposal of Agrichemicals and Containers
- of New Zealand Standard NZS 8409:2004 Management of Agrichemicals.

#### *Explanation:*

*The sections and appendices of NZS 8409:2004 Management of Agrichemicals given in (a) to (h) above contain requirements highlighted by the words “shall” that will minimise any adverse effects on the environment from the use of **agrchemicals**. These shall be considered in the context of how the **agrchemicals** are being used including, but not limited to, storage, method of agrichemical application, **spray plans** and diaries and notification.*

*Other useful parts of NZS 8409:2004 Management of Agrichemicals that may help **applicators** minimise adverse effects on the environment from the use of **agrchemicals** include Appendix C Agrichemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.*

**4A.4.5** When assessing the effects from the discharge of contaminants into air, or onto or into land or water from the application of **agrchemicals**, particular regard shall be had, where relevant, to:

- (a) The type of **agrchemical** to be discharged, including its toxicity and volatility and the **carrying agent**;
- (b) The proposed method of application, including the type of spray equipment to be used, the spray volume and droplet size, the direction of spraying and the height of release above the ground;
- (c) The nature of any training undertaken by the operator;
- (d) Measures to avoid **agrchemical spray drift** including **buffer zones**;
- (e) The proximity of the application to **potable water** including roof water;
- (f) The proximity of the application to the following Management Areas:
  - (i) Wetlands;
  - (ii) Natural Lakes;
  - (iii) Natural Streams; and
  - (iv) High Use Streams;
- (g) The timing of application in relation to weather conditions; and
- (h) Communication requirements.

**4A.4.6** The discharge of agrichemicals into air shall be considered inappropriate where it causes, or is likely to cause, significant adverse effects from **agrchemical spray drift** beyond the **boundary** of the **premises** where the discharge into air of **agrchemicals** is occurring, including:

- (a) Noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; or
- (b) Significant adverse effects on human health or the environment from **hazardous air pollutants**.

**Explanation:**

*The aerial and ground-based application of **agrchemicals** is an accepted practice in the Auckland region particularly in rural areas. These policies focus on avoiding significant adverse effects from **agrchemical spray drift**. Some areas, places or landuses are particularly sensitive to adverse effects from **agrchemical spray drift**, including:*

- a. *Dwelling houses*
- b. *Educational facilities*
- c. **Amenity areas and public places**
- d. *Domestic and community water supplies*
- e. *Water bodies and associated riparian vegetation*
- f. *Non target plants and/or crops which are sensitive to **agrchemicals***
- g. *Organically farmed properties; or*
- h. *Wetlands, indigenous flora and fauna habitat areas and reserves.*

*An adverse effect from **agrchemical spray drift** may include, but not be limited to,*

the following:

*Actual or potential adverse effects(s) on human health including allergic reactions, irritation, toxic poisoning and exposure to **carcinogens** and **teratogens**;*

*Contamination of domestic or commercial water supplies;*

*The exceedence of a threshold specified for any substance in the **agrchemical** pursuant to the Hazardous Substances and New Organisms Act 1996.*

*Adverse effects beyond the boundary of the **premises** on **amenity** such as odour, dust, visible emissions, or reduced access to property or adjoining areas because of contamination (e.g. on grass or clothes washing) from spraying activity;*

*Adverse effects on ecosystems (including exotic and indigenous flora and fauna);*

*Contamination of waterbodies (e.g. resulting in residues being detected in fish or the damage of flora or fauna); or*

*Damage to crops and other plants to the point where the **agrchemical** has affected the growth or quality of the crop, or contaminates the crops to a level where residues exceed limits for safe human consumption.*

*In responding to a complaint relating to a breach of condition concerning odour or dust in relation to the discharge into air of **agrchemicals** and any adverse effects from **agrchemical spray drift**, (for a resource consent or permitted activity rule), what may be “offensive or objectionable” will generally be determined by a Council officer, or officers who have experience in **agrchemical** odour and dust assessment. In such assessments, officers will generally follow relevant case law principles and take into account the FIDOL factors (Frequency, Intensity, Duration, Offensiveness, and Location). This approach aims to promote consistency in the assessment of odour and dust from **agrchemical spray drift**. FIDOL factors will be considered in combination, as no single FIDOL factor determines how noxious, dangerous, offensive or objectionable odour or dust is. ‘Location’ includes the receiving environment – part of this assessment includes the relevant provisions of the underlying District Plan zones and current neighbouring activities.*

*Note that signage on public roads needs to meet the requirements of the appropriate road controlling authority.*

## 4A.5 Rules

*Note: The definition of **agrchemicals** does not include **fertilisers**, chemicals when used in the treatment of **potable water** or biocides when used in cooling towers.*

### Permitted Activities

**4A.5.1** The discharge of **agrchemicals** into air, or onto or into land or water by handheld application (nonmotorised sprayer carried on foot) or as a bait, is a Permitted Activity subject to the following conditions:

- (a) That beyond the **boundary** of the **premises** where the discharge into air of **agrchemicals** is being undertaken there shall be no significant adverse effects from **agrchemical spray drift** including:
  - (i) No noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; and
  - (ii) No **hazardous air pollutants** that cause, or are likely to cause, significant adverse effects on human health, **ecosystems** or property.
- (b) Without prejudice to condition (a), the application shall be undertaken in accordance with:



- (i) All mandatory requirements set out in:
  - (a) Section 2 Management of Agrichemicals;
  - (b) Section 4 Storage and Supply of Agrichemicals;
  - (c) Section 5 Use of Agrichemicals;
  - (d) Section 6 Disposal of Agrichemicals and Containers;
  - (e) Appendix L General Storage Requirements;
  - (f) Appendix M Notification and Signage for Application of Agrichemicals;
  - (g) Appendix Q Application Equipment; and
  - (h) Appendix S Disposal of Agrichemicals and Containers
 of New Zealand Standard NZS 8409:2004 Management of Agrichemicals, except where agrichemicals are used in domestic quantities by home gardeners.
- (ii) The manufacturer's relevant label recommendations; and
- (c) Where the discharge of baits onto or into land occurs in **amenity areas and public places, signs** shall be erected prior to the application commencing, and maintained until the application has ceased and all baits removed or have become non-toxic. **Signs** shall be erected at every point where people normally obtain access to the land (except in the case of the roads including the State highway network where such signs shall be located every 500 metres along that part of the road over which the baiting has occurred) and include the name of the person or body applying the bait, the name and nature of the pesticide, the word poison, the date of application and appropriate cautions regarding drinking water, domestic animals and the taking of animals for meat.

**Explanations:**

The **agrichemical** manufacturer's label recommendations also provide guidance on the Best Practicable Option for application of that particular **agrichemical**.

The use of vertebrate toxic agents in controlling vertebrates, including by the laying of bait, is also covered by the Hazardous Substances and New Organisms Act 1996 and the Agricultural Control and Veterinary Medicines Act 1997.

The sections and appendices of NZS 8409:2004 Management of Agrichemicals given in (b)(i) above contain requirements highlighted by the words "shall" that will minimise any adverse effects on the environment from the use of **agrichemicals**. These shall be considered in the context of how the **agrichemicals** are being used including, but not limited to, storage, method of agrichemical application, **spray plans** and diaries and notification.

Other useful parts of NZS 8409:2004 Management of Agrichemicals that may help **applicators** minimise adverse effects on the environment from the use of **agrichemicals** include Appendix C Agrichemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.

Policy 4A.4.6 and its associated explanation provides an explanation of the reasons for Rule 4A.5.1.

- 4A.5.2** The discharge of **agrichemicals** into air, or onto or into land or water by **motorised handheld application**, is a Permitted Activity subject to the following conditions:

- (a) That beyond the *boundary* of the *premises* where the discharge into air of *agrchemicals* is being undertaken there shall be no significant adverse effects from *agrchemical spray drift* including:
  - (i) No noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; and
  - (ii) No *hazardous air pollutants* that cause, or are likely to cause, significant adverse effects on human health, *ecosystems* or property;
- (b) Without prejudice to condition (a), the application shall be undertaken in accordance with all mandatory requirements set out in:
  - (i) Section 2 Management of Agrichemicals;
  - (ii) Section 4 Storage and Supply of Agrichemicals;
  - (iii) Section 5 Use of Agrichemicals;
  - (iv) Section 6 Disposal of Agrichemicals and Containers;
  - (v) Appendix L General Storage Requirements;
  - (vi) Appendix M Notification and Signage for Application of Agrichemicals;
  - (vii) Appendix Q Application Equipment; and
  - (viii) Appendix S Disposal of Agrichemicals and Containers

of New Zealand Standard NZS 8409:2004 Management of Agrichemicals, and in accordance with the relevant manufacturer's label recommendations, except where agrichemicals are used in domestic quantities by home gardeners;
- (c) Except where *agrchemicals* are used in domestic quantities by home gardeners, any ground *applicator* shall hold as a minimum a current GROWSAFE® Introductory Certificate or be under the *direct supervision* of a person holding that qualification;
- (d) When the application is within 50 metres of a *boundary* (or in the case of a phenoxy herbicide within 1000 metres of any commercial viticultural or horticultural activity), the *applicator* shall:
  - (i) Either provide written, telephone or email notification to any person who is likely to be directly affected by the application of *agrchemicals* within a timeframe agreed between the parties or, failing such agreement, at least 24 hours prior to spraying or provide notice publicly through recognised methods, such as notice in a *local newspaper* or a letter drop at least seven days prior to the proposed application; and
  - (ii) Where the application is of phenoxy herbicides within 1000 metres of any commercial viticultural or horticultural activity, notification shall also be in accordance with Rule 4A.5.4 (f) and (g).
- (e) The *applicator* shall ensure that notification of any person who is likely to be directly affected by the application of *agrchemicals* as required by condition (d) has occurred prior to the application of *agrchemicals* commencing.
- (f) Where spraying is occurring in an *amenity area or public place* other than roads or railways, *signs* shall be placed within the immediate vicinity of the spraying prior to commencing, and maintained until spraying has ceased; and
- (g) Where spraying is occurring on or alongside roads, or railways, vehicles associated with the spraying shall display prominent *signs* on both the front and back of the vehicle advising that spraying is in progress.

*Note that signage on public roads needs to meet the requirements of the appropriate road controlling authority.*

**Explanation:**

The sections and appendices of NZS 8409:2004 Management of Agrichemicals given in (b) above contain requirements highlighted by the words “shall” that will minimise any adverse effects on the environment from the use of **agrichemicals**. These shall be considered in the context of how the **agrichemicals** are being used including, but not limited to, storage, method of agrichemical application, **spray plans** and diaries and notification.

Other useful parts of NZS 8409:2004 Management of Agrichemicals that may help **applicators** minimise adverse effects on the environment from the use of **agrichemicals** include Appendix C Agrichemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.

- 4A.5.3** The discharge of any **agrichemicals** into air, or onto or into land or water pursuant to Section 7A(1) – (8) and Part 7 of the Biosecurity Act 1993, is a Permitted Activity subject to the following conditions:
- (a) A copy of the public notice or declaration given by the responsible Minister; and details of the following shall be provided to the ARC 48 hours prior to the spraying occurring:
    - (i) The organism to be eradicated,
    - (ii) The principal actions that are to be taken in the attempt to eradicate the organism,
    - (iii) The geographical area of the intended spraying,
    - (iv) The duration of the discharge, the name of the **agrichemical** to be used, the rate and method of application, and the name and contact details of the **applicator**.
- 4A.5.4** The discharge of **agrichemicals** into air, or onto or into land or water by any method other than handheld application or **motorised handheld application** (as defined in Rule 4A.5.1 and 4A.5.2), including those approved under the H.S.N.O Act 1996 for aquatic weed control in water; or those required for pest control by local authorities for the purposes of biosecurity, is a Permitted Activity subject to the following conditions:
- (a) That beyond the **boundary** of the **premises** where the discharge into air of **agrichemicals** is being undertaken there shall be no significant adverse effects from **agrichemical spray drift** including:
    - (i) No noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; and
    - (ii) No **hazardous air pollutants** that cause, or are likely to cause, significant adverse effects on human health, **ecosystems** or property;
  - (b) Without prejudice to condition (a), the application shall be undertaken in accordance with all mandatory requirements set out in:
    - (i) Section 2 Management of Agrichemicals;
    - (ii) Section 4 Storage and Supply of Agrichemicals;
    - (iii) Section 5 Use of Agrichemicals;
    - (iv) Section 6 Disposal of Agrichemicals and Containers;
    - (v) Appendix L General Storage Requirements;
    - (vi) Appendix M Notification and Signage for Application of Agrichemicals;
    - (vii) Appendix Q Application Equipment; and

(viii) Appendix S Disposal of Agrichemicals and Containers

of New Zealand Standard NZS 8409:2004 Management of Agrichemicals, and in accordance with the relevant manufacturer's label recommendations;

- (c) The discharge is not by aerial application in an Urban Air Quality Management Area given in Map Series 1 which is subject to an operative urban zoning in a District Plan;
- (d) **Training**
  - (i) Any ground *applicator* shall hold, as a minimum, a current GROWSAFE® Introductory Certificate or be under the *direct supervision* of a person holding the GROWSAFE® Applied Certificate or the qualification in ii(1);
  - (ii) Any ground contractor, those registered for aquatic weed control in water and those required for pest control by statutory agencies for the purposes of biosecurity shall hold, as a minimum, either:
    - (1) A GROWSAFE® Registered Chemical Applicator's Certificate; or
    - (2) A GROWSAFE® Introductory Certificate and be under the *direct supervision* of a person holding the qualification in (1); and
  - (iii) Any pilot undertaking aerial application shall hold as a minimum, a GROWSAFE® Pilot's Agrichemical Rating Certificate.
- (e) **Spray Plan**
  - (i) The *applicator* shall prepare a *spray plan* and notify adjoining neighbours in writing that a spray plan has been prepared (and is available on request) at intervals of no more than once a year and at least 7 days prior to the first application of the period covered by the *spray plan*. If the spraying is in *amenity areas or public places* then notification of the preparation of the *spray plan* to adjoining neighbours is not required.
  - (ii) Upon the request of any person who is likely to be directly affected by the application of *agrchemicals*, the *applicator* shall supply that person with a copy of the *spray plan* within seven days;
  - (iii) Details of the notification method used to advise any person who is likely to be directly affected by the application of *agrchemicals* of spraying occurring shall be included in the *spray plan*.
- (f) **Notification in areas other than *Amenity Areas or Public Places***
  - (i) Upon the request of any person who is likely to be directly affected by the application of *agrchemicals* to be advised of spraying occurring, the *applicator* shall either:
    - (1) Provide written, telephone, or e-mail notification of the intent to spray to any person who is likely to be directly affected by the application of *agrchemicals* within a timeframe agreed between that person and the *applicator*; or,
    - (2) Failing such agreement, provide written, telephone, or e-mail notification to any person who is likely to be directly affected by the application of *agrchemicals* of the intent to spray at least 24 hours prior to the proposed application; or
    - (3) Where 1 or 2 are not practicable, provide notice publicly through recognised methods, such as notice in a *local newspaper* or a letter drop at least seven days prior but not more than 1 month before the proposed application.

- (ii) For discharges directly to water the **applicator** shall notify:
  - (1) Every person taking water for **potable** supply within 1 km downstream of the proposed discharge, at least 12 hours prior to the discharge occurring; and
  - (2) Every holder of a resource consent for the taking of water for public **potable water** supply purposes downstream of the proposed discharge, at least 1 week before commencing the discharge.
- (iii) The **applicator** shall ensure that notification of any person who is likely to be directly affected by the application of **agr chemicals** as required by condition (f) has occurred prior to the application of **agr chemicals** commencing.

(g) **Notification in Amenity Areas or Public Places**

When spraying **amenity areas or public places** the **applicator** shall provide a public notice in a **local newspaper** or a letter drop in the area to be sprayed at least seven days before the proposed application.

- (i) Where spraying is occurring in a public area other than roads or railways, **signs** shall be placed within the immediate vicinity of the spraying prior to commencing, and maintained until spraying has ceased.
- (ii) Where spraying is occurring on or alongside roads, or railways, vehicles associated with the spraying shall display prominent **signs** on both the front and back of the vehicle advising that spraying is in progress.

*Note that signage on public roads needs to meet the requirements of the appropriate road controlling authority.*

- (iii) For discharges directly to water the **applicator** shall notify:
    - (1) every person taking water for **potable** supply within 1 km downstream of the proposed discharge, at least 12 hours prior to the discharge occurring; and
    - (2) every holder of a resource consent for the taking of water for public **potable water** supply purposes downstream of the proposed discharge, at least 1 week before commencing the discharge.
  - (iv) The **applicator** shall ensure that notification of any person who is likely to be directly affected by the application of **agr chemicals** as required by condition (g) has occurred prior to the application of **agr chemicals** commencing.
- (h) **Additional condition for aquatic weed control:**

Discharges to water for the purpose of eradication or controlling unwanted **emergent or submerged plants** shall not exceed the quantity and concentration required for that purpose.

**Explanations:**

*The sections and appendices of NZS 8409:2004 Management of Agr chemicals given in (b) above contain requirements highlighted by the words "shall" that will minimise any adverse effects on the environment from the use of agr chemicals. These shall be considered in the context of how the agr chemicals are being used including, but not limited to, storage, method of agr chemical application, spray plans and diaries and notification.*

*Other useful parts of NZS 8409:2004 Management of Agr chemicals that may help applicators minimise adverse effects on the environment from the use of agr chemicals include Appendix C Agr chemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H*

*Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.*

*In preparing a **spray plan** reference should be made to NZS 8409:2004 Management of Agrichemicals and to Schedule 5 of this Plan.*

*The requirement to prepare and notify a **spray plan** is reflective of the requirements in NZS 8409:2004 but is intended to be an information and consultation process and not an approval process. **Spray Plans** do not require the approval of any person who is likely to be directly affected by the application of **agrchemicals** or the consent of the Regional Council.*

*It is expected that where large numbers of **amenity areas or public places**, such as particular categories of public parks, have similar attributes that a generic **spray plan** might be produced to cover all such **amenity areas and public places** and maybe notified on an annual basis. In other cases, such as privately operated horticulture enterprises, individual **spray plans** will be required to cater for the particular circumstances of the enterprise and its surroundings.*

*The differing notification requirements applying to **amenity areas and public places** are a recognition of the specific requirements in NZS 8409: 2004 and of the public functions and accountability of the public sector organisations which are required to maintain large numbers of such **amenity areas and public places**.*

#### 4A.5.5 The discharge of bloat medication into air and onto land by applications using a rosette nozzle is a Permitted Activity subject to the following conditions:

- (a) That beyond the **boundary** of the **premises** where the discharge into air of bloat medication is being undertaken there shall be no significant adverse effects from **agrchemical spray drift** including:
  - (i) No noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; and
  - (ii) No **hazardous air pollutants** that cause, or are likely to cause, significant adverse effects on human health, **ecosystems** or property;
- (b) The discharge shall not be undertaken within 20 metres of any water body;
- (c) Without prejudice to condition (a), the application shall be undertaken in accordance with all mandatory requirements set out in:
  - (i) Section 2 Management of Agrichemicals;
  - (ii) Section 4 Storage and Supply of Agrichemicals;
  - (iii) Section 5 Use of Agrichemicals;
  - (iv) Section 6 Disposal of Agrichemicals and Containers;
  - (v) Appendix L General Storage Requirements;
  - (vi) Appendix M Notification and Signage for Application of Agrichemicals;
  - (vii) Appendix Q Application Equipment; and
  - (viii) Appendix S Disposal of Agrichemicals and Containers
 of New Zealand Standard NZS 8409:2004 Management of Agrichemicals; and
- (d) Any **applicator** shall hold as a minimum a current GROWSAFE® Introductory Certificate or be under the **direct supervision** of a person holding that qualification; and

- (e) Where bloat medication is being applied in an **amenity area or public place** other than roads or railways, **signs** shall be placed within the immediate vicinity of the spraying prior to commencing, and maintained until spraying has ceased; and
- (f) Where bloat medication is being applied on or alongside roads, or railways, vehicles associated with the spraying shall display prominent **signs** on both the front and back of the vehicle advising that spraying is in progress.

*Note that signage on public roads needs to meet the requirements of the appropriate road controlling authority.*

**Explanation:**

*The sections and appendices of NZS 8409:2004 Management of Agrichemicals given in (c) above contain requirements highlighted by the words “shall” that will minimise any adverse effects on the environment from the use of **agrichemicals**. These shall be considered in the context of how the **agrichemicals** are being used including, but not limited to, storage, method of agrichemical application, **spray plans** and diaries and notification.*

*Other useful parts of NZS 8409:2004 Management of Agrichemicals that may help **applicators** minimise adverse effects on the environment from the use of **agrichemicals** include Appendix C Agrichemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.*

**Controlled Activity**

**4A.5.6** The discharge of **agrichemicals** into air, or onto or into land or water that does not comply with Rules 4A.5.1, 4A.5.2 or 4A.5.4 is a Controlled Activity, subject to the following standards and terms:

- (a) That beyond the **boundary** of the **premises** where the discharge into air of **agrichemicals** is being undertaken there shall be no significant adverse effects from **agrichemical spray drift** including:
  - (i) No noxious, dangerous, offensive or objectionable odour, dust, vapour, droplets, visible emissions or particulate; and
  - (ii) No **hazardous air pollutants** that cause, or are likely to cause, significant adverse effects on human health, **ecosystems** or property;
- (b) The discharge is not by aerial application in an Urban Air Quality Management Area given in Map Series 1 which is subject to an operative urban zoning in a District Plan;

The ARC shall exercise its control over the following matters:

- (i) Avoiding, remedying or mitigating any significant adverse effects arising from the discharge of **agrichemicals** into air, or onto or into land or water from the non-compliance with relevant manufacturer’s label recommendations and all mandatory requirements set out in:
  - (1) Section 2 Management of Agrichemicals;
  - (2) Section 4 Storage and Supply of Agrichemicals;
  - (3) Section 5 Use of Agrichemicals;
  - (4) Section 6 Disposal of Agrichemicals and Containers;
  - (5) Appendix L General Storage Requirements;
  - (6) Appendix M Notification and Signage for Application of Agrichemicals;
  - (7) Appendix Q Application Equipment; and



## (8) Appendix S Disposal of Agrichemicals and Containers

of New Zealand Standard NZS 8409:2004 Management of Agrichemicals; or

- (ii) Minimising any significant adverse effects resulting from the non-compliance with notification, signage, training/qualifications or **spray plan** requirements;
- (iii) The monitoring of the consent;
- (iv) The duration of the consent; and
- (v) The timing and nature of reviews of consent conditions.

**Explanation:**

*The sections and appendices of NZS 8409:2004 Management of Agrichemicals given in 4A.5.6(i) above contain requirements highlighted by the words "shall" that will minimise any adverse effects on the environment from the use of **agrichemicals**. These shall be considered in the context of how the **agrichemicals** are being used including, but not limited to, storage, method of agrichemical application, **spray plans** and diaries and notification.*

*Other useful parts of NZS 8409:2004 Management of Agrichemicals that may help **applicators** minimise adverse effects on the environment from the use of **agrichemicals** include Appendix C Agrichemical Use, Appendix F Environmental Management, Appendix G Spray Drift Hazard and Weather Conditions, Appendix H Competency and Training, Appendix K6 Emergency Planning – Spillage, Appendix N Adverse Effects and Appendix R Handling and Mixing Chemicals.*

**Discretionary Activities**

- 4A.5.7** The discharge of any **agrichemicals** into air, or onto or into land or water, that does not comply with Rules 4A.5.3, 4A.5.5 or 4A.5.6 is a Discretionary Activity.

**Prohibited Activities**

- 4A.5.8** The discharge into air of **agrichemicals** not approved under the Hazardous Substances and New Organisms Act 1996 12 months from the date of cancellation of any approval is a Prohibited Activity.
- 4A.5.9** From 1 January 2003, the discharge of 2,4-D butyl ester into air is a Prohibited Activity.
- 4A.5.10** The discharge of any **agrichemicals** into air, or onto or into land or water by applications using a rosette nozzle other than the spraying of bloat medication into air and onto land is a Prohibited Activity.

**4A.6 Other Methods**

- 4A.6.1** The ARC will carry out a range of activities in relation to the use of **agrichemicals** including;
- (a) Developing partnerships with industry, resource users and community groups to increase awareness of the adverse effects on the environment;
  - (b) Undertaking and sharing research;
  - (c) Providing up to date information on good management practices through publications, pamphlets, 'welcome kits' for new rural landowners/residents, seminars, field days and workshops.
- 4A.6.2** The ARC will, in partnership with other organisations including the New Zealand Agrichemical Education Trust, promote and advocate the adoption of operational best practice for the application of **agrichemicals** by:
- (a) Supporting the distribution of education material relating to safe, efficient and effective use of **agrichemicals**;



- (b) Promoting compliance with, and training in relation to, the appropriate industry codes of practice in particular New Zealand Standard NZS 8409: 2004 Management of Agrichemicals; and
- (c) Encouraging *agrichemical* aerial and ground contracting companies or businesses to be accredited.

**4A.6.3** The ARC will encourage the use of alternatives to *agrichemicals*, including '*integrated pest management*' (IPM) to avoid or minimise the need for *agrichemical* use.

**4A.6.4** The ARC will promote the development of a holistic farm planning process for landowners including good farming practices that minimise adverse environmental effects.

**4A.6.5** The ARC will liaise with Environment Waikato to ensure that as far as practicable a consistent approach towards *agrichemical* use is maintained across the regional *boundary*.

## 4A.7 Anticipated Environmental Results

Refer to Chapter 4.7 and 5.7 for general anticipated environmental results associated with *agrichemical* use.

Specific anticipated environmental results to be achieved by the Agrichemicals Chapter of this plan are, significant adverse effects on human health and the environment, including crops, from the application of *agrichemicals* are avoided, by endorsing appropriate spray application methods.



## 5 Discharges to Land, Water and Land Management

### 5.1 Introduction and Principal Reasons

#### 5.1.1 Statutory Framework

This chapter contains provisions relating to land management and water quality. In this context, Section 30(1)(c) of the RMA empowers the ARC to control the use of land for *soil conservation*; the *maintenance* and enhancement of the quality of water in water bodies and coastal water; and the prevention or mitigation of any adverse effects of the storage, use, disposal, or transportation of *hazardous substances*. Section 30(1)(f) provides for the control of discharges of contaminants into or onto land or water and discharges of water into water.

This part of the plan uses Section 9 of the RMA to control management practices in respect of *Industrial or Trade Activities* in order to avoid discharges of *environmentally hazardous substances*. This section is permissive in that the use of land is allowed except any use that is prohibited or regulated in the Plan. The Plan also uses section 15 of the RMA to remedy or mitigate the effects of discharges arising from the *Activity Areas* of *Industrial or Trade Activities* where those discharges cannot be avoided.

Section 15 of the RMA provides the legal sanctions for controlling discharges of contaminants into water, or onto or into land. The presumption in Section 15(1) is that a discharge is prohibited unless it is expressly allowed by a resource consent, a rule in the plan, or regulations.

#### 5.1.2 Scope of Chapter

This chapter deals with the discharge of contaminants into water, or onto or into land. The primary topics addressed in this chapter are:

- *Stormwater and wastewater networks*;
- *Sewage treatment* and disposal;
- *Sewage sludge (including biosolids)*;
- Land management;
- Discharges from production land activities;
- *Fertiliser* use;
- *Contaminated Land*;
- *Landfills*;
- Other discharges of contaminants to land or water; and
- Stock Access.

#### 5.1.3 Management Approach

##### 5.1.3.1 Stormwater and Wastewater Networks

*Stormwater* and *wastewater* infrastructure is constructed, owned and operated by a range of parties in the Auckland region, including:

- Territorial local authorities (or network operators on their behalf);
- Crown agencies and providers of *regionally significant infrastructure* (such as New Zealand Transport Agency, Watercare Services Ltd and Ports of Auckland Ltd);
- Private entities (including individual industrial and trade activities, property developers and residents).

The objectives, policies and rules of this chapter recognise two different types of *stormwater* and/or *wastewater* diversions and discharges. The first are individual discharges which are covered by the provisions relating to non-network discharges. The second type are discharges associated with the operation of a *stormwater or wastewater network*. A *stormwater or wastewater network* is generally defined as infrastructure that conveys *stormwater* or *wastewater* from more than one property.

The *stormwater and wastewater network* provisions further distinguish between *stormwater* or *wastewater* discharges that are managed on a catchment or sub-catchment basis by *stormwater and wastewater network utility operators* (being territorial authorities, network operators and Watercare Services Ltd) and those discharges that are derived from the State highway network. The majority of *stormwater* or *wastewater* infrastructure constructed by property developers is handed over to a Territorial Local Authority upon completion of a development and thereafter becomes part of a catchment based network.

Some *stormwater* infrastructure forms part of the State highway network, rather than being associated with individual properties. Due to the form and scale of *stormwater* infrastructure associated with the State highway network, this Plan also recognises *New Zealand Transport Agency* as a *Highway network operator*.

*Stormwater* discharges may also arise from significant areas of impervious surface such as at the Ports of Auckland or Auckland International Airport. This Plan recognises these facilities as *regionally significant infrastructure* (see Chapter 12). They may also qualify as network utility operators under section 166 of the RMA. Although having large impervious surface areas, they are not recognised as network operators in this chapter as their *stormwater* diversions and discharges are more *site* specific, rather than forming a network. Stormwater discharges arising from these types of *regionally significant infrastructure* may connect to a catchment wide *stormwater network* or may discharge directly to the environment via several discrete discharge points.

*Stormwater and wastewater networks* operated by *stormwater and wastewater network utility operators* are key components of the infrastructure necessary for any large city or intensively urbanised area. They have been constructed to provide for the health and safety of the community and are designed to reduce the risk of flooding and risks to public health by transporting *stormwater* and *wastewater* away from *Urban Areas*. There is also a range of *regionally significant infrastructure*, such as the State highway network, the commercial seaport and airport facilities, that has *stormwater* infrastructure to service its activities. However, the discharges from these *networks* and other discharge points can cause adverse effects. This plan promotes an integrated approach to the management of *stormwater* discharges and *wastewater overflows*. An integrated approach involves consideration, where possible, of environmental performance at the catchment level having regard to the interconnections between the *stormwater* and *wastewater networks*, recognising that discharges from different *networks* impact the same *receiving environment*.

Whilst this Plan considers the effects of discharges onto land and into freshwater, the interlinked nature of this system with the coastal marine area must be acknowledged.

In the natural situation, rainfall soaks into the ground or runs off the land into streams. The water that soaks into the ground, recharges *aquifers* and provides *base flow* and springflow for streams. Impervious (hard) surfaces intercept water, divert it away from its natural flow path, and this may result in higher and more frequent flood flows and lower *base flows* in water bodies. Increased flood flows may increase the extent of flooding and the erosion of rivers and streams. Erosion and lower stream *base flows* may affect the quality of freshwater aquatic habitat.

Within most parts of the *urban area*, engineered *drainage* systems collect *stormwater* for discharge, and while ground soakage occurs in some places, most ends up, via streams, in the sea. *Stormwater* collects a wide variety of contaminants as it passes over surfaces. The contaminants of most concern are suspended solids, heavy metals, oil and other petrochemicals, polynuclear aromatic *hydrocarbons* and pathogens.

There are numerous sources of non-point urban *stormwater* contamination as a result of normal urban activities, including land development, buildings and the use of motor vehicles. Negligent or inappropriate industrial product or *waste* management practices can also cause high contaminant loads and contribute to *stormwater* degradation. These contaminants accumulate in depositional areas such as estuaries and harbours and may affect aquatic fauna.

*Wastewater networks* contain *sewage* and in some cases the liquid wastes generated by industry. The contaminants that derive from *wastewater* typically cause shorter term effects of most concern to public health. The contaminants that derive from *stormwater* typically cause longer term adverse effects of most concern to the health of aquatic *ecosystems* and public health.

In most areas of the region the *stormwater* disposal *network* is designed to operate independently of the *wastewater* (sewerage) *network*. However, in practice this is often not the case. In certain circumstances, *stormwater* finds its way into *wastewater networks*, and *wastewater* finds its way into *stormwater networks* (or directly to the environment), for the following reasons:

- (a) *Wastewater networks* discharge to *groundwater* and *surface waters* through joints and cracks brought about by deterioration or breakage (*exfiltration*) no matter how well they are designed or constructed, and through cross connections, both authorised and illegal, from *wastewater* systems into *stormwater* systems; and
- (b) *Stormwater* and *groundwater* also enters *wastewater networks* through joints and pipe failures (*infiltration*) and through cross connections from *stormwater* systems (inflow), sometimes causing them to *overflow* in wet weather.

In addition, in the older parts of Auckland City, the *drainage* network was designed as a combined sewer system where *stormwater* and *wastewater* share a common pipe, with purpose built *overflow* structures that are designed to discharge when the network's hydraulic capacity is exceeded. This results in larger, more frequent *overflows* than typically occur in a separate system due to the higher proportion of *stormwater* in the *overflows*. The different design of the combined system necessitates a different management approach to that of a separate *wastewater network*. It is also recognised that there is a strong inter-linkage between the Auckland City combined system and the Watercare Services' trunk system and integrated solutions across these two systems may be required to achieve the best outcomes for the region.

While *wastewater networks* are designed to accommodate some extra flow in wet weather they also have relief points, of necessity, discharging to *stormwater networks* or waterbodies. Landuse intensification and redevelopment which has occurred in the absence of *wastewater* system upgrades has compounded the pollution problems from *wastewater* and *stormwater*.

*Wastewater overflows* typically contain elevated levels of bacterial and other pathogenic organisms, and organic material that uses oxygen as it breaks down. Such discharges have the potential to affect public health, cultural and *amenity* values, and aquatic life. For example, *overflows* may lead to public health advisory

notices being issued at water recreational areas due to increased microbiological risks. This consequence is experienced and disapproved of by many Aucklanders.

The benefits of *stormwater* management are extremely difficult to define in financial terms. However, one study (Ward and Scrimgeour) which has attempted to quantify the benefits of maintaining the water quality of the Waitemata and Manukau Harbours, and the Tamaki Estuary, concluded that the annual benefits from these resources are in excess of \$400 million. It also concluded that a positive cost: benefit ratio would be achieved if mitigation costs of \$118 - \$150 million (in 1991 dollars) annually were spent to maintain these regional assets. This study did not consider the values associated with the freshwater *receiving environment* or the costs of flooding.

There are no simple solutions to reducing the quantity of discharges, or improving the quality of discharges on a regional basis. The continued growth of Auckland will place added pressure on the Region's existing *wastewater networks* and *stormwater* networks and these will require additional capacity. In Growth Areas located within already developed *Urban Areas* these problems are exacerbated by the additional pressures of further increases in *impervious area* and greater contaminant loads. Moreover, the management of *stormwater* and *wastewater* needs to meet public expectations for achieving positive environmental outcomes.

These public expectations emphasise the need to improve water quality and reduce the quantity of contaminants discharged into the waterways of the Region and ultimately the coastal marine area. They are both key drivers to improving the current situation in the Auckland Region.

The costs of addressing all these issues will be substantial and doing so will take time. In addition it is recognised that the costs of upgrading infrastructure are largely borne by the public purse. *Stormwater and Wastewater Network Utility Operators* are also faced with a public expectation that cost increases for *wastewater* and *stormwater* services will be minimised.

Accordingly, a balance needs to be achieved between the infrastructure needs of the community and the management of discharges into the Region's waterways. Central to this is the progressive upgrading of ageing infrastructure and continuing advances in *stormwater* and *wastewater* disposal technology and methodology.

Due to the scale of improvement required and the considerable cost involved, it is recognised that a progressive management approach may be implemented over a period of time to enhance the performance of existing networks, while providing for growth, to achieve improved environmental outcomes. This will result in both medium and long term reductions in the volume and concentration of contaminants discharged into waterbodies including the coastal marine area. A realistic and practical approach therefore needs to be adopted in considering applications for discharge consents relating to *stormwater* and *wastewater* infrastructure.

The provision and management of *stormwater* infrastructure in *Urban Areas* is largely undertaken by local authorities. Over time the management of *stormwater* has progressed from a focus solely on mitigating flood risk to an emphasis including flooding, stream erosion, *stormwater* quality and the effects of the contaminants.

A range of methods are available to manage the different effects on *receiving environments* in accordance with a number of separate legislative provisions. Both the ARC and *territorial authorities* have statutory responsibilities that need to be coordinated.

Minimising the contaminant build-up on impervious surfaces cannot be purely based on the regulation of discharges by the ARC. Landuse controls at a district level,

education and advocacy are essential components of an integrated management approach. Given the connection between *stormwater* contamination and vehicle use, national management initiatives will be an important contributor to a reduction in levels of vehicle generated contaminants.

This Plan recognises that there are practical difficulties for *territorial authorities* in requiring management of *stormwater* quality and quantity, especially where land is developed in compliance with the district plan provisions.

It is also recognised that there may be issues of practicality (such as space limitations) and timing which limit the upgrading of existing infrastructure on individual sites or necessitate a staged upgrading programme. In the case of *regionally significant infrastructure* a prioritised programme of upgrading across multiple sites may be appropriate given the need to maintain operations while improvements are undertaken.

With greater understanding of contaminant transport by *stormwater* has come the need for a more holistic and integrated approach to catchment management. There are a range of practical and statutory options, such as regulatory, advocacy, education and service delivery mechanisms for the effective management of *stormwater* to avoid, remedy or mitigate adverse environmental effects. *Structure plans* may play an important role in integrating development with methods to manage discharges at source in developing areas.

The most effective options for improving the performance of *stormwater* and *wastewater* networks should be identified on a “whole of catchment” basis or on a “whole of network basis”. Therefore, before investing in expensive upgrades of *wastewater* or *stormwater* infrastructure, it is essential to consider the relative contribution of each to environmental degradation, how to avoid, remedy or mitigate the effects, and the values of the *receiving environment* itself. The implementation of performance improvements will be prioritised within catchments and across the network based on public health, environmental and property risk and *receiving environment* effects, and acknowledging the costs involved in improving existing networks.

In areas of new urban development, *wastewater networks* should be designed, constructed, operated and maintained so that *wastewater overflows* only occur in extreme circumstances. In existing *Urban Areas*, *wastewater overflows* may be occurring more frequently. An appropriate frequency of discharge or other appropriate performance measures will need to be defined through the consent processes for *wastewater networks*, noting that the Regional Plan: Coastal requires a BPO analysis to justify having more than two wet weather *wastewater overflows* per annum leading to public health advisory notices being issued for a water recreation area.

The key management tools proposed in this Plan to integrate *receiving environment* values and the risks of discharges, are the preparation of an *Integrated Catchment Management Plan* (ICMP) by the *territorial authority*, and resource consents for:

- Discharges and diversions from *stormwater* and *wastewater networks*;
- Some discharges and diversions from non-networks;
- Discharges of *environmentally hazardous substances* from Industrial or Trade Activities.

Other tools could include land-use planning controls and education.

It is noted that *ICMPs* are non-statutory documents prepared to assist the *TA* in managing catchments to achieve specified outcomes. These outcomes will in many cases, be determined through statutory *processes* in accordance with the RMA and/ or the Local Government Act. The *ICMPs* may also define statutory and non-statutory methods that will be used to contribute to the achievement of the outcomes sought. To the above extent *ICMPs* will provide useful guidance to all parties on statutory

requirements to be met and additional guidance on other methods the *TA* will use in seeking to achieve the stated outcomes.

The tools will consider the many management aspects including; environmental sensitivity, catchment values, quality and quantity of discharges, affordability and management methods. Overall, they will determine the Best Practicable Option.

#### 5.1.3.1A Industrial or Trade Activities

The use of land for *Industrial or Trade Activities* is authorised subject to compliance with conditions including the completion of an Emergency Spill Response Plan in all cases and an Environmental Management Plan for Moderate and High Risk activities. All discharges of contaminants (including *environmentally hazardous substances* and other contaminants associated with the activity including those in *stormwater*) arising from the *Activity Area* are authorised by way of permitted activity rules or resource consents. Separate authorisation may be required for the discharge of *stormwater* (covering quality and quantity effects) under Rules 5.5.1 to 5.5.13 of this Regional Plan; or under the Auckland Regional Plan: Sediment Control for some *earthworks*, tracking, roading or vegetation removal activities. Such authorisations are likely where the balance of the *site* falls outside the *Activity Area* for High Risk sites, and from the land on which the *Industrial or Trade Activity* is undertaken for Unscheduled, Low or Moderate Risk sites which do not discharge *environmentally hazardous substances*. Additionally, *stormwater* quantity effects (such as flooding or erosion) arising from the *Activity Area* may also need to be provided for in the separate *stormwater* authorisation. It is envisaged that any necessary *stormwater* and *Industrial or Trade Activity* consent applications would be made concurrently and *processed* together.

#### 5.1.3.2 Sewage Treatment and Disposal

Wastes are conveyed from the *sewage* collection *networks* that operate through the urbanised parts of the region to *municipal sewage* treatment plants. While the treatment plants at Mangere and Rosedale treat the majority of the region's *sewage*, satellite townships outside of the *Metropolitan Urban Limits* have their own treatment and disposal systems. Most of these systems rely upon the assimilation of treated *wastewater* by waterbodies for final disposal, although some incorporate a land disposal component for at least part of the year.

Areas of the Auckland Region without sewerage reticulation rely on land application for *sewage* treatment and disposal. There are estimated to be approximately 42,000 households and businesses relying on on-site *sewage* treatment and disposal systems. In many areas, this is complicated by the soil types, such as clay soils or free draining sands. Areas with clay soils experience significant problems with conventional septic tank and soakage trench systems, especially where high *wastewater* volumes are generated. For on-site disposal, problems can be exacerbated by inappropriate design, use or *maintenance* of systems, increased occupancy rates and changing lifestyle expectations.

Ineffective land disposal can lead to adverse impacts on the water quality and *amenity* values of the region's waterbodies, such as eutrophication of waterbodies, public health threats and odour. Often, the greatest potential for adverse effects is where on-site disposal systems are clustered around areas of high *amenity*, for example beach communities.

Recognition of recent industry advances in the design of treatment and land application systems, the introduction of *wastewater* treatment and disposal system *maintenance* programmes and ongoing up-skilling of practitioners is critical if on-site disposal is to be considered a sustainable use of resources or best practicable option as required by the RMA.



### 5.1.3.3 Sewage sludge (including biosolids)

The treatment of *sewage* generally involves the separation of the liquid and solid fractions of the wastes entering the treatment plant. *Sewage sludges* that are of a suitable quality for reuse are referred to as *biosolids*. Untreated raw sludges or untreated sludges from sewage treatment and industrial processes are not *biosolids*.

The region's main *sewage* treatment plants collectively produce about 400-500 tons of *solid wastes* per day as part of the *sewage* treatment *process*. The solids from *sewage* treatment plants are generally disposed of to *landfills* at significant cost to the region. This uses up valuable space in *landfills*. Solids collected in individual household septic tank systems in areas such as the Islands of the Hauraki Gulf, are applied to land under discharge permits issued by the ARC.

*Sewage sludge* contains nutrients, organic matter and other useful trace elements and therefore has potential for application to land as a *fertiliser* or soil conditioner when transformed into *biosolids*.

*Biosolids* are *sewage sludges* or *sewage sludges* mixed with other materials that have been treated and stabilised to the extent that they are able to be safely and beneficially applied to land. *Biosolids* have significant fertilising and soil conditioning properties as a result of the nutrients and organic materials they contain. In addition to natural nutrients, *biosolids* may also contain pathogens, heavy metals and synthetic organic compounds. They therefore require appropriate management to minimise the risk to public health and the contamination of both land, surface and *groundwater* and the coastal marine area.

More sophisticated *wastewater* treatment plants and improved management of trade wastes have enabled the production of more highly treated *biosolids* and more flexibility in their disposal to land. National guidelines provide direction on the grading of *biosolids*, according to their levels of contamination and stability. This grading system forms the technical basis for how the application of *biosolids* are managed by this plan.

The application of biosolids to land can result in a number of beneficial outcomes, including economic benefits, waste minimisation and land rehabilitation.

*Sewage sludges* that are not *biosolids* can be applied to land and stored on land where application is appropriately managed.

### 5.1.3.4 Land Management

Without appropriate erosion and *sediment control* land disturbing activities, including vegetation removal, can increase the potential for the generation and discharge of elevated levels of sediment. The volume and frequency of sediment generation and discharge depends on the nature, scale, duration and frequency of activities and on environmental factors such as rainfall intensity and duration, soil type, *slope* and soil moisture content. Erosion and sedimentation are natural *processes*. However these *processes* can be accelerated by anthropogenic activities such as soil *cultivation* or pastoral farming. This Plan promotes the use of appropriate *cultivation* and sustainable land management practices to avoid or minimise accelerated erosion.

The small size of the clay particles typical of the region's geology heightens the need to implement erosion and *sediment control* measures. In particular the fine clay soils, once mobilised, take a much longer time to settle than the coarser sand and silt material, and are thus more difficult to remove by typical *sediment control* measures. Once sediment enters water bodies, recovery times from their impacts are more likely to be measured in years than months.

The adverse effects of sediment discharge include increased flooding, reduced viability of aquatic life, recreational use, *potable water* supply, stock water and horticultural use and greatly increased sedimentation of water bodies, wetlands, estuaries and harbours.

Discharges of sediment from *earthworks*, vegetation removal and other land disturbing activities are addressed in the Regional Plan: Sediment Control (2001).

Soil health is also an important factor as it can be affected by land management practices. Loss of soil by erosion depletes the land's productive capacity. Repeated *cultivation* and disturbance affect the soil's ability to function properly by disrupting natural biological and chemical interactions. Of particular concern in certain parts of the region is the increased potential for nitrate leaching from the soil and consequent effects on *groundwater* quality. A further serious consequence is reduced soil organic matter content. This increases reliance on artificial *fertiliser* inputs and decreases the soil's structural resilience, resulting in compaction and poorer natural *drainage*. Further soil compaction can result when machinery or stock moves over land with a high soil moisture status or where the soil has been disturbed. In severe cases compacted soil may never recover to its full productive capacity. The productive capacity of soil can be enhanced by some agricultural practices including appropriate *fertiliser* use, mechanical aeration and incorporation of organic matter.

The Plan proposes to make land *cultivation* a Permitted Activity, subject to rules limiting *slope* and compliance with good practice.

#### 5.1.3.5 Wastes From Production Land Activities

Many common rural land use practices produce *waste*. The disposal of these products (e.g. *effluent*, compost) can have beneficial effects on the rural environment if handled correctly. For example compost can increase the organic content of soils, improving the soils structure and fertility. However if poorly managed the adverse effects on the environment and public health can be significant.

In the absence of a community system to collect and treat wastes, farmers must rely upon land application to minimise the potential for contamination of water bodies. Many agricultural *waste* materials contain nutrients that have a *fertiliser* value. Therefore reusing these wastes is a common and beneficial practice in rural areas. As these practices are seen as sustainable management of natural resources they are promoted by a lower level of regulation. Controls on wastes from production land activities are based on the underlying soils, minimisation of nutrient leaching and adequate contingency plans. Low volumes are provided for as a Permitted Activity, while higher volumes require Resource Consent.

Discharges from farm dairies are addressed in the Operative Regional Plan: Farm Dairy Discharges (1998).

#### 5.1.3.6 Fertiliser Use

*Fertilisers* are used to replace or supplement essential nutrients and trace elements in order to maintain soil fertility, sustain plant health and increase rural primary production. While *fertiliser* has many positive effects, when poorly managed it also has the potential for significant adverse effects on *groundwater* and *surface waters* when nutrients from *fertilisers* get into water bodies and affect their natural nutrient balance.

Nitrogen is the nutrient of greatest concern in terms of adverse effect which include proliferation of weeds and algae in waterbodies and potential public health problems associated with drinking nitrate-contaminated water. This risk is greatest in the Franklin volcanic *aquifer* due to the combination of land use for intensive horticulture and the nature of the *groundwater* resource.

There is also potential for phosphate from *fertiliser* to adversely affect water quality particularly on free-draining soils such as sands.

In order to avoid, minimise, mitigate or remedy these effects, users must adopt good management practices. The industry developed Code of Practice is the basis for compliance with the Permitted Activity rule.

#### 5.1.3.7 Contaminated Land

Some land within the Auckland Region is affected by contaminated water or soil, mainly from historical industrial and rural land use activities that were generally recognised practice at the time. Some land has contaminants present that have originated from neighbouring land uses and that are unrelated to current land uses. Where contaminant levels are elevated above that which occurs within the soil, *remediation* or management may be appropriate depending upon a range of matters, including the proposed use of the land. In some instances, contaminants can occur at levels where they are causing or are likely to cause significant adverse effects on human health or the environment. In this case, the land is termed *contaminated land* and *remediation* or management is required to avoid, remedy or mitigate these adverse effects.

This necessitates a need to identify *land containing elevated levels of contaminants* including *contaminated land* and to assess the degree of its contamination through *site* investigations.

This plan provides a regulatory framework for management or *remediation* to a standard appropriate for the *protection* of human health and the environment.

This plan also recognises that contamination may not always necessitate *remediation* where contaminant concentrations may be present at low levels or where contamination arises from other authorised discharges (e.g. within *stormwater* treatment devices).

The cost of remediating *land containing elevated levels of contaminants* including *contaminated land* can be significant. *Remediation* techniques range from non-interventionist “natural” *remediation processes* to the removal of contaminated material to an appropriate disposal facility. In some circumstances, land management techniques, such as *site* capping, with an *impervious layer*, can achieve *protection* of human health and the environment without contaminant removal.

It is also important to note that *contaminated land* management is an inter-media issue with possible implications for air quality in terms of *amenity* (odour) and human health (inhalation) risks to site workers and neighbours. Other agencies with a public health *protection* mandate, for example agencies with responsibilities under public health legislation including the Health Act including *territorial authorities*, are also involved in *site* and risk management and *remediation*. Coordination between these agencies should continue and be enhanced where necessary.

#### 5.1.3.8 Landfills

The Auckland Region is currently serviced by three major municipal *solid waste landfills* at Greenmount, Redvale and Whitford. All operative landfills are consented with stringent conditions specifying design, construction, operation and monitoring. The ARC encourages *waste* minimisation to avoid or mitigate the potential adverse effects of *waste* disposal, in terms of both the quantity and toxicity of *waste* to preserve the availability of scarce *landfill* space in the region. At the same time, it is recognised that modern, engineered, carefully designed and properly managed *landfills* are an essential component of Auckland’s regional infrastructure, and contribute to the social, economic and environmental well-being of people and communities in the Auckland Region.

Around 370 old closed *landfills* of varying sizes and ages have been identified in the Auckland Region. Historically, these *sites* were poorly constructed and managed, they therefore have the potential to contaminate ground and *surface water* resources.

*Leachate* from *landfills* is best described as a chemical cocktail that varies in composition depending on the type of *refuse* and the age of the *site*. It usually comprises heavy metals, synthetic organic contaminants and oxygen-demanding substances. Studies in New Zealand and overseas show that *solid waste landfills* require a minimum of 30 years of post-closure care. Therefore all closed *sites* still require a thorough evaluation to ensure that they are not causing adverse environmental or public health effects.

However very old Auckland *sites* examined to date have *leachate* of a quality well below international guidelines for the *protection* of aquatic life. As such these can be managed by a lower level of regulation.

There are a large number of varying sized *cleanfills* operating across the region at any one time. *Cleanfill* is primarily made up of inert materials like uncontaminated dirt, sand, concrete, and bricks. As these materials do not create *leachate* that can then discharge into the environment and cause adverse effects, the level of environmental *protection* required is low.

#### 5.1.3.9 Other Discharges of Contaminants to Land or Water

Many routine and widespread activities result in *wastewater* discharges, for example concrete or asphalt cutting, swimming pool operation, and the washing of vehicles, plant and machinery. Flow volumes and contaminants from each activity are often minor, but cumulatively they can cause significant adverse effects. In many circumstances there are practicable disposal alternatives, such as the sanitary sewer or land application to avoid adverse effects on waterbodies.

Discharges sometimes arise as a consequence of emergency service response activities protecting the safety and well-being of people and communities. When practical, environmental *protection* measures should be employed as a part of emergency service response activities that result in discharges to the environment.

Discharges from some activities involve contaminants of such minor effect that they can be safely carried out using simple management techniques. Low levels of regulation are appropriate for such discharges.

Geothermal water occurs in several locations in the Auckland Region, although at present there are only two places where it is used in large quantities; Waiwera and Parakai. The main geothermal water uses are for therapeutic and recreational purposes, heating hot pools in large public pool complexes or motels and apartments, and in small quantities to heat private spa pools. Once used the water is mostly discharged directly or indirectly into the sea.

The discharge of geothermal water results in changes to water temperature, volume, rate and chemical composition due to the presence of pool water treatment chemicals. Poor management of geothermal discharges can result in significant adverse effects to aquatic life, suitability for use, aesthetic values, erosion and scouring.

#### 5.1.3.10 Stock Access

The ARC intends to notify a Plan Variation / Change to the stock access part of Chapter 5 within two years of the notification of the ARC Hearings Committee decisions on submissions to the Plan. This Plan Change / Variation is considered necessary to take advantage of evolving strategies/initiatives for the *protection* of beds of *lakes*, rivers and streams. Recent initiatives by rural sector groups (Fonterra, Federated Farmers), central government (MfE) and local government (Regional Councils and *Territorial Authorities*) are progressing toward an efficient and effective combination of education, advocacy and regulation. It is anticipated that an appropriate combination of advocacy (including financial assistance for voluntary initiatives), education (including demonstration facilities) and regulation (including rules) will be better defined within this two-year timeframe.

## 5.2 Issues

### Stormwater Discharges and Wastewater Overflows (Networks and non-Networks)

- 5.2.1 Rainfall runoff can become contaminated as it transports sediment and other contaminants. These contaminants can then accumulate within urban waterbodies, and particularly estuaries and harbours, leading to adverse environmental effects.
- 5.2.2 The diversion of runoff by impervious surfaces reduces the amount of rainfall that soaks into the ground, affecting *groundwater* recharge and altering flow regimes in rivers and streams, with consequent adverse effects on *water availability* and aquatic life.
- 5.2.3 If managed inappropriately, *stormwater* conveyed by rivers and streams can increase the risk of flooding, bank instability and erosion, thereby posing a potential threat to buildings, property, and infrastructure.
- 5.2.4 *Overflows* and leaks from *wastewater networks* may cause a variety of adverse environmental effects, but in particular risks to the health of people undertaking water based recreational activities.
- 5.2.5 The Auckland Regional Growth Strategy and associated Sector Agreements have identified where *land use intensification* and development within the Auckland *Urban Area* should occur. This growth has potential to generate adverse effects at a *site* and catchment scale and will place pressure on existing *stormwater* and *wastewater networks*. These *networks* will require greater capacity where *land use intensification* occurs and *extensions* where new development occurs.
- 5.2.6 Parts of the Auckland Region's existing catchment wide *stormwater* and *wastewater networks* are old and need refurbishment, or have exceeded their design capacity. Improving these *networks* and their performance is essential to ensure the sustainable management of the Auckland region's *drainage* infrastructure and land and water resources and to meet public expectations for positive environmental outcomes.
- 5.2.7 In terms of the Resource Management Act definition of sustainable management, *stormwater* and *wastewater networks* are essential physical resources serving the important functions of flood *protection*, safeguarding public health and safety, and promoting community wellbeing. If the regulatory *process* does not recognise these positive effects, some of the basic benefits of *stormwater* and *wastewater networks* may be reduced or compromised.
- 5.2.8 The ownership of, and interaction between networks can be complex. If the management of *stormwater* and *wastewater networks* is not integrated, *networks* may be upgraded on a piecemeal basis in response to highly localised needs. It is possible that wider adverse effects on the environment will be overlooked or the *networks* as a whole will not operate efficiently and effectively in terms of providing basic public health *protection* and public health and safety. Non-integration is likely to lead to duplication of effort, resources and projects resulting in greater total costs and unclear overall environmental results. This will lead to increased compliance costs through the need for multiple smaller consents with the potential for a wide variation of consent conditions and operational practices to develop over time.
- 5.2.9 There may be considerable costs involved in achieving significant environmental improvements from the operation of *stormwater* and *wastewater* infrastructure and the financial implications of improvement works needs to be assessed. Piecemeal solutions developed on less than a catchment or network scale may lead to limited opportunities for community involvement or may pose a risk that the chosen solutions will not represent the best overall value for money or the best practicable option.

**5.2.9A** The combined *stormwater* and *wastewater network* that services part of Auckland City is designed to operate differently to the separated *stormwater* and *wastewater networks* that are more common in the Auckland Region. In particular, the system is designed to *overflow* during some rainfall events (resulting in larger and more frequent overflows than a separated *wastewater network*). The costs of reducing *overflow* volumes and frequencies is considerable. There are significant linkages between the local and trunk networks providing opportunities to consider integrated solutions across both networks.

**5.2.9B** The state highway network crosses multiple catchments and local authority boundaries and discharges *stormwater* to many different *receiving environments*. This has significant implications for the management of *stormwater* quality in particular, as there are no regional or national mechanisms currently in place to control the generation of contaminants from motor vehicles. Whilst regard should be had to the sensitivity and pressures on the *receiving environment* and the outcomes sought by local authorities, it is recognised that any solutions need to reflect the nature and extent of the state highway network and its operational constraints.

#### **Sewage Treatment and Disposal**

**5.2.10** Inappropriate *wastewater* treatment and disposal system design, installation or *maintenance* can lead to poor system performance resulting in adverse effects on public health and the environment.

**5.2.11** Poor management of solids and liquids from *wastewater* treatment plants can have adverse public health or environmental effects due to high levels of pathogenic organisms, heavy metals, synthetic organic contaminants and nutrients.

**5.2.12** The assimilation capacity of the *receiving environment* is a critical factor in determining the sustainability of any *wastewater* treatment system discharge.

**5.2.13** Land application of *wastewater* is potentially sustainable outside of reticulated areas, however some of Auckland's soil types and the cumulative effect of many land applications systems in an area make system design together with regular monitoring and *maintenance* inspections, and the *remediation* of failing systems, critical to avoid adverse effects on *groundwater*, *surface waters* or public health.

#### **Industrial or Trade Activities**

**5.2.14** Inappropriate *site* management practices from an *Industrial or Trade Activity* can result in discharges of *environmentally hazardous substances* accumulating within urban waterbodies, and particularly estuaries and harbours, leading to adverse environmental effects.

#### **Sewage Sludge (including Biosolids)**

**5.2.15** Appropriately treated and stabilised *sewage sludges* have the potential for beneficial reuse. These are referred to as *biosolids*. *Biosolids* have significant fertilising and soil conditioning properties as a result of the nutrients, organic matter and useful trace elements they contain. However, *biosolids* require appropriate management to minimise risks to public health and the environment. *Sewage sludges* that do not meet the product specifications to become *biosolids* may also have potential for beneficial reuse, however careful consideration is required to ensure the appropriate management of adverse effects.

#### **Land Management**

**5.2.16** Agricultural and horticultural *cultivation* activities can create bare surfaces that are subject to erosion and have the potential to discharge sediment if not managed carefully. Sediment is a significant water pollutant as it can result in adverse environmental effects.



**5.2.17** Soil loss and degradation from inappropriate land management practices result in a reduction in soil quality and consequently the productive potential of the land for future generations.

**5.2.18** Repeated *cultivation* without careful land management can lead to depletion of soil carbon levels, resulting in nitrate leaching through the mineralisation of organic matter.

#### **Wastes from Production Land Activities**

**5.2.19** Unless managed carefully, wastes from production land activities have the potential to cause significant adverse public health and/or environmental effects.

#### **Fertiliser Use**

**5.2.20** Without careful management, the rate and timing of *fertiliser* application can result in application rates exceeding plant requirements. Excess soil nitrogen and phosphorus can then enter water bodies via leaching and/or runoff leading to adverse effects on *groundwater* and *surface waters* (such as eutrophication). The Franklin volcanic *aquifer* is vulnerable due to its unconfined nature and the intensive *cultivation* of the overlying land.

#### **Contaminated Land**

**5.2.21** Regional growth means that land is developed or redeveloped which potentially exposes people to unacceptably high levels of contaminants due to historical land use activities or through the migration of mobile contaminants onto other *sites* including dust and vapours.

**5.2.21A** The ARC has a statutory duty to investigate land for the purposes of identifying and monitoring *contaminated land*. While local authorities must disclose information they hold on land contamination in accordance with section 44A of the Local Government Official Information and Meetings Act 1987, there is currently no requirement for the public to forward information that they are aware of, leading to risks to human health or the environment. Therefore, a mechanism is required to gather that information from the public.

**5.2.22** The *remediation* or management of *land containing elevated levels of contaminants* including *contaminated land* is complicated by changes of land ownership and land use activities or movement of mobile contaminants. This often means that current *site* owners may have no relationship to the activity that caused contamination of their land and therefore they have a reluctance to take responsibility for undertaking *remediation*.

**5.2.23** *Remediation* and or management of *land containing elevated levels of contaminants* including *contaminated land* must take into account potential adverse effects on human health, *groundwater*, *surface waters* and natural local *background levels* of contaminants together with the physical constraints of the *site*, operational practicalities, and the financial implications of the investigation, *remediation*, management and monitoring options.

**5.2.23A** Not all *land containing elevated levels of contaminants* requires *remediation*, and some contaminated materials may be suitable for reuse in certain circumstances, especially where contaminant concentrations are present at low levels and/or are unlikely to be readily mobilised. This needs to be carefully managed to protect human health and the environment.

**5.2.23B** Both the ARC and the region's territorial authorities have functions under the RMA relating to the management of *contaminated land*. In terms of effective and integrated management it is important that respective agency *processes* are integrated with land owner efforts, that duplication of effort is avoided, and there is a full and open sharing of information on land uses and land use changes.

**Landfills**

**5.2.24** *Landfills* pose a potential risk to public health and the environment because they may contain harmful *waste* and produce *leachate* which may contaminate *groundwater* or *surface water* unless managed appropriately.

**5.2.25** The inappropriate disposal of contaminants at *cleanfill* sites can lead to adverse effects on public health and/or the environment.

**Other Discharges of Contaminants to Land or Water**

**5.2.26** The discharge of *wastewater* from some small scale activities such as washing vehicles, and the cleaning, *maintenance* and preparation of building surfaces may have only minor impacts individually, but are having significant cumulative environmental effects.

**5.2.27** Without appropriate management, activities that result in large quantities of water with negligible amounts of contaminants can cause adverse effects to ground or *surface water*. Such activities include pipeline testing, reticulated water supply and water containing dye for investigating pipeline integrity.

**5.2.28** Discharges of geothermal water to water bodies can have adverse effects on the physical, chemical and biological composition of the *receiving water* arising from the amount of geothermal water discharged at any one time, its temperature and chemical composition.

**5.2.29** Discharges associated with the activities of emergency service providers are necessary to provide for the safety and wellbeing of people and communities.

**Stock Access**

**5.2.30** It is well recognised nationally and internationally that the access of stock to the beds of *lakes*, rivers and streams in rural areas can cause a range of significant adverse effects on water quality and instream and riparian habitat values. While all types of stock can potentially impact on values the issue is particularly relevant to larger animals such as dairy and beef cattle, deer and pigs. The main mechanisms for causing damage relate to trampling, pugging or erosion of the bed, bank and riparian margins from stock movement. Foraging can also adversely affect *lake*, river and stream morphology and flow; increase sedimentation and damage instream and riparian habitats. Stock defecation reduces habitat quality by adding organic sediment, nutrients and pathogens, which affect both human and stock health. Increased sedimentation from faecal contamination affects the habitat quality of fish and other aquatic biota.

**5.2.31** The predominance of small soft-bottom streams makes this issue particularly important in the Auckland Region. However a number of the Region's *lakes* and wetlands are also very vulnerable to the activity of stock around their margins and in any feeder streams. These effects can contribute to adverse impacts on other sensitive water resources such as estuaries and sheltered harbour waters common along the east coast and as components of the Region's several harbours.



## 5.3 Objectives

### General Objectives

#### 5.3.1 To protect, maintain or enhance the quality of land and water in the Auckland Region by:

- (a) Maintaining areas of high environmental quality;
- (b) Minimising adverse effects on degraded natural and physical resources where these cannot be avoided; and
- (c) Enhancing degraded areas where practicable.

This shall be achieved by avoiding or minimising the adverse effects arising from:

- (i) the discharge of sediment;
- (ii) **overflows** and **exfiltration** from **wastewater networks**;
- (iii) contaminant levels in **stormwater** runoff, including **stormwater** generated from the **Activity Area** of an **Industrial or Trade Activity**;
- (iv) contaminant levels in **sewage** treatment plant discharges;
- (v) the application of wastes in vulnerable **groundwater protection** areas;
- (vi) discharge of wastes from production land activities to water;
- (vii) the excessive application of **fertilisers** to land;
- (viii) discharges from **contaminated land**;
- (ix) discharges from **landfills**;
- (x) contaminant levels in geothermal discharges;
- (xi) contaminant levels in **washwater** and **wastewater** from **Industrial or Trade Activities**; and
- (xii) discharges from emergency fire service training exercises; and
- (xiii) discharges from other activities including reticulated water systems which are of such minor nature that management techniques can ensure that any adverse effects generated are no more than minor.

*(This Objective relates to Issues 5.2.1, 5.2.5, 5.2.10 – 5.2.29)*

#### 5.3.2 To allow the treatment and reuse of **sewage**, **sewage sludge**, **washwater**, and wastes from production land activities in a sustainable manner, while avoiding, remedying or mitigating adverse effects on the environment and public health.

*(This Objective relates to Issues 5.2.10 – 5.4.13, 5.2.15 and 5.2.19)*

#### 5.3.2A To provide for the beneficial use of **biosolids** onto or into land without having significant adverse effects on water quality, public health, amenity values or the environment.

*(This Objective relates to Issues 5.2.10 – 5.2.13 and 5.2.15)*

#### 5.3.3 To minimise, where appropriate and practicable, changes to natural **infiltration** rates and **stormwater** runoff volumes, thereby preventing river erosion and protecting **aquifer outflows** including river and stream **base flows**.

*(This Objective relates to Issue 5.2.2, 5.2.3 and 5.2.7)*

#### 5.3.4 To ensure that land-use intensification activities:

- (a) Avoid adverse effects on natural and physical resources outside **Urban Areas**;
- (b) Remedy or mitigate adverse effects on natural and physical resources within **Urban Areas**.

*(This Objective relates to Issues 5.2.5, 5.2.6 and 5.2.7)*

### **Stormwater Discharges and Wastewater Overflows (Networks and non-Networks)**

- 5.3.5** To prevent or minimise the adverse effects of *stormwater* and *wastewater* discharges.  
(This Objective relates to Issues 5.2.1- 5.2.4)
- 5.3.6** To achieve the integrated management of *stormwater* diversions and discharges, *wastewater* discharges and associated river and lakebed activities at a catchment or network wide level through *Integrated Catchment Management Plans* and/or *stormwater* and *wastewater network* resource consents.  
(This Objective relates to Issues 5.2.5 - 5.2.9B)
- 5.3.7** To recognise and have regard to the significant contribution that *stormwater* and *wastewater networks* and other *regionally significant infrastructure* make to the sustainability of the Region's environment, including the health, safety, and economic, social and cultural wellbeing of the community.  
(This Objective relates to Issues 5.2.7 - 5.2.9B)
- 5.3.8** To provide for and enable diversions and discharges associated with *stormwater* and *wastewater* within *Urban Areas* consistent with the Auckland Regional Growth Strategy and Sector Agreements while adopting the Best Practicable Option (BPO) to manage adverse effects on the environment.  
(This Objective relates to Issues 5.2.1. – 5.2.5)

### **Industrial or Trade Activities**

- 5.3.9** To promote sustainable management practices that where practicable avoid discharges of *environmentally hazardous substances* from an *Industrial or Trade Activity*, and remedy or mitigate the effects of discharges where they cannot be avoided.  
(This Objective relates to Issue 5.2.14)

### **Sewage Treatment and Disposal**

- 5.3.10** To ensure the treatment and discharge from *sewage treatment* plants are undertaken in a manner which does not lead to significant adverse effects on the environment and public health.  
(This Objective relates to Issues 5.2.10 – 5.2.13)
- 5.3.11** To avoid significant adverse cumulative effects on water quality and public health arising from single lots or multiple on-site systems.  
(This Objective relates to Issues 5.2.10, 5.2.11 and 5.2.13)

### **Land Management**

- 5.3.12** To maintain the long-term health and productive potential of soils in the region while those soils are being used for production land purposes.  
(This Objective relates to Issues 5.2.16 to 5.2.18)
- 5.3.13** To encourage integrated land management practices that minimise the discharge of sediment, maintain and enhance the productive potential of soil and minimise soil loss and degradation.  
(This Objective relates to Issues 5.2.16 to 5.2.18)

### Contaminated Land and Landfills

- 5.3.14** To promote and facilitate the identification and management of *land containing elevated levels of contaminants* including *contaminated land*.  
(This Objective relates to Issue 5.2.21A)
- 5.3.15** Where necessary, to ensure that the *remediation* and/or management of *land containing elevated levels of contaminants* including *contaminated land*, closed and operative *solid waste landfills* and *cleanfills* is undertaken to protect the environment and human health.  
(This Objective relates to Issues 5.2.21- 5.2.23A, 5.2.24 and 5.2.25)
- 5.3.16** To recognise and support the sustainable use of *land containing elevated levels of contaminants* including *contaminated land* in a manner which provides for the community's social and economic well being, consistent with the provisions of District Plans.  
(This Objective relates to Issues 5.2.22, 5.2.23, 5.5.23A and 5.5.23B)

### Stock Access

- 5.3.17** To maintain the instream and riparian habitat values and water quality of *lakes*, and *Permanent rivers and streams* by:  
(a) protecting existing areas of high value; and  
(b) enhancing degraded areas.  
(This Objective relates to Issues 5.2.30 and 5.2.31)
- 5.3.18** To avoid, remedy or mitigate the adverse effects of stock access to stream beds and margins including, movement, foraging and defecation, while enabling environmentally sustainable farming practices.  
(This Objective relates to Issues 5.2.30 and 5.2.31)

## 5.4 Policies

### General Policies

- 5.4.1** The adverse effects of the discharge of contaminants on the values of the Wetland, Natural Stream and Type 2 Urban Stream, High Use Stream, High Use *Aquifer*, Quality Sensitive *Aquifer*, and Natural and Urban Lake Management Area shall be avoided where practicable, or remedied or mitigated.  
(This Policy relates to Objectives 5.3.1, 5.3.3, 5.3.9, 5.3.10, 5.3.11, 5.3.13, 5.3.14, 5.3.17 and 5.3.18)
- 5.4.2** To have regard to the objectives and policies of Chapters 2.1, 2.2 and 2.3 in assessing any resource consent to discharge contaminants, into water or onto or into land.  
(This Policy relates to Objectives 5.3.1, 5.3.3, 5.3.4, 5.3.9, 5.3.10, 5.3.11, 5.3.13, 5.3.14, 5.3.17 and 5.3.18)
- 5.4.3** To have particular regard to the Urban Stream Management Framework (Figure 3.1) of this Plan when assessing any proposal to discharge contaminants within an *Urban Area*.  
(This Policy relates to Objectives 5.3.3, 5.3.4, 5.3.6, and 5.3.8)

## Stormwater Diversions and Discharges

### 5.4.4

When processing consent applications for non network **stormwater** diversions and discharges under Rules 5.5.2 to 5.5.5 the ARC shall require the applicant to adopt the Best Practicable Option (BPO) for the diversion and discharge, which shall have regard to:

- (a) The BPO statutory criteria in the RMA;
- (b) That, outside **Urban Areas**, the scale and intensity of the development shall be consistent with the Regional Growth Strategy and Sector agreements or is part of the state highway network;
- (c) The level of adverse effects on the environment, including in particular adverse effects on:
  - (i) the **receiving environment** due to the quality of the discharge;
  - (ii) the health and safety of people and communities from flooding;
  - (iii) aquatic habitat from erosion and sedimentation, particularly for **Natural Stream Management Areas** and Type 2 Urban Streams; and
- (d) The level of adverse effects arising from the cumulative effects of **stormwater** discharges and diversions at the discharge point(s) for existing and proposed land uses within the **site** or in the case of a State highway, that part of the highway within the same **stormwater catchment**. In particular, this includes any existing or redeveloped **impervious areas**, draining to the same discharge point as new **impervious areas**.

*(This Policy relates to Objective 5.3.1 and 5.3.8)*

### 5.4.4A

When processing consent applications for **stormwater** diversions and discharges under Rules 5.5.2 to 5.5.5 the ARC shall recognise the strategic importance of **stormwater** systems owned or operated as part of **regionally significant infrastructure** in achieving sustainable management and enabling people and communities to meet their needs for economic, social and cultural well-being.

#### **Explanation:**

*The costs associated with **regionally significant infrastructure** installation, maintenance and refurbishment are high. Due regard needs to be given to the ability to fund such works.*

### 5.4.4B

In addition to the matters listed in Policy 5.4.4, consent applications for non network **stormwater** diversions and discharges under Rules 5.5.2 to 5.5.5 will also be assessed against the following matters:

- (a) The extent to which:
  - (i) the scale and intensity of the land use activity is consistent with that provided for in the District Plan; or
  - (ii) the application adopts the outcomes of any **Structure Plan** (that has been incorporated into a District Plan); or
  - (iii) the application adopts the outcomes of any **Integrated Catchment Management Plan** (for the area within which the discharge occurs or will occur) to ensure an integrated approach; or
- (b) Outside **Urban Areas**, whether the development is located in a growth area and is in accordance with the Regional Growth Strategy, and Sector agreements, or is part of the State highway network, including the timing of such development, so as to avoid cumulative adverse effects of **stormwater** discharges outside **Urban Areas**;

- (c) The outcomes of any consultation undertaken with any potentially adversely affected parties;
- (d) The extent to which a wide range of management options have been considered to prevent or minimise the adverse effects of any existing and maximum potential landuse and any consequential diversions and discharges, and associated river and *lake* bed activities to ensure the most appropriate option is selected;
- (e) The level of *stormwater* quality management identified by the relevant *Integrated Catchment Management Plan* to prevent or minimise the adverse effects of *stormwater* contaminants;
- (f) If an *ICMP* has not been prepared, the assessment criteria will include the extent to which *stormwater* quality management:
  - (i) adopts the Best Practicable Option;
  - (ii) adopts methods (*source control*, traditional or *innovative*) to prevent or minimise the adverse effects of contaminants on the *receiving environment*, including *total suspended solids (TSS)* loads anticipated to arise on a long term basis from the proposed *impervious area*;
- (g) Whether the proposal:
  - (i) avoids exacerbating or causing flooding of the floor level (authorised by a local authority) of a *habitable building(s)*, or a State highway;
  - (ii) avoids the use of flood storage volume below the 100 year *ARI* flood level;
- (h) The extent to which there is the potential for local scour and downstream channel erosion, particularly for *Natural Stream Management Areas* and Type 2 Urban Streams and that this is managed to prevent or minimise adverse effects;
- (i) The extent to which the activity incorporates *low impact design* and *non-structural methods* to prevent or minimise adverse effects (including minimising the extent of *impervious area* and *stormwater* runoff volumes);
- (j) The extent to which operation and *maintenance* programmes are provided to ensure the effective ongoing functioning of the discharge;
- (k) The extent to which *stormwater* quality treatment and quantity control are, or will be, provided for existing and proposed land uses within the same *stormwater* catchment or *site* to reduce existing and potential adverse effects. In particular, this includes any existing or redeveloped *impervious areas*, draining to the same discharge point as new *impervious areas*;
- (l) Where assets are to be vested to another organisation, whether a financial bond is required (from the applicant to that other organisation) for the purposes of ensuring effective ongoing operation and *maintenance* of the *stormwater* management methods proposed;
- (m) With respect to existing discharges and diversions, the extent to which any prioritised programme for implementing upgrades and improvements to infrastructure considers and balances environmental effects, operational needs, physical constraints, practicality, timing issues, and financial considerations; and
- (n) Having regard to Policy 5.4.4C, the extent to which monitoring and reporting may be required.

(This policy relates to Objectives 5.3.1, 5.3.4, 5.3.5, 5.3.6 and 5.3.8)

**Explanation:**

One means of complying with Assessment Criteria (e), (f), (g) and (h) is to adopt the practices outlined in the ARC guideline document "Stormwater Management Devices: Design Guidelines Manual", second edition, May 2003, Technical Publication 10.

**5.4.4C** Where the *stormwater* management methods proposed by an applicant are in accordance with the design methods in ARC Technical Publication 10: Stormwater Management Devices: Design Guidelines Manual second edition (May 2003) and address the matters listed in Policy 5.4.4, a detailed Assessment of Effects on the Environment (AEE) is not required to support a resource consent application under Rules 5.5.2 to 5.5.4 (but note excluding Rule 5.5.5). Alternatively, an applicant may prepare a detailed AEE, in accordance with the Fourth Schedule of the RMA, to address the adverse effects (including cumulative effects) arising from their activity and propose alternative management methods to avoid, remedy or mitigate those effects.

**5.4.4D** Where authorisation for the diversion and discharge of *stormwater* from within the *Activity Area* of an *Industrial or Trade Activity* is obtained under Rules 5.5.14 to 5.5.19 then Policies 5.4.4 and 5.4.4A shall only apply to the diversion and discharge of *stormwater* from the balance of the *site* located outside the *Activity Area*.

*(This policy relates to Objectives 5.3.5, 5.3.6 and 5.3.8)*

#### **Wastewater Overflow Discharges**

**5.4.5** When processing consent applications for *wastewater* discharges from pump stations under Rule 5.5.7 the ARC shall require the applicant to adopt the Best Practicable Option for the discharge, which shall have regard to:

- (a) The BPO statutory criteria in the RMA;
- (b) The provision made for *wastewater* discharges deriving from potential urban growth, urban redevelopment, and *land use intensification* within the catchment, taking into account the growth projections developed under the Regional Growth Strategy and related Sector Agreements produced by the Auckland Regional Growth Forum, and District Plans; and
- (c) That any aspects of performance which have significant environmental risks are managed to prevent or minimise adverse effects.

*(This Policy relates to Objectives 5.3.5, 5.3.6 and 5.3.8)*

**5.4.5A** Consent applications for *wastewater* discharges from pump stations under Rule 5.5.7 will also be assessed against the following matters:

- (a) The extent to which the growth projections developed under the Regional Growth Strategy and related Sector Agreements produced by the Auckland Regional Growth Forum, and District Plans have been considered and the means by which *wastewater* discharges deriving from those areas will be provided for;
- (b) The extent to which the overall management approach for discharges and diversions is consistent with the objectives and methods of implementation contained in any *Integrated Catchment Management Plan* that exists for the catchment to ensure an integrated approach;
- (c) The extent to which any aspects of performance have significant environmental risks and the methods proposed manage those risks and reduce high risks;
- (d) The extent to which the management approach proposed may be reviewed based on an increased understanding of environmental responses, community needs and network priorities to improve performance over time;
- (e) With respect to existing discharges and diversions, (and particularly those associated with *regionally significant infrastructure*) the extent to which any prioritised programme for implementing upgrades and improvements to infrastructure considers and balances environmental effects, operational needs, physical constraints, practicality, timing issues, and financial considerations;

- (f) Where assets are to be vested to another organisation, whether a financial bond is required (from the applicant to that other organisation) for the purposes of ensuring effective ongoing operation and **maintenance** of the **wastewater** management methods proposed;
- (g) The extent to which operation and **maintenance** programmes are provided to ensure the ongoing effective functioning of the pump station and in particular the minimisation of unforeseen dry weather **wastewater overflows** to the environment;
- (h) The extent to which monitoring and reporting may be required where there is uncertainty about the effects on the environment or the management methods proposed including:
  - (i) monitoring the **receiving environments** relative to the effects of discharges having regard to Policy 20.4.12 of the Auckland Regional Plan: Coastal;
  - (ii) conducting regular reviews of monitoring results and identifying those situations and circumstances where overall management responses and physical works programmes can be adapted to in response to feedback provided by monitoring and review processes;
  - (iii) monitoring and reporting on the effectiveness of any prioritised works programme set out in the application.

(This policy relates to Objectives 5.3.5, 5.3.6, 5.3.7 and 5.3.8)

**Explanation:**

Policies 5.4.4 to 5.4.5A apply to consents processed under Rules 5.5.2 to 5.5.5 and 5.5.7 but do not apply to network consents processed under Rules 5.5.10 to 5.5.13.

**Stormwater and Wastewater Network Discharges**

**5.4.6**

To be consistent with the intent of Methods 8.4.5(1), 8.4.5(2), 8.4.7(2), 11.4.2(4) and 11.4.2(7) of the Operative Auckland Regional Policy Statement, **Territorial Authorities** should prepare, and update as is necessary, **Integrated Catchment Management Plans** for the catchments within their districts in order to promote the integrated and sustainable management of diversions, discharges and associated river and **lake** bed activities. In association with this management approach, consents under Rules 5.5.10 to 5.5.13 may be prepared on a scale larger than a single catchment (for example a district or sub-regional scale) to allow the integrated management of multiple catchments, networks and **receiving environments**.

(This Policy relates to Objective 5.3.6)

**5.4.7**

Implementation of **Integrated Catchment Management Plans** may be through:

- (a) Resource consents granted to **stormwater and wastewater network utility operators** for **stormwater** and **wastewater network** activities, including for discharges from the new impervious surfaces;
- (b) Management of land-use activities and their effects through regional and district plans and by-laws;
- (c) Resource consents through regional plans granted to **highway network operators** and for non-network **stormwater** and/or **wastewater** discharges, diversions, **damming** and river and **lake** bed activities, and the ARC having regard to **ICMPs** when processing those consents, where appropriate, for those activities;
- (d) Transfers of powers for the regulation of **stormwater** and **wastewater** diversions and discharges within a catchment to Territorial Authorities;
- (e) Non-regulatory methods by Territorial Authorities and ARC; and/or
- (f) Other regulatory methods by central government.



**Explanation:**

*Activities covered under (b) include: management of contaminants by **source control**, erosion and **sediment control** and management of riparian vegetation outside the bed of a **lake** or river.*

*Activities covered under (c) include: non-network **stormwater** discharges, contaminants from **Industrial or Trade Activities**, **dams** and other structures on, over or under the bed of a **lake** or river.*

*Activities under (e) could include controls on contaminants through National Environmental Standards and regulations set by Order in Council.*

*Consents held by a **highway network operator** or for non-network **stormwater** and/or **wastewater** discharges and associated activities will be implemented independently from an ICMP or network resource consent.*

*(This policy gives effect to Objective 5.3.6)*

**5.4.7A** In considering the appropriate weight to be given to any **ICMP** referenced in Policies 5.4.5A to 5.4.13, the ARC will have regard to the extent to which it has been subject to a consultative process involving affected parties including operators of **regionally significant infrastructure** and the extent to which there is agreement on the contents of the **ICMP**.

**5.4.8** **Stormwater and wastewater network utility operators and highway network operators** shall adopt the Best Practicable Option (BPO) at a catchment or network level to prevent or minimise the actual or potential adverse effects on the environment from diversions and discharges from **stormwater** and **wastewater networks** (controlled by **stormwater and wastewater network utility operators or highway network operators**). The network operator shall specify the performance standards, works and other methods that make up the BPO. In determining the BPO for a network of a **stormwater or wastewater network utility operator, or a highway network operator** regard shall be had, but not limited to the following:

- (a) The nature of the discharges and the sensitivity of the **receiving environment** to adverse effects;
- (b) The management options available to prevent or minimise adverse effects on the environment, including methods to mitigate any significant unavoidable adverse effects; the effects of the selected option on the environment compared to other options; and the financial implications of the selected option;
- (c) The current state of technical and scientific knowledge and the likelihood that the selected option can be successfully implemented;
- (d) The timeframe within which adverse effects identified in (b) can be addressed, taking into account:
  - (i) the scale and significance of environmental effects.;
  - (ii) the consequences of delay, compared to the consequences of delaying other works to the **stormwater or wastewater network**; and
  - (iii) community priorities set following consultation on (a) and (b) where this is relevant to the responsibilities of the **stormwater or wastewater network utility operator**;
  - (iv) funding available set following consultation on (a) and (b) where this is relevant to the responsibilities of the **stormwater or wastewater network utility operator**;
  - (v) funding available to and priorities of the **highway network operator**; and
  - (vi) opportunities to achieve better overall outcomes by taking an holistic approach and developing integrated local solutions;



- (e) The extent to which the *stormwater or wastewater network utility operator* or the *highway network operator* is responsible for or has the ability to manage the effects of diversions or discharges and the extent to which other parties may be responsible for or have the ability to manage such effects;
  - (f) The benefits of maintaining and optimising existing infrastructure;
  - (g) In the case of *stormwater or wastewater network utility operator* the specific management requirements of the combined sewer system and the benefits of developing integrated solutions with the *wastewater* trunk system.
- (This Policy relates to Objectives 5.3.5, 5.3.6, 5.3.7 and 5.3.8)*

**5.4.8A** The achievement of Objective 5.3.8 and the Best Practicable Option under Policy 5.4.8 may be developed on a district wide or network wide scale, based on *receiving environment* effects and environmental risk, where the *stormwater or wastewater network utility operator or the highway network operator* is applying for network consents at that scale at the same time.

**5.4.9** When processing consent applications for *stormwater* and *wastewater* diversions and discharges under Rules 5.5.10 to 5.5.13 the ARC shall recognise the strategic importance of *stormwater* and *wastewater networks* owned or operated by a *stormwater or wastewater network utility operator or a highway network operator* in achieving sustainable management and enabling people and communities to meet their needs for economic, social and cultural well-being and have regard to the outcomes specified in any *Integrated Catchment Management Plan* developed under Policies 5.4.6, 5.4.10 or 5.4.11.

**Explanation:**

*The costs associated with infrastructure installation, maintenance and refurbishment are high. Due regard needs to be given to community expectations and the ability to fund such works where such networks are managed by territorial authorities or associated network operators. Some infrastructure is funded by central government and subject to different funding processes.*

*(This Policy relates to Objective 5.3.7)*

**5.4.9A** The extent of the network discharges and diversions authorised by a network consent may include those from proposed networks and networks the *stormwater or wastewater network utility operator* will assume control of (e.g. under the Local Government Act), provided the consent application has assessed the effects of those discharges and diversions.

*(This Policy relates to Objectives 5.3.6 and 5.3.8)*

**5.4.10** *Integrated Catchment Management Plans* should identify for the *stormwater* and *wastewater* discharges, diversions and associated activities within the catchment or district:

- (a) the *stormwater* or *wastewater* issues facing the catchment and the range of effects from those discharges, diversions and associated activities;
- (b) strategic objectives for the management of *stormwater* and *wastewater* discharges, diversions and associated activities within the catchment or district;
- (c) a range of management options and the preferred management approach for avoiding, remedying or mitigating environmental effects and risks;
- (d) roles and responsibilities for implementation of the preferred management approach;
- (e) tools to support implementation of the preferred management approach; and
- (f) a process for review.

*(This policy relates to Objectives 5.3.6 and 5.3.7)*

**5.4.11** *Integrated Catchment Management Plans* and applications for consent under Rules 5.5.10 to 5.5.13 may be prepared as combined documents or separate documents as appropriate to the organisational structures of *Territorial Authorities* and *stormwater or wastewater network utility operators*. *ICMPs* and applications for consent under Rules 5.5.10 to 5.5.13 (in combination) shall meet the minimum information requirements set out in Schedule 9.

The minimum information requirements for a consent under Rules 5.5.10 to 5.5.13 without an accompanying *ICMP* are listed as a standard and term to those rules.

*(This Policy relates to Objective 5.3.6)*

**5.4.12** In circumstances where a consent under Rules 5.5.10 to 5.5.13 has not yet been granted, discharges or diversions resulting from changes to the existing *network* of a *stormwater or wastewater network utility operator*, within that catchment that result in a new resource consent being required, will generally be considered appropriate where:

- (a) the discharge or diversion is generally consistent with the *stormwater* and *wastewater* objectives of this Plan;
- (b) any changes to existing discharges result in benefits to public safety, health or the natural environment, with no more than minor adverse effects occurring as a consequence of the change;
- (c) any works required to implement changes to an existing discharge are not likely to limit the future application of the Best Practicable Option within the catchment or *network*;
- (d) the consent duration is commensurate with the timeframe within which the *ICMP* or network resource consent will be completed and the date for which the catchment based consent application associated with those documents is likely to commence.

*(This Policy relates to Objective 5.3.8)*

#### **Stormwater Discharges (Network and non-Network)**

**5.4.13** When preparing *stormwater* or *wastewater* discharge applications or *ICMPs* under the provisions of Policies 5.4.6, 5.4.10 or 5.4.11 *stormwater and wastewater network utility operators* and *highway network operators* shall have regard to any monitoring results for the contaminants listed in Table 20.1 of the operative or proposed Auckland Regional Plan: Coastal for the settling zone where the discharges enter the coastal marine area.

*(This Policy relates to Objective 5.3.8)*

#### **Wastewater Overflow Discharges (Network and non-Network)**

**5.4.14** When preparing an Assessment of Effects on the Environment in accordance with the Fourth Schedule of the RMA for consent applications under Rules 5.5.7 and 5.5.10 to 5.5.13 applicants shall identify the location of individual *wastewater* discharges and quantify the effects of those discharges on the environment if:

- (a) the discharge location is known to the applicant and the discharge exceeds 1000 m<sup>3</sup> per annum; or
- (b) modelling or monitoring shows the discharge occurs more frequently than once per six months; or
- (c) modelling or monitoring shows the discharge exceeds 1000 m<sup>3</sup> per annum.

In all other cases a generic description of the location and effects of the discharges shall be undertaken.

*(This Policy relates to Objective 5.3.8)*

### Stormwater or Wastewater Overflow Discharges (Network and non-Network)

- 5.4.15** When undertaking reviews of *stormwater* or *wastewater* discharge consents under section 128 of the RMA or when considering applications to change consent conditions under section 127 of the RMA, the ARC will generally not publicly notify those reviews unless works or activities are proposed by the consent holder that would result in an increase in the scale or intensity of the actual or potential adverse effects associated with the activity authorised by the consent.

*(This Policy relates to Objectives 5.3.7 and 5.3.8)*

### Industrial or Trade Activities

- 5.4.16** To manage the environmental risk of *discharges* of *environmentally hazardous substances* onto or into land or water occurring as a result of an *Industrial or Trade Activity* by:
- (a) setting Permitted Activity land use conditions and standards for all existing and new *Industrial or Trade Activities*;
  - (b) requiring land use consents for *Industrial or Trade Activities* which do not meet the Permitted Activity conditions and standards;
  - (c) setting Permitted Activity conditions for the discharge of contaminants onto or into land or water from the *Activity Area* of an *Industrial or Trade Activity*;
  - (d) requiring discharge consents for the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of an *Industrial or Trade Activity* which does not meet the Permitted Activity conditions;
  - (e) exempting existing High Risk *Industrial or Trade Activities* from the need for further discharge consents under this part of the Plan if:
    - (i) those activities have appropriate *stormwater* discharge consents or *Industrial or Trade Activity* consents; or
    - (ii) the owner or operator lodged applications in accordance with section 124 of the Act for *stormwater* discharge consents to replace previous authorisations that expired pursuant to Section 386(3) of the RMA in October 2001; and
 those consents or authorisations included management practices and/or devices to treat *environmentally hazardous substances* associated with discharges from the land on which the *Industrial or Trade Activity* is undertaken;
  - (f) making:
    - (i) the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of High Risk *Industrial or Trade Activities* that were existing at 23 October 2001, and
    - (ii) the discharge of *environmentally hazardous substances* onto or into land or water from the *Activity Area* of an *Unscheduled, Low or Moderate Risk Industrial or Trade Activity*;

Permitted Activities with the permitted activity status progressively expiring on a industry sector basis as specified in Schedule 3 (providing that any industry sector expiry date specified in Schedule 3 may be extended by the ARC by no more than 24 months, provided notice of such an *extension* is made more than 6 months before the expiry date is reached);

- (g) requiring a Controlled Activity resource consent for the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of *Industrial or Trade Activities* where they do not meet the Permitted Activity conditions or standards;

- (h) requiring a Restricted Discretionary Activity consent for the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the **Activity Area** of new High Risk **Industrial or Trade Activities** that commenced after 23 October 2001;
- (i) requiring a Discretionary Activity consent for the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the **Activity Area** of **Industrial or Trade Activities** that do not meet the standards and terms of the Controlled Activity or Restricted Discretionary Activity rules;
- (j) requiring operators of Moderate and High Risk **Industrial or Trade Activities** to prepare and implement Environmental Management Plans that identify the *environmentally hazardous substances* associated with the **Industrial or Trade Activity** and set out the methods to be used to avoid discharges of those substances onto or into land or water where practicable, and to remedy or mitigate the adverse effects of discharges where they cannot be avoided.

**Explanation:**

*Schedule 3 is used to initially determine the risk of an **Industrial or Trade Activity** and whether it is Low, Moderate or High Risk. Thereafter compliance or otherwise with the provisions of the **Industrial or Trade Activity** rules, and the size of the **Activity Area**, dictate the activity status of the **Industrial or Trade Activities**.*

*As the activities undertaken by an **Industrial or Trade Activity** may vary over time, ARC compliance staff may require access to the area of land occupied by the **Industrial or Trade Activity** in order to assess the current nature and scale of the **Activity Area**.*

*Unscheduled, Low and Moderate Risk **Industrial or Trade Activities** which have an **Activity Area**, but do not have a discharge of *environmentally hazardous substances*, may still require a discharge consent under the **stormwater** Rules 5.5.1 to 5.5.13.*

*(This Policy relates to Objectives 5.3.1 and 5.3.9)*

- 5.4.17** The implementation of Environmental Management Plans for Moderate Risk **Industrial or Trade Activities** shall be assessed on a regular basis (either by way of self assessment or independent assessment). The implementation of Environmental Management Plans for High Risk **Industrial or Trade Activities** may be assessed by way of self assessment or independent assessment with the agreement of the ARC on a case by case basis.

*(This Policy relates to Objectives 5.3.1 and 5.3.9)*

- 5.4.18** When processing land use or discharge consent applications for **Industrial or Trade Activities**, the ARC shall have regard to the operational and financial viability of the activity and/or the **site** on which it is located when considering the necessity for, and the setting of timeframes for, any upgrading of existing **site** infrastructure, while ensuring that significant adverse effects are appropriately avoided, remedied or mitigated.

*(This Policy relates to Objective 5.3.9)*

- 5.4.18A** Suitably qualified, experienced and/or trained **Industrial and Trade Activity** assessors may be registered in accordance with Other Methods 5.6.8 and 5.6.8A.

*(This Policy relates to Objective 5.3.9)*

**Explanation:**

*Prior to the establishment of the training programme referred to in Other Methods 5.6.8 and 5.6.8A, the registration of assessors will be based on the review of applicants by a Panel appointed by the ARC. Thereafter, registration may be obtained either by passing the ARC training programme or by way of review by the Panel*

### Sewage Treatment And Disposal – Community

- 5.4.19** The discharge of treated **sewage** to land shall be at a rate that does not exceed the ability of the land to assimilate the **effluent** or does not result in significant adverse soil or water contamination and does not pose a threat to public health.

*(This Policy relates to Objectives 5.3.1, 5.3.10 to 5.3.11)*

- 5.4.20** The discharge of treated **sewage** to water shall be considered inappropriate unless it can be demonstrated that the treatment system is:

- (a) Designed to cope with the expected **influent** volume; and
- (b) The discharge does not result in significant adverse environmental or public health effects, including cumulative effects.

*(This Policy relates to Objectives 5.3.1 and 5.3.10)*

- 5.4.21** In assessing the effects of treated **sewage** discharges to water, regard shall be had to:

- (a) The extent of degradation of the existing water quality of the **receiving water** body;
- (b) Whether the discharge to land would have more significant adverse environmental effect; and
- (c) The current state of technical knowledge regarding the proposed system and the likelihood that the proposed method of discharge can be successfully applied.

*(This Policy relates to Objectives 5.3.1 and 5.3.10)*

#### **Explanation:**

*Policies 5.4.19 - 5.4.21 do not apply to "overflow" events, but only to discharges of treated sewage from community sewage treatment plants. Overflows are addressed in other policies and rules including: Policies 5.4.5, 5.4.5A, 5.4.14, 5.4.15 and Rules 5.5.6, 5.5.7, 5.5.8, 5.5.10, 5.5.11, 5.5.12 and 5.5.13.*

### Sewage Treatment And Disposal – On-site

- 5.4.23** When considering the use of on-site **sewage treatment** and disposal systems for new subdivision and/or **land use intensification**, regard shall be had to the potential for cumulative adverse effects.

*(This Policy relates to Objectives 5.3.1 and 5.3.11)*

- 5.4.24** When considering on-site **sewage treatment** and disposal, regard shall be had to:

- (a) Adverse public health and environmental impacts on water quality and **amenity** values;
- (b) The location and proximity of the discharge to other discharges, and cumulative effects on the **receiving environment**;
- (c) The feasibility of connecting the discharge to a sanitary sewer or de-centralised system and whether that connection is the 'best practicable option';
- (d) The system design and whether the volume of the discharge, level of contaminants and rate of discharge has been minimised to the greatest extent practicable;
- (e) Whether the type of **wastewater** treatment system is suitable for the **site** and conditions;
- (f) Whether the method of land application is appropriate for the **site** and conditions; and
- (g) The issues and concerns of tangata whenua.

*(This Policy relates to Objectives 5.3.1, 5.3.10 to 5.3.11)*

### Sewage Sludge (including Biosolids)

- 5.4.25** To promote the application of *biosolids* onto and into land where it can be demonstrated that:
- (a) it will not result in significant adverse effects on surface and groundwater quality;
  - (b) it does not pose a threat to public health in terms of concentrations of nutrients, heavy metals, pathogens and synthetic organic chemicals;
  - (c) it does not adversely affect any identified *wāhi tapu* site;
  - (d) it does not result in more than minor adverse effects to a water supply management area;
  - (e) there is no offensive or objectionable odour or dust beyond the boundary of the property on which the biosolids are applied;
  - (f) the application of biosolids to land used for food production or residential activities will be avoided.

*(This Policy relates to Objectives 5.3.1, 5.3.2 and 5.3.2A)*

- 5.4.26** To allow the application of *sewage sludge* that does not meet the product specifications to become *biosolids* onto and into land and the storage of *sewage sludge* on land where it can be demonstrated that:
- (a) it will not result in significant adverse effects on surface and groundwater quality;
  - (b) it does not pose a threat to public health in terms of concentrations of nutrients, heavy metals, pathogens and synthetic organic chemicals;
  - (c) it does not adversely affect any identified *wāhi tapu* site;
  - (d) it does not result in more than minor adverse effects to a water supply management area;
  - (e) there is no offensive or objectionable odour or dust beyond the boundary of the property on which the sludge is applied;
  - (f) the application of *sewage sludge* to land used for food production or residential activities will be avoided.

Where the above matters cannot be appropriately addressed the *sewage sludge* should be disposed of by landfilling or similar means.

*(This Policy relates to Objectives 5.3.1, 5.3.2 and 5.3.2A)*

### Land Management

- 5.4.27** The discharge of sediment shall not result in more than minor adverse effects on the values of any Natural *Lake*, Natural Stream and Wetland Management Areas where the discharge occurs within the Management areas as defined in Map Series 1 for Natural *Lake*, Natural Stream and Wetland Management Areas.

*(This Policy relates to Objective 5.3.13)*

- 5.4.28** *Cultivation* activities shall avoid, mitigate or minimise adverse effects from the generation and discharge of sediment. In assessing the effects on the environment, regard shall be had to appropriate *sediment control* measures specified in the Franklin Sustainability Project Guidelines, 'Doing it Right' (2000).

*(This Policy relates to Objectives 5.3.12 and 5.3.13)*

### Discharges from Production Land Activities

**5.4.29** Discharges from production land activities are carried out so as to avoid or minimise contamination of *groundwater* and *surface waters*, and to avoid any risk to human health.  
(This Policy relates to Objectives 5.3.1 and 5.3.2)

**5.4.30** The re-use of discharges from production land activities is promoted where they are:

- (a) Low *maintenance* and low risk;
- (b) Land based, where soil types and disposal areas are adequate; and
- (c) Operated in accordance with a *maintenance*, monitoring and contingency plan.

(This Policy relates to Objectives 5.3.1 and 5.3.2)

### Fertiliser Use

**5.4.32** To ensure that *fertilisers* are used in accordance with good management practices so as to minimise the entry of nutrient into waterbodies.  
(This Policy relates to Objective 5.3.1)

### Contaminated Land

**5.4.34A** To facilitate the identification and appropriate management of *land containing elevated levels of contaminants* including *contaminated land*.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.34B** To work with *site* owners or responsible parties to determine what if any management is required for *land containing elevated levels of contaminants*.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.34** To encourage the owners or occupiers of land, where activities listed as high risk in the 'Contaminated Land Management Guidelines No. 3 Risk Screening System' (MfE February 2004) have been undertaken, to complete a contaminated *site* assessment when appropriate throughout the cycle of use, redevelopment or sale of the land.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.35** To encourage *TA's* to seek contaminated *site* assessments prior to allowing a change in land use, subdivision or redevelopment where the land has been used for any activity listed in the 'Contaminated Land Management Guideline No. 3 Risk Screening System' (MfE February 2004).  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.36** To facilitate the *remediation* or management of *contaminated land* in cooperation with territorial authorities, where *site* investigations show a significant risk to human health.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.37** The management of *land containing elevated levels of contaminants* may allow contaminants to remain in the ground on the site where it can be demonstrated that the level of contamination will not pose potentially significant adverse effects on the environment or to human health.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)

**5.4.37A** When processing discharge consent applications for *land containing elevated levels of contaminants* including *contaminated land* the ARC shall have regard to the actual and potential adverse effects of the activity, physical constraints of the *site*, operational practicalities, and the financial implications of the investigation, *remediation*, management and monitoring options imposed compared with other options.  
(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)



- 5.4.37B** The contaminant levels specified in Rules 5.5.41, 5.5.42 and 5.5.42A do not establish **remediation** criteria for land which must be met in all cases, although land owners may choose to remediate **contaminated land** to those levels should they wish to comply with those Rules.

*(This Policy relates to Objectives 5.3.1, 5.3.14, 5.3.15 and 5.3.16)*

#### **Landfills**

- 5.4.39** In assessing the effects of closed **landfills** on the environment and public health regard shall be had to 'A Guide to the Management of Closing and Closed Landfills in New Zealand', MfE 2001 and other appropriate documents and principles.

*(This Policy relates to Objectives 5.3.1 and 5.3.15)*

- 5.4.40** The discharge of **leachate** from closed **landfills** shall be considered to be appropriate where it will not have a significant adverse effect on **groundwater** quality, **surface water** quality, aquatic life or public health.

*(This Policy relates to Objectives 5.3.1 and 5.3.15)*

- 5.4.41** All closed **landfills** shall have an appropriate level of monitoring to ensure the effectiveness of post-closure care relative to the risks of adverse effects from discharges to **groundwater**, **surface waters** or public health, in accordance with 'A Guide to the Management of Closing and Closed Landfills in New Zealand', Ministry for the Environment 2001 and other appropriate documents and principles.

*(This Policy relates to Objectives 5.3.1 and 5.3.15)*

- 5.4.42** **Landfill** post-closure management shall ensure that the integrity of the **site** is maintained so that:

- (a) Any discharge will not pose a threat to the environment or to public health;
- (b) The current and proposed future use of the land will not be adversely affected; and
- (c) Ongoing monitoring appropriate to the extent and type of contamination of the **site** is undertaken to ensure that (a) and (b) above are achieved.

*(This Policy relates to Objectives 5.3.1 and 5.3.15)*

- 5.4.43** Proposals to discharge **refuse** to land shall demonstrate that:

- (a) Any discharge to the environment will not pose a threat to the environment or to public health; and
- (b) Ground and **surface water** resources are not at risk from the discharge of contaminants onto or into land.

*(This Policy relates to Objectives 5.3.1 and 5.3.15)*

#### **Other Discharges of Contaminants to Land or Water**

- 5.4.44** Reuse of **washwater** will be encouraged. **Washwater** disposal to land will be acceptable where it will not result in contaminant runoff or the accumulation of contaminants, such as **hydrocarbons** and heavy metals, above acceptable levels in the **receiving environment**. **Washwater** should only be discharged to water where other options including disposal to the sanitary sewer are impractical, and a thorough evaluation of the assimilative capacity of the **receiving environment** has been carried out proving the discharge will not give rise to any significant adverse effects.

*(This Policy relates to Objective 5.3.1)*

- 5.4.45** Discharges from activities that result in large quantities of water with negligible amounts of contaminants, such as swimming pools and water reticulation systems, to land or waterbodies shall be considered appropriate where simple management techniques are adopted which ensure that there are no more than minor adverse effects.

*(This Policy relates to Objective 5.3.1)*

- 5.4.46** Any proposal to discharge geothermal water into any water body shall demonstrate that adverse effects on the environment are avoided as far as practicable, remedied or mitigated by ensuring that:

- (a) The volume of the discharge has been minimised to the greatest extent practicable;
- (b) The adverse effects of added chemicals and filter backwash or other contaminants have been minimised to the greatest extent practicable; and
- (c) The **receiving environment** is able to assimilate the discharge without significant adverse effects.

*(This Policy relates to Objective 5.3.1)*

- 5.4.47** New discharges of geothermal water outside of Parakai and Waiwera, or any redevelopment of existing **sites** which results in a change in the volume or location of a geothermal discharge, shall be encouraged to discharge to **territorial authority stormwater network**, rather than discharging at a separate individual discharge point. Any discharge of geothermal water to a reticulated system shall require the approval of the system owner.

*(This Policy relates to Objective 5.3.1)*

- 5.4.48** Discharges of geothermal water to land shall be undertaken in a way that does not give rise to land instability, erosion or flooding either on the **site** of the discharge or in neighbouring properties.

*(This Policy relates to Objective 5.3.1)*

- 5.4.48A** When processing consent applications for discharges associated with the construction, use, operation and maintenance of the reticulated water networks under rules 5.5.54 to 5.5.68 the Council shall recognise the strategic importance of reticulated water networks in achieving sustainable management and enabling people and communities to meet their needs for economic, social and cultural well-being.

*(This Policy relates to Objective 5.3.1)*

#### **Stock Access**

- 5.4.49** Unrestricted stock access to the beds of **lakes**, rivers and streams shall be discouraged. (To give effect to this policy a range of tools including; advocacy, partnerships and regulation will be considered).

#### **Explanation**

*The ARC intends to notify a Plan Variation/Change to the stock access part of Chapter 5 within two years of the notification of the ARC Hearings Committee decisions on submissions to the Plan. This Plan Variation/Change is considered necessary to take advantage of evolving strategies/initiatives for the **protection** of beds and banks of **lakes**, rivers and streams. Recent initiatives by rural sector groups (Fonterra, Federated Farmers), central government (MfE) and local government (Regional Councils and **Territorial Authorities**) are progressing toward an efficient and effective combination of education, advocacy and regulation. It is anticipated that an appropriate combination of advocacy (including financial assistance for voluntary initiatives), education (including demonstration facilities) and regulation (including rules) will be better defined within this two-year timeframe.*

*The work programme to provide the information necessary to develop the Plan Variation / Change will include the following:*

- A Section 32 evaluation;
- Consultation with interested parties;
- Investigation of funding options for implementation of voluntary initiatives;
- Collection of baseline data on the extent of the problem (benchmarking);
- Setting of targets for areas fenced and timeframes for completion and priorities (e.g. high ecological values versus highly compromised situations) following benchmarking;
- Liaison with **Territorial Authorities** regarding the role of District Plans;
- Integration of other initiatives such as the Clean Streams Accord and other Regional Council education, advocacy and regulatory approaches; and
- ARC to provide best practice examples via demonstration facilities through projects such as the Riparian Implementation Project and the Mahurangi Project.

*The ultimate target will be the **protection** of all **Permanent rivers and streams** from unrestricted stock access using a staged approach based on appropriate criteria used to establish priorities for management. The degree to which **Intermittent streams** and wetland resources require **protection** from stock access are the subject of ongoing investigations. Management issues and options will be dealt with based on the outcome of this research and included as relevant in the Variation.*

*(This Policy relates to Objectives 5.3.17 and 5.3.18)*

**5.4.50** Stock access to the bed or bank of any **lake, Permanent River or Stream** shall be considered appropriate in the following circumstances:

- (a) At stock crossing points where it can be demonstrated that:
  - (i) No reasonable or practicable alternative method or location exists; or
  - (ii) The use of an alternative method or location would have more significant adverse environmental effect; and
  - (iii) The area necessary for access is minimised to the greatest extent practicable.
- (b) For grazing adjacent to any **lake or Permanent river or stream**:
  - (i) significant cumulative adverse effects will be avoided;
  - (ii) where it will not result in significant adverse changes to bed morphology and flow hydraulics;
  - (iii) where it will not cause or exacerbate significant adverse effects on aquatic flora and fauna, habitat values and riparian vegetation;
  - (iv) where it will not give rise to more than temporary minimised turbidity or disturbance or permanent long-term adverse effects; and
  - (v) where it will not give rise to significant adverse effects on existing lawful users or recreational and **amenity** values downstream.

*(This Policy relates to Objectives 5.3.17 and 5.3.18)*

## 5.5 Rules

### Rules for Stormwater Diversions and Discharges and Wastewater Overflow Discharges

#### Explanation:

These rules relate to the discharge of *stormwater* after developments have been completed. Sediment discharges from land disturbing (being earthworks, quarrying, roading, trenching, tracking and vegetation removal) activities are regulated by the Regional Plan: Sediment Control.

The discharge of contaminants that originates from an *industrial or trade activity* is not permitted by Rule 5.5.1 and is regulated by Rules 5.5.14 to 5.5.19.

Table 5.1: Rules for Stormwater Discharges and Diversions Outside the Urban Areas

The following tables are for explanation purposes only and to assist the reader to determine the relevant rule applying to their activity. Refer to each Rule for the required conditions.

Discharges and Diversions of Stormwater from:	Existing <sup>1</sup> impervious areas	New impervious areas < 1,000m <sup>2</sup>	New impervious areas between 1000m <sup>2</sup> and 5,000m <sup>2</sup>	New impervious areas between 5,000m <sup>2</sup> and 10,000m <sup>2</sup>	New impervious area > 10,000m <sup>2</sup>
Local roads	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.1 (3)	Rule 5.5.3	Rule 5.5.4
Other roads	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.2	Rule 5.5.3	Rule 5.5.4
Farming, horticultural, rural community facility	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.1 (2)	Rule 5.5.3	Rule 5.5.4
<i>Countryside living</i>	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.1 (3)	Rule 5.5.3	Rule 5.5.4
Zoned future urban and meets <i>ICMP</i>	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.2	Rule 5.5.3	Rule 5.5.4
Other activities	Rule 5.5.1(1A)	Rule 5.5.1 (1)	Rule 5.5.2 or 5.5.5	Rule 5.5.3	Rule 5.5.4 or 5.5.5

<sup>1</sup> Existing means as at the date of Notification of this Plan (23 October 2001)

**Table 5.2: Rules for Stormwater Discharges and Diversions Inside the Urban Areas**  
*The following tables are for explanation purposes only and to assist the reader to determine the relevant rule applying to their activity. Refer to each Rule for the required conditions.*

Discharges and Diversions of Stormwater from:	Development within a comprehensive catchment consent <sup>1</sup> area or connected to a network with a consent <sup>2</sup>	Development connected to a public stormwater network which does not have a specific consent		Development not connected to a public stormwater network		Impervious area thresholds		
	Existing or new impervious areas	Existing impervious areas	New impervious areas	Existing impervious areas	New impervious areas	Impervious areas < 1000m <sup>2</sup>	Impervious areas between 1000 and 5000m <sup>2</sup>	Impervious areas > 5000m <sup>2</sup>
Residential subdivision	Authorised by permitted activities (Transitional Regional Plan and Rule 5.5.9) or consent	Authorised by existing – use authorisations <sup>3</sup>	Refer to the impervious area thresholds. Compare only the new impervious area against the thresholds.	Refer to the impervious area thresholds. Compare only the new impervious areas against the thresholds.		Rule 5.5.1 (1)	Rule 5.5.1 (4)	Rule 5.5.3
All other activities	Authorised by permitted activities (Transitional Regional Plan and Rule 5.5.9) or consent	Authorised by existing – use authorisations	Refer to the impervious area thresholds. Compare only the new impervious area against the thresholds.	Refer to the impervious area thresholds. Compare only the new impervious areas against the thresholds.		Rule 5.5.1 (1)	Rule 5.5.2	Rule 5.5.3

<sup>1</sup> Comprehensive catchment consents have been issued for some catchments in the Urban Areas. These consents authorise **stormwater network** discharges within a

*whole catchment and other discharges as per the Transitional Regional Plan and Rule 5.5.10 of this plan. As at 23 October 2001, the following catchments were covered:*

- Auckland CC: Vale Rd (St Heliers), Alfred St (Onehunga), Oakley Creek, Motions Creek, Anns Creek, Ellerslie Waiaatarua, part of Kohimarama,
- Manukau CC: Portage Rd (Pukaki and Waiokauri Creek), South Stream (Eastern Beach), Howick South, Flat Bush (Otara Stream), Upper Puhinui, Puhinui Stream, Otara Creek, North Redoubt Rd (Otara Stream), Gibbons Rd (Weymouth), Nield Rd, Waimahia Creek, Oruarangi Creek, East Tamaki Point View, Wakaoranga/Bucklands
- North Shore CC: Taiotea (Brown's Bay), Rothesay Bay
- Papakura DC: Croskery Rd (part of Slippery Creek)
- Rodney DC: Hatfields Beach, selected sub-catchments in Orewa, Duck Creek, Red Beach, Stanmore Bay, Tindalls Beach, Swan Beach, Big Manly, Little Manly, Army Bay, Wellsford, Helensville, Kaukapakapa, Coatesville, Riverhead
- Waitakere CC: Wisely Rd (Hobsonville), Rewarewa, Green Bay, Kashmir Rd, Wairau Creek, Metcalfe Rd catchment, Waimoko, Paremuaka, Upper Manetewhau, Parrs Stream

<sup>2</sup> *Stormwater discharges from subdivisions are often authorised by a consent granted to a developer which is subsequently transferred to the **Territorial Authority**. These consents may authorise discharges from increases in **impervious area**.*

<sup>3</sup> *Existing use authorisations are those authorisations issued under the Water and Soil Act to all **Territorial Authorities** for the discharge of **stormwater** as at 9 September 1966. Increases to these were allowed under the Transitional Regional Plan, but were not included in the ALW Plan. **Territorial Authorities** have applied for **stormwater** discharge consents for their **networks** in the **Urban Areas**.*

## Permitted Activity

### 5.5.1

The diversion and discharge of **stormwater** either inside or outside **Urban Areas** is a Permitted Activity if it arises from:

- (1A) **impervious** areas existing at the date of notification of this plan (23 October 2001) and it complies with all of conditions (a), (aa), (b), (c), (d) and (e); or
- (1) less than 1,000m<sup>2</sup> of combined **impervious area**(s) constructed after the date of notification of this plan (23 October 2001) from a subdivision or development and it complies with all of conditions (a), (b), (c), (d), (e),(g) and (h).

The diversion and discharge of **stormwater** outside **Urban Areas** is a Permitted Activity if it arises from:

- (2) between 1,000 and 5,000m<sup>2</sup> of **impervious area** constructed after the date of notification of this plan (23 October 2001) and it originates from a farming, horticultural, rural community facility or local roading activity and it complies with all of conditions (d), (e), (f) and (g);or
- (3) between 1,000 and 5,000m<sup>2</sup> of **impervious area** from a **countryside living** subdivision or development and it complies with all of conditions (d), (e), (f) and (g).

The diversion and discharge of **stormwater** inside **Urban Areas** is a Permitted Activity if it arises from:

- (4) between 1,000 and 5,000m<sup>2</sup> of **impervious areas** from a residential subdivision or development (including any access road) and it complies with all of conditions (ab), (b), (f) (sub clause (i) only), (g), (i) and (j); or,

- (5) **impervious areas** existing at the date of notification of this Plan (23 October 2001) from land zoned under a **rural classification** in an operative district plan if it complies with all of conditions (a), (aa), (b), (c), (d) and (e).

**Conditions:**

- (a) The land-use activity giving rise to the discharge shall not change to one which will generate increased levels of stormwater contaminants;
- (aa) The extent of impervious area giving rise to the discharge shall not exceed that which existed at the date of notification of this plan (23 October 2001);
- (ab) It is not otherwise authorised by a **stormwater network** consent granted under the provisions of Rules 5.5.10, 5.5.11, 5.5.12 or 5.5.13;
- (b) It does not cause scouring at the point of discharge;
- (c) It does not cause flooding, in a 100 year **ARI** storm, of a **habitable floor level** in any dwelling, authorised by a Territorial Local Authority, existing at the date of notification of this plan;
- (d) The discharge shall occur with the minimum of nuisance and damage and in particular shall avoid more than minor adverse effects on any downstream neighbouring property;
- (e) Modifications to existing **drainage** patterns shall be minimised. In particular, **stormwater** shall be discharged to land in a manner that disperses the flow and prevents scour and point discharges forming;
- (f) For discharges to land or to a **Permanent river or stream**, the method of **stormwater** disposal shall minimise changes to the pre-development hydrological regime (existing immediately prior to construction). In particular:
  - (i) the peak flows for the 2 year and 10 year **ARI** post-development events shall not be greater than the corresponding peak flows for pre-development events; and
  - (ii) the volume of **stormwater** runoff for post-development events shall be minimised; and
  - (iii) the time of concentration for post-development events shall be maximised so that it is as close as practicable to those for pre-development events;
- (g) It does not cause flood levels in a 100 year **ARI** storm to rise within 0.5 metres of a **habitable floor level** (authorised by a **Territorial Authority**) in any dwelling unless the relevant District Plan or "**Local Authority Infrastructure Design Standards**" establishes an alternative freeboard requirement (above the 100 year **ARI** storm) in which case the District Plan or **Local Authority Infrastructure Design Standards** freeboard requirement shall prevail;
- (h) Primary sediment treatment shall be provided by methods such as cesspits or vegetated buffer strips;
- (i) **Overland flow** paths shall be provided and maintained for flows in excess of the primary **drainage network** capacity to allow flows up to and including the 100 year **ARI** storm to discharge with the minimum of nuisance and damage;
- (j) For any **stormwater** discharged from more than 1,000m<sup>2</sup> of **impervious area source control**, contaminant reduction or contaminant removal methods shall be designed to provide for the removal of at least 75% (or the alternative percentage specified in the relevant discharge consent for the area) of the **total suspended solids** anticipated from the **impervious area** on a **long term average basis**. These methods include but are not limited to constructed wetlands, swales, vegetative filters or **infiltration** practices.



**Explanations:**

- (1) Rules 5.5.1(1A) and 5.5.1(5) authorise existing activities that were previously authorised by permitted activity rules in the Transitional Regional Plan (Discharge from Development in Rural Areas, Discharge of Water from Roads). The terms in Rule 5.5.1(5) have been specifically used to ensure consistency with the Transitional Regional Plan. The Rule places a number of conditions on the discharge to limit adverse effects. Discharges from new **impervious areas** adjacent, or contiguous to the existing development require consent where they cannot meet the conditions of Rule 5.5.1(1).
- (2) Guidance in meeting conditions (e), (f), (h) and (j) is provided in ARC Technical Publications; "TP10: Stormwater Treatment Devices: Design Guideline Manual"; (stormwater treatment devices designed, constructed, and maintained in accordance with TP10 are deemed to achieve 75% **total suspended solids** removal on a **long term average basis**. Other treatment methods are acceptable provided that the applicant can demonstrate that they are designed to achieve 75% **total suspended solid** removal) "TP92: Large Lot Stormwater Management Design" and "TP124: **Low impact design** manual for the Auckland Region," Rodney District Council's "Management of Stormwater in **Countryside Living Zones - A Toolbox of Methods**," or Waitakere City Council's "Countryside and Foothills Stormwater Management Code of Practice."
- (3) Activities unable to comply with the standards and terms of Rule 5.5.1 default to Rule 5.5.2.
- (4) **Impervious areas** are calculated as the sum of the separate **impervious areas** from the completed subdivision or development. **Impervious areas** that are already authorised by another permitted activity or **stormwater** discharge permit are excluded. Existing **impervious areas** draining to a public **stormwater network** are excluded (as they are authorised by existing use authorisations under RMA s386 (2) and General Authorisation 11 in the Transitional Regional Plan).
- (5) The **Territorial Authority, stormwater or wastewater network utility operator or highway network operator** may not accept ownership/responsibility for the discharge from a site and any new **stormwater** infrastructure and its **maintenance**, unless otherwise agreed to and approved by the **Territorial Authority, stormwater or wastewater network utility operator or highway network operator**. It is prudent to discuss this matter with the relevant **territorial authority/network operator** before commencing the diversion or discharge.
- (6) Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds. For new developments involving an additional **impervious area** of less than 5,000m<sup>2</sup>, financial contributions may apply in lieu of **stormwater** mitigation works.
- (7) Conditions (a), (aa), (e), (h) and (j) shall not apply to discharge from the **Activity Area of an Industrial or Trade Activity**.

**Inside or Outside Urban Areas****Other Stormwater Discharges from Impervious Areas Greater than 1,000m<sup>2</sup> but Less than or Equal to 5,000m<sup>2</sup>****Controlled Activity****5.5.2**

Other than for discharges authorised by Rules 5.5.1 the diversion and discharge of **stormwater** from **impervious areas** which total greater than 1,000 m<sup>2</sup> but less than or equal to 5,000m<sup>2</sup> is a Controlled Activity if it complies with all of the following standards and terms:

- (a) The combined *impervious areas* (not already authorised or consented) of the subdivision or development total less than or equal to 5000m<sup>2</sup>;
- (b) It is not otherwise authorised by a *stormwater network* consent granted under the provisions of Rules 5.5.10, 5.5.11, 5.5.12, or 5.5.13;
- (c) Inside the *Urban Area*, *Stormwater outfalls* that are likely to *cause* erosion at the *outfall* incorporate *erosion control* measures that do not impede *fish passage*;
- (d) It does not cause flood levels in a 100 year *ARI* storm to rise within 0.5 metres of a *habitable floor level* authorised by a *Territorial Local Authority*, in any dwelling, unless the relevant District Plan or "*Local Authority Infrastructure Design Standards*" establishes an alternative freeboard requirement (above the 100 year *ARI* storm) in which case the District Plan or "*Local Authority Infrastructure Design Standards*" freeboard requirement shall prevail;
- (e) For any *stormwater* discharged from more than 1,000m<sup>2</sup> of *impervious area source control*, contaminant reduction or contaminant removal methods shall be designed to provide for the removal of at least 75% (or the alternative percentage specified in the relevant network discharge consent for the area) of the *total suspended solids* anticipated from the *impervious area* on a *long term average basis*. These methods include but are not limited to constructed wetlands, swales, vegetative filters or *infiltration* practices;
- (f) *Overland flow paths* shall be provided and maintained for flows in excess of the primary *drainage network* capacity to allow flows up to and including the 100 year *ARI* storm to discharge with the minimum of nuisance and damage; and
- (g) Where the ownership of the proposed *stormwater* works are to be taken over by the Territorial Local Authority upon deposit of the survey plan, the written approval of that Territorial Local Authority regarding the operational and *maintenance* aspects of the proposed works has been provided to the ARC.

#### 5.5.2A The ARC shall exercise its control over the following matters in rule 5.5.2:

- (a) The provision of methods to avoid downstream channel erosion;
- (b) The methods to achieve Rule 5.5.2 (c), (d) and (e) and *erosion control*, including the extent and type of vegetation and/or re-vegetation cover on *site*;
- (c) The location of the point of discharge;
- (d) The degree of consistency and integration with any *Integrated Catchment Management Plan* or *stormwater network* consent within the same catchment;
- (e) Effects on *archaeological sites*, *wāhi tapu*, and the matters listed in Policy 2.3.4.4.
- (f) Monitoring and reporting requirements; and
- (g) The duration of the consent.

#### Explanations:

- (1) *Impervious areas* are calculated as the sum of the separate *impervious areas* from the completed subdivision or development. *Impervious areas* that are already authorised by a permitted activity or *stormwater* discharge permit are excluded. Existing *impervious areas* draining to a public *stormwater network* are excluded (as they are authorised by existing use authorisations under RMA s386 (2) and General Authorisation 11 in the Transitional Regional Plan).
- (2) ARC Technical Publication 10 gives guidance in achieving the requirements of standard and term (e). *Stormwater* treatment devices designed, constructed and maintained in accordance with TP10 are deemed to achieve 75% *total suspended solids* removal on a *long term average basis*. Other treatment methods are acceptable provided that the applicant can demonstrate that they achieve (e).

- (3) Activities unable to comply with the standards and terms (a) to (g) of Rule 5.5.2 default to Rule 5.5.3 for discharges from **impervious areas** less than 10,000m<sup>2</sup> and Rule 5.5.4 for discharges from **impervious areas** greater than 10,000m<sup>2</sup>.
- (4) Standard and term (e) shall not apply to discharges from the **Activity Area** of an **Industrial or Trade Activity**.
- (5) Consent applicants/holders are informed that obtaining a resource consent for a particular discharge or diversion may not mean that the **Territorial Authority, stormwater or wastewater network utility operator or highway network operator** will accept ownership/responsibility for the discharge from that **site** and any new **stormwater infrastructure** and its **maintenance**, unless otherwise agreed to and approved by the **Territorial Authority, stormwater or wastewater network utility operator or highway network operator**. It is also suggested that consent applicants discuss this matter with the relevant **territorial authority/network operator** before applying for consent.
- (6) Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds. For new developments involving an additional **impervious area** of less than 5,000m<sup>2</sup>, financial contributions may apply in lieu of **stormwater** mitigation.

#### Non Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### **Stormwater Discharges from less than 5,000m<sup>2</sup> of impervious area not complying with Rules 5.5.1 and 5.5.2 or stormwater discharges from areas between 5,000m<sup>2</sup> and 10,000m<sup>2</sup>**

##### Restricted Discretionary Activity

### 5.5.3

The diversion and discharge of **stormwater** which does not meet the conditions of Rules 5.5.1 or 5.5.9 or the standards and terms of Rule 5.5.2, or which arises from an **impervious** area between 5,000m<sup>2</sup> and 10,000m<sup>2</sup>, is a Restricted Discretionary Activity if it complies with all of the following standards and terms:

- (a) The combined **impervious areas** (not already authorised or consented) of the subdivision or development total less than or equal to 10,000m<sup>2</sup>;
- (b) It is not otherwise authorised by a **stormwater network** consent granted under the provisions of Rules 5.5.10, 5.5.11, 5.5.12 or 5.5.13;
- (c) Where the ownership of the proposed **stormwater** works are to be vested to the **Territorial Authority**, the written approval of that **Territorial Authority** regarding the operational and **maintenance** aspects of the proposed works has been provided to the ARC.

### 5.5.3A

The ARC shall restrict the exercise of its discretion to the matters within the conditions and standards and terms of Rules 5.5.1, 5.5.2 and 5.5.9 that the activity is unable to comply with together with the following matters:

- (a) The provision of methods to avoid downstream channel erosion;
- (b) The methods to achieve standards and terms (c) and (d) of Rule 5.5.2, including the extent and type of vegetation and/or re-vegetation cover on **site**;
- (c) The location of the point of discharge;
- (d) The effects of the discharge of contaminants after reasonable mixing in the relevant **receiving environment**;

- (e) The degree of consistency and integration with any *Integrated Catchment Management Plan* or *stormwater network* consent within the same catchment;
- (f) Effects on *archaeological sites*, *wāhi tapu*, and the matters listed in Policy 2.3.4.4;
- (g) Monitoring and reporting requirements; and
- (h) The duration of the consent.

**Explanation:**

- (1) Activities unable to comply with Rule 5.5.3 default to Rule 5.5.4.
- (2) Consent applicants/holders are informed that obtaining a resource consent for a particular discharge or diversion may not mean that the *Territorial Authority*, *stormwater or wastewater network utility operator* or *highway network operator* will accept ownership/responsibility for the discharge from that *site* and any new *stormwater* infrastructure and its *maintenance*, unless otherwise agreed to and approved by the *Territorial Authority*, *stormwater or wastewater network utility operator* or *highway network operator*. It is also suggested that consent applicants discuss this matter with the relevant *territorial authority/network operator* before applying for consent.
- (3) Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds. For new developments involving an additional *impervious area* of less than 5,000m<sup>2</sup>, financial contributions may apply in lieu of *stormwater* mitigation works.
- (4) Matter of control (d) shall not apply to discharges from the *Activity Area* of an *Industrial or Trade Activity*.

**Non Notification**

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Discretionary Activity**

**5.5.4** Other than for discharges authorised by Rules 5.5.1, 5.5.2, 5.5.3, 5.5.9 or a *stormwater network* consent granted under the provisions of Rules 5.5.10, 5.5.11, 5.5.12 or 5.5.13, the diversion and discharge of *stormwater* is a Discretionary Activity where the ownership of the proposed *stormwater* works are to be vested to the *Territorial Authority*, the written approval of that Territorial Local Authority regarding the operational and *maintenance* aspects of the proposed works has been provided to the ARC.

**Explanations:**

- (1) Activities unable to comply with Rule 5.5.4 default to Rule 5.5.5.
- (2) Consent applicants/holders are informed that obtaining a resource consent for a particular discharge or diversion will not mean that the *Territorial Authority*, *stormwater or wastewater network utility operator* or *highway network operator* will accept ownership/responsibility for the discharge from that *site* or any new *stormwater* infrastructure or its *maintenance*, unless otherwise agreed to and approved by the *Territorial Authority*, *stormwater or wastewater network utility operator* or *highway network operator*. It is also suggested that consent applicants discuss this matter with the relevant *territorial authority/network operator* before applying for consent.

- (3) *Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds.*

*(For Rule 5.5.4 see also Policy 5.4.4)*

#### Non Complying Activity

##### 5.5.5

The diversion and discharge of **stormwater** unable to comply with Rule 5.5.4 is a non-complying activity.

#### *Explanation:*

- (a) *Consent applicants/holders are informed that obtaining a resource consent for a particular discharge or diversion may not mean that the **Territorial Authority, stormwater or wastewater network utility operator** or **highway network operator** will accept ownership/responsibility for the discharge from that site or any new **stormwater** infrastructure and its **maintenance**, unless otherwise agreed to and approved by the **Territorial Authority, stormwater or wastewater network utility operator** or **highway network operator**. It is also suggested that consent applicants discuss this matter with the relevant **territorial authority/ network operator** before applying for consent.*
- (b) *Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds.*

#### Wastewater Discharges In All Areas

#### *Explanation:*

- (1) *This section covers the discharge of **wastewater** from individual pumping stations. **Stormwater or Wastewater Network Utility Operators** may use Rules 5.5.10 – 5.5.13 instead for network discharges. On-site wastewater disposal and the discharge of treated **wastewater** from treatment facilities are covered in Rules 5.5.20 to 5.5.28.*
- (2) *Where the ownership of a proposed pumping station is to be transferred to the **Territorial Authority**, the pumping station design should be approved by the relevant **Territorial Authority**.*

#### Permitted Activity

##### 5.5.6

The discharge of wastewater from a wastewater pumping station (either via a constructed outlet of upstream manhole) is a Permitted Activity, subject to the following conditions:

- (a) The pump station and/or its location are shown on a plan with NZMS grid references (seven digit easting and northing), and by a photograph, both of which are provided to the ARC;
- (b) It does not render a currently used **potable water** source unsuitable for human consumption, as defined in the 'Drinking Water Standards for New Zealand', Ministry of Health (2000);
- (c) The **average dry weather flow** into the pumping station is less than 3 litres/second and the **design peak flow** into the pumping station is less than or equal to 15 litres/second;
- (d) Any discharge from the pumping station is free of any **trade waste** not authorised by the **wastewater network** operator receiving the discharge;
- (e) It is not otherwise authorised by a **wastewater network** consent granted under the provisions of Rules 5.5.10, 5.5.11, 5.5.12 and 5.5.13;

- (f) Storage shall be provided above the high level pump start to contain flows in excess of the pumping capacity to a minimum of four hours **average dry weather flow**;

**Explanation:**

*Local Authority Infrastructure Design Standards or District Plans may specify a higher level or performance, particularly where a proposed wastewater pump station is intended to be vested in the local authority.*

- (g) An alarm shall warn the operator when storage is being utilised, including during times of loss of mains power supply, and the operator shall take all reasonable steps to prevent a discharge;
- (h) **Outfalls** from pump stations shall discharge to land and the potential for the discharge to enter water bodies or the coastal marine area shall be minimised;
- (i) Inspection, operation and **maintenance** procedures shall be developed and implemented to ensure that inflow and **infiltration** to the pump station is minimised, storage is available, and alarms are maintained in good working order.

#### Restricted Discretionary Activity

##### 5.5.7

The discharge of **wastewater** from **wastewater** pumping stations (either via a constructed outlet or upstream manhole) that does not comply with one or more standards and terms of Rule 5.5.6 is a Restricted Discretionary Activity.

The ARC will restrict the exercise of its discretion to the standards and terms of Rule 5.5.6 that the activity is unable to comply with, together with the following additional matters:

- (a) the quality, volume, rate and frequency of the discharge;
- (b) the methods of **wastewater** collection, treatment and discharge;
- (c) methods to avoid, remedy or mitigate adverse effects on public health and ecology;
- (d) methods to remedy (or cleanup) any residual adverse effects of authorised **wastewater overflow** discharges on public health, **amenity** values and ecology;
- (e) the location of the point of discharge;
- (f) the degree of integration with any **wastewater network** consent within the same catchment;
- (g) the degree of integration with any **structure plan** for the catchment;
- (h) Effects on **archaeological sites**, **wāhi tapu**, and the matters listed in Policy 2.3.4.4;
- (i) the scope and nature of any further consultation required; and
- (j) monitoring and reporting requirements.

#### Non Notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless specifically requested by the applicant or required by a rule or national environmental standard. However, the application may be publically notified if in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.



## Stormwater and Wastewater Networks

### Explanation:

- (1) *The following Rules 5.5.8 to 5.5.13 apply to **stormwater and wastewater networks** for a whole, or part of, a catchment although they may also apply on a scale larger than a single catchment (for example a district or sub-regional scale) to allow the integrated management of multiple catchments, networks and receiving environments. The ARC has established a regime whereby existing and new **stormwater and wastewater network** discharges within **Urban Areas** are controlled activities unless they cannot meet specified standards and terms, in which case they are restricted discretionary or discretionary activities.*
- (2) *Outside of **Urban Areas** **stormwater and wastewater network** discharges arising from urban land development are discretionary activities.*  
*The rules (Rules 5.5.10 to 5.5.13) only apply to “**stormwater or wastewater network utility operators**” and “**highway network operators**” defined in this Plan. These operators may alternatively apply for consent for individual discharges under Rules 5.5.2, 5.5.3, 5.5.4, 5.5.5, or 5.5.7.*
- (3) *A **stormwater network** consent authorises the discharge of **stormwater** from the **stormwater networks** over which the consent holder has control. A **wastewater network** consent authorises the discharge of **wastewater** from the piped **wastewater network** and includes discharges from combined (i.e. a reticulated system that is designed to convey both **wastewater and stormwater**) **stormwater and wastewater networks**. Specific exclusions are therefore:*
  - (i) *discharges from private developments to land, rivers, **lakes** or ground (no public **network** exists), and*
  - (ii) *discharges from private developments to a public **network** which are not in accordance with the land-use zonings and intensities set out in the **network** consent (ie the discharge is to a public **network** and it occurs from new developments that are not specifically identified and authorised within a **network** consent/NMP).*

Such a consent could authorise all existing elements of the network(s) that require consent from the ARC if the application includes those elements. Appropriate parts of a network consent can be authorised under the relevant provisions of Chapter 6: Water Allocation and Chapter 7: Beds of Lakes and Rivers & Diversion of Surface Water of this Plan. Where the network discharges directly to the coastal marine area, this discharge and any associated structures are assessed under Chapters 10: General, 11: Activities, 12: Structures, and Chapter 20: Discharge of Contaminants of the Auckland Regional Plan: Coastal. A network consent does not authorise the discharge of the catchment stream(s) to marine waters (as no consent is required for such discharges) and does not transfer the regulatory control for other discharges within the catchment from the ARC to the consent holder. Where the supporting information for the **stormwater network** consent identifies the effects of future urban intensification, and the discharges from the intensified areas occur directly to the network, then the quality and quantity of those future discharges are authorised by the consent. A **stormwater network** consent issued to a **highway network operator** must be consistent with any existing *Integrated Catchment Management Plans* for the catchment or relevant **stormwater network** consents.



## Exfiltration

### Permitted Activity

#### 5.5.8

The discharge of **wastewater** from a **wastewater network**, via **exfiltration** to **groundwater** is a Permitted Activity, if it complies with all of the following conditions:

- (a) the discharge shall not render a **potable water** source unsuitable for human consumption, as defined in the "Drinking Water Standards for New Zealand", MoH (1995);
- (b) The **wastewater network utility operator** shall have a programme in place to determine the general extent of **exfiltration** within the network and identify areas of proportionally high **exfiltration**;
- (c) The **wastewater network utility operator** shall have an operation and **maintenance** programme aimed at the progressive reduction, where practicable, of **wastewater exfiltration**; and
- (d) The **wastewater network utility operator** shall report to the ARC regarding the programmes under (b) and (c) upon request.

#### Explanations:

- (1) Refer also to Rule 6.5.34 which permits the taking of **groundwater** for the purposes of **infiltration** into the network in certain circumstances.
- (2) Programmes to determine the extent of **infiltration** and methods to reduce it will satisfy the requirements of conditions 5.5.8(b) and (c).

## Non-Network Operator Activities

### Permitted Activity

#### 5.5.9

Other than as provided for by Rules 5.5.1, 5.5.2, 5.5.3, 5.5.4 or 5.5.5; the diversion and discharge of **stormwater** to ground or to surface water (which the relevant **stormwater network utility operator** or **highway network operator** does not manage or otherwise have responsibility for) originating from a **site** located within either:

- (a) The extent of a **stormwater network** consent granted under Rules 5.5.10 to 5.5.13 of this Plan which has accounted for the actual or potential **stormwater** discharges from the **site**; or
- (b) The extent of a comprehensive catchment consent issued under the Auckland Transitional Regional Plan and that consent has accounted for the actual or potential **stormwater** discharges from the **site**;

is a Permitted Activity if it complies with all of the following conditions:

- (i) With regard to **impervious area**, the land use activity giving rise to the diversion and discharge shall be authorised under the relevant District Plan as a designation, permitted activity or controlled activity, or shall have a resource consent, or shall have existing use rights;
- (ii) The discharge shall not cause scouring at the point of discharge;
- (iii) **Overland flow paths** shall be provided and maintained for flows in excess of the primary **drainage network** capacity to allow flows up to and including the 100 year **ARI** storm to discharge with the minimum of nuisance and damage;
- (iv) The person undertaking the diversion and discharge has obtained the written approval of the **stormwater network utility operator** for the area and that approval is provided to the ARC prior to the activity commencing.

Activities that fall within the definition of (a) or (b) but are unable to comply with one or more of conditions (i) to (iv) will be assessed as a restricted discretionary activity under Rule 5.5.3.

**Explanation:**

- (1) Rule 5.5.9 authorises the diversion and discharge of **stormwater** from private **sites** and developments to ground or to rivers and streams within an area covered by a **stormwater network** discharge consent prepared by a **territorial authority**, or to a **territorial authority network**, provided that the land use giving rise to the discharge is authorised under the district plan and the supporting information for the network consent considered and prevented or minimised the potential adverse effects of the private diversion and discharge. For the purposes of stormwater quality controls, discharges from the **Activity Area** of an **Industrial or Trade Activity** are excluded from the coverage of Rule 5.5.9 as those activities have their own discreet suite of rules.
- (2) Where the Operative Manukau District Plan 2002 applies, please refer to Chapter 9, Land Modification, Development and Subdivision, Part 9.14 Financial Contributions and Bonds.

**Network Operator Activities Within Urban Areas****Controlled Activities**

**5.5.10** The following activities are controlled activities when undertaken by a **stormwater or wastewater network utility operator or highway network operator**:

- (a) The diversion of **stormwater**;
- (b) The discharge of **stormwater**;
- (c) The discharge of **wastewater** via a pumping station or network **overflow**;
- (d) **Exfiltration** of **wastewater** not authorised under Rule 5.5.8

if they comply with all of the following standards and terms:

- (i) The activity is undertaken by a **stormwater or wastewater network utility operator or highway network operator**;
- (ii) The activity occurs within an **Urban Area**
- (iii) The applicant has prepared either:
  1. An **Integrated Catchment Management Plan (ICMP)**; or
  2. An Assessment of Environmental Effects (AEE);
 that addresses each component required by schedule 9 of this plan;
- (iv) The discharge is not into a Coastal Protection Area 1 listed in Table 20.2A "Table of Ecological CPA 1s" of the Auckland Regional Plan: Coastal;
- (v) For **stormwater** activities:
  1. All **outfall** discharges that may cause scour at the **outfall** incorporate **erosion control** measures;
  2. The passage of fish and other aquatic organisms both up and down stream is maintained;
  3. The discharge shall not cause flood levels in events up to and including the 100 year ARI flood to rise within 0.5 metres of the habitable floor levels of dwellings or increase flooding of a state highway, unless the relevant District Plan establishes an alternative freeboard requirement in which case the District Plan freeboard requirement shall prevail;
  4. **Overland flow paths** are provided and maintained for flows in excess of the primary **drainage network** capacity to allow flows up to and including the 100 year **ARI** storm to discharge with the minimum of nuisance and damage;

5. For individual *sites* (or additions to the state highway network if a *highway network operator*) or subdivision, that were developed after 23 October 2001, that have in excess of 1,000m<sup>2</sup> of *impervious area* and were included in the land use development scenario modelled in the *ICMP* or AEE for the area, *stormwater* diversions and discharges are managed to:
    - a. remove at least 75% of *total suspended solids* (TSS) loads on an *average annual basis*; or
    - b. prevent or minimise any more than minor adverse effects from the *stormwater* discharge of contaminants;
  6. *Stormwater* diversions and discharges in non - greenfield areas/networks (or from existing state highway networks if a *Highway network operator*) are managed to:
    - a. remove at least 30% of *total suspended solids* (TSS) on an average annual basis; or
    - b. prevent or minimise any more than minor adverse effects from the *stormwater* discharge of contaminants;
  7. *Stormwater* diversions and discharges in greenfield areas are managed to:
    - a. prevent or minimise downstream channel erosion in any receiving river or stream and;
    - b. reduce the TSS load that is anticipated from future *land use intensification* and development within the catchment by at least 75% on an *average annual basis*; or
    - c. prevent or minimise the more than minor potential adverse effects from the *stormwater* discharge of contaminants;
- (vi) For *wastewater* activities:
1. The activity does not render a currently used *potable water* source unsuitable for human consumption as defined in the 'Drinking Water Standards for New Zealand', MoH (2000);
  2. All *outfall* discharges that may cause scour at the *outfall* incorporate *erosion control* measures;
  3. The *wastewater* collection network is designed and operated to avoid dry weather overflows during normal operation of the network, and the network operator has an operational and *maintenance* programme in place that minimises dry weather *overflows* to the environment;
  4. The *wastewater* collection network is designed to minimise wet weather *overflows* to the environment and no *overflow* point in the separated *wastewater network* shall be designed to *overflow* during or following a storm event of a 6 month *ARI* or less;
  5. The discharge is not likely to result in gross floatable solids being visible in the *receiving environment* during or following a storm event of 1 in 6 month *ARI* or less; where regular public usage (*contact* and non-contact) occurs in the *receiving environment* area affected by the *overflow* discharge and the *gross* solids could be expected to remain visible for more than six hours after the discharge ceases;
  6. Pumping stations which have any potential to *overflow wastewater* to the environment and have a *contributing catchment equivalent population* (EP) of 100 or more are continuously monitored by telemetry.

**5.5.10A** When assessing applications by *stormwater or wastewater network utility operators* or a *highway network operator* under Rule 5.5.10 the Council shall restrict the exercise of its control to the following matters:

- (a) The location of any future discharges where the overall quantity and effects of those discharges have been assessed, but their precise location had not been specified in the application for consent;
- (b) The effects of the discharge of contaminants from the *stormwater or wastewater network* or highway network, after reasonable mixing in the relevant *receiving environment*. For *stormwater* and state highway networks, if standard and terms (v)(f)(1), (g)(1) or (h)(2) of Rule 5.5.10 are met, then additional treatment or removal of *total suspended solids* (TSS) shall not be required;
- (c) The programme of works, services and other methods adopted to prevent or minimise the actual or potential adverse effects on the environment from diversions and discharges;
- (d) Effects on *archaeological sites*, *wāhi tapu*, and the matters listed in Policy 2.3.4.4;
- (e) Monitoring, reporting and review requirements;
- (f) Consent duration; and
- (g) Administrative fees and charges.

**Explanations:**

- (1) *For the purposes of matter of control (b) the contaminants and any effects arising from their discharge to the environment shall be identified in the relevant Integrated Catchment Management Plan (ICMP) or an Assessment of Environmental Effects (AEE) in accordance with Schedule 9 of this Plan.*
- (2) *Applicants for consent under Rule 5.5.10 shall include within their AEE application details on how the standards and terms of the Rule are intended to be met.*

**Non Notification**

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless specifically requested by the applicant or required by a rule or national environmental standard. However, the application may be publically notified if in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Restricted Discretionary Activities**

**5.5.11** The following activities are restricted discretionary activities:

- (a) The *diversion of stormwater*;
- (b) The discharge of *stormwater*;
- (c) The discharge of *wastewater* via a pumping station or network *overflow*;
- (d) *Exfiltration* not authorised under Rule 5.5.8.

that comply with standards and terms (i), (ii), (iii) of Rule 5.5.10 but are unable to comply with one or more of the standards and terms in (iv), (v) or (vi) of Rule 5.5.10.

### 5.5.11A The ARC will restrict the exercise of its discretion to the following matters:

- (a) Where a discharge is to a Coastal Protection Area 1 listed in Table 20.2A "Table of Ecological CPA 1s" of the Auckland Regional Plan: Coastal, measures to prevent or minimise the adverse effects of the discharges on the environmental values for which the area is classified as a CPA 1;
- (b) For those standards and terms in (v) and (vi) of Rule 5.5.10 that are not complied with, specific measures to prevent or minimise the adverse effects of the discharges in respect of those standards and terms;
- (c) The location of any future discharges, where the overall quantity and effects of those discharges have been assessed, but their precise location had not been specified in the application for consent;
- (e) The effects of the discharge of contaminants from the *stormwater* or *wastewater network*, or highway network after reasonable mixing in the relevant receiving environment. For stormwater and state highway networks, if standard and terms (v)(f)(1), (g)(1) or (h)(2) of Rule 5.5.10 are met, then additional treatment or removal of *total suspended solids (TSS)* shall not be required;
- (f) The programme of works, services and other methods adopted to prevent or minimise the actual or potential adverse effects on the environment from diversions and discharges;
- (g) Monitoring, reporting and review requirements;
- (h) Consent duration; and
- (i) Administrative fees and charges.

#### *Explanation:*

*For the purposes of matter of discretion (e) the contaminants and any effects arising from their discharge to the environment shall be identified in the relevant **Integrated Catchment Management Plan (ICMP)** or an **Assessment of Environmental Effects (AEE)** in accordance with Schedule 9 of this Plan.*

#### **Non Notification**

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless specifically requested by the applicant or required by a rule or national environmental standard. However, the application may be publically notified if in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### **Discretionary Activities**

### 5.5.12 The following activities are discretionary activities:

- (a) The diversion of *stormwater*;
- (b) The discharge of *stormwater*;
- (c) The discharge of *wastewater* via pumping station or network *overflow*; and
- (d) *Exfiltration* not authorised under Rule 5.5.8.

that do not comply with standard and term (iii) of Rule 5.5.10.

(For Rule 5.5.12 see also Policy 5.4.11)

**Outside Urban Areas****Discretionary Activities**

**5.5.13** Other than as provided for by Rules 5.5.22 to 5.5.63 the following activities undertaken by a *stormwater or wastewater network utility operator* or *highway network operator* outside of the **Urban Area** are Discretionary Activities:

- (a) The diversion of *stormwater*;
- (b) The discharge of *stormwater*;
- (c) The discharge of *wastewater* via pumping station or network *overflow*; and
- (d) *Exfiltration* not authorised under Rule 5.5.8.

**Explanation:**

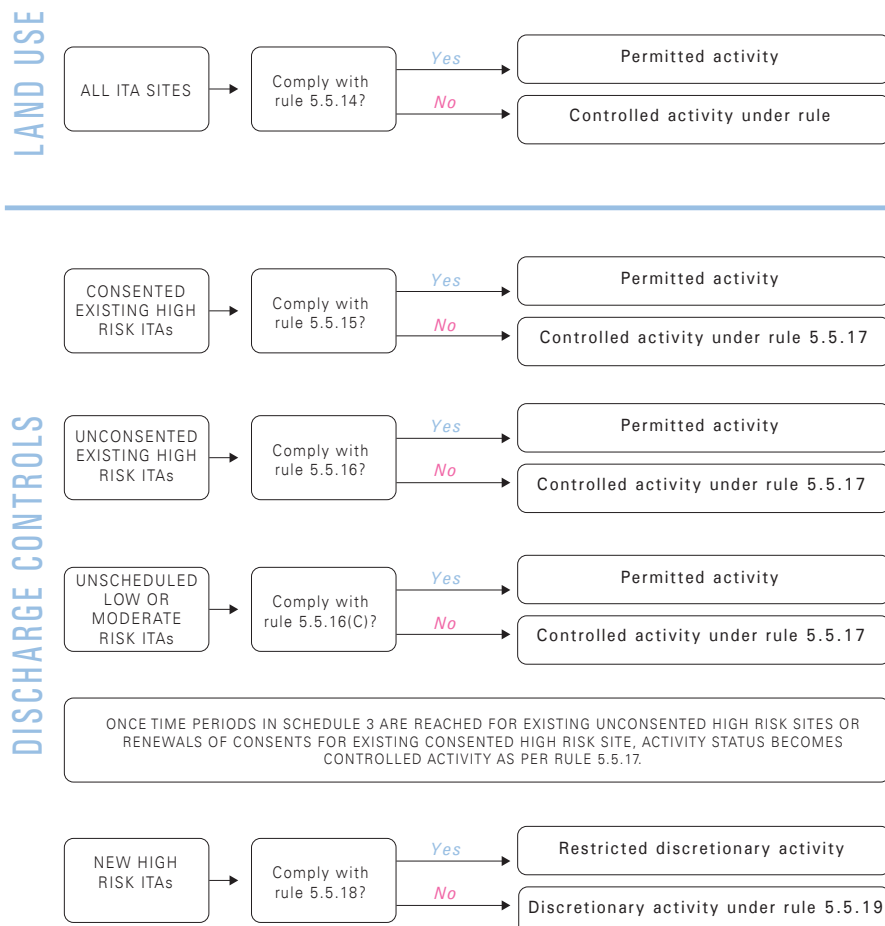
Rule 5.5.13 makes the provision of *stormwater* and *wastewater network* discharges, including discharges from state highway networks, discretionary activities outside of the **Urban Areas**. *Stormwater* and *wastewater* discharges from individual sites are able to be authorised under Rules 5.5.1 to 5.5.5 of this Plan.

**Industrial or Trade Activities**

Note: Onehunga Volcanic Aquifer is a Quality Sensitive Aquifer Management Area

Figure 5.1 Rules for Industrial or Trade Activities

The following diagram is for explanation purposes only and to assist the reader to determine the relevant rule applying to their activity. Refer to each Rule for the required conditions.



## Permitted Activities

**5.5.14** The use of land for the purposes of an *Industrial or Trade Activities* is a Permitted Activity, subject to the following conditions:

- Schedule 3 Low Risk Activities and *Industrial or Trade Activities* not listed in Schedule 3 are subject to conditions (a) to (h).
  - Schedule 3 Moderate and High Risk Activities are subject to conditions (a) to (j).
  - Conditions (d), (g), (i) and (j) shall be complied with within 12 months of this Rule becoming operative and all other conditions of this Rule shall be complied with within 18 months of this Rule becoming operative.
- (a) *Waste* compactors and bins shall be located and operated in such a manner that prevents *leachate* or waste leaking from them onto land in a position where it may enter water;
- (b) *Wastewater* produced by the *Industrial or Trade Activity* shall be collected either for recycling, or disposal to a system or facility with all the appropriate authorisations to accept *wastewater* of that type. For the purposes of this rule *wastewater* shall also include:
- (i) boiler blow down and condensate;
  - (ii) all *waste* liquids generated or collected as part of an *Industrial or Trade Activity*;
  - (iii) cooling tower water excluding vapour; and
  - (iv) condensate from three phase air compressors.

### *Explanation:*

*Where the Industrial or Trade Activity is located within a sewage treatment facility then the wastewater may be disposed of within that facility.*

- (c) *Washwater* produced by the *Industrial or Trade Activity* shall be:
- (i) collected for recycling or disposal to a *consented waste disposal system*; or
  - (ii) discharged onto or into land in a manner that does not result in overland flow of the *washwater* leaving the land on which the *Industrial or Trade Activity* is undertaken and does not result in accumulation of *environmentally hazardous substances* onto or into land.
- (d) Where any *environmentally hazardous substance* is stored on land on which the *Industrial or Trade Activity* is undertaken at a greater quantity than used for *domestic purposes* an Emergency Spill Response Plan shall be developed. Such plans shall include:
- (i) a schedule of inspection to check that *environmentally hazardous substances* are stored and/or contained appropriately (such as within a *bund*);
  - (ii) a protocol/method for identifying and stopping the discharge of *environmentally hazardous substances* to land or water and avoiding future events of this nature;
  - (iii) emergency containment and clean-up procedures;
  - (iv) a list of appropriate spill kits contents to enable the containment and/or absorption of spilled material and a plan showing spill kit locations;
  - (v) a requirement for appropriate signage to identify the location of spill kits and the actions to be taken in the event of a spill;



- (vi) actions to remedy or mitigate any adverse effects on the environment or public health and safety arising from discharges or spills of **environmentally hazardous** substances to land or water;
- (vii) methods for disposal of spilled **environmentally hazardous substances** and any other contaminated materials used in the spill clean-up;
- (viii) a schedule of adequate training for personnel in the use of the Emergency Spill Response Plan and in anticipating and preventing the likelihood of spills;
- (ix) up-to-date and accurate copies of all **drainage** plans for the land on which the **Industrial or Trade Activity** is undertaken showing the location of the final discharge point to the public **stormwater** system, or land or water; and
- (x) a procedure for notifying as soon as practicable the ARC's 24 hour emergency response service and the relevant **stormwater or wastewater network utility operator** in the event of any discharge of environmentally hazardous substances on the land on which the **Industrial or Trade Activity** is undertaken that results in, or is likely to result in, contamination of any stormwater system, or land or water; and
- (xi) A procedure to determine, prior to draining a secondary containment device, whether any fluid collected in the containment device is contaminated.

**Explanation:**

- (1) For **environmentally hazardous substances** in quantities covered by Part 4 of the Hazardous Substances (Emergency Management) Regulations 2001, a Spill Response Plan prepared in accordance with these regulations will be considered to comply with Permitted Activity Rule 5.5.14(d) provided the Plan also explicitly addresses matters (vii) to (x) above.
  - (2) For **environmentally hazardous substances** not covered by Part 4 of the Hazardous Substances (Emergency Management) Regulations 2001, a Spill Response Plan prepared in accordance with the ARC's 'Environmental Operations Plan 2001' will be considered to comply with Permitted Activity Rule 5.5.14(d).
- (e) **Environmentally hazardous substances** shall be stored in a manner that prevents the entry of rainwater into the container;
  - (f) When the quantity stored above ground exceeds that used for **domestic purposes**, **environmentally hazardous substances** shall be stored in a container with a secondary containment device (such as a **bund**) or within a containment system. The secondary containment device or system shall be:
    - (i) constructed of impervious materials that are resistant to chemical attack from the substances contained therein;
    - (ii) designed, constructed and managed so that uncontaminated **stormwater** runoff is prevented from flowing into the contained area;

**Explanation:**

- (1) For **environmentally hazardous substances** in quantities covered by Part 4 of the Hazardous Substances (Emergency Management) Regulations 2001, storage requirements in accordance with these regulations will be considered to comply with Permitted Activity Rule 5.5.14(e) and (f).
- (2) For **environmentally hazardous substances** not covered by Part 4 of the Hazardous Substances (Emergency Management) Regulations 2001, storage requirements in accordance with the ARC's 'Environmental Operations Plan 2001', however **bund** sizing criteria for secondary stage storage are:

- (i) for tanks the **bund** has a storage capacity of at least 110% of the capacity of the largest tank taking into account the volume displaced by any equipment or materials stored within the **bund**; and
  - (ii) for drums the **bund** has an effective storage height of at least 100mm (allowing for any sloping ground) and the bund is set back from the drums by a distance that equates to half the height of the stacked or stored drums.
- (g) A procedure shall be developed and implemented so that reconciliation measurements are recorded by the site operator for any **environmentally hazardous substance** stored in an underground storage tank;
- (h) **On-site vehicle re-fuelling facilities** with a total storage capacity of greater than 5,000 litres shall be contained and housed under cover, and/or surrounded by a drain that drains to an appropriately designed and sized **stormwater** treatment and spill containment device fitted with a shut-off valve;
- (i) Operations within the land on which the **Industrial or Trade Activity** is undertaken shall be undertaken in accordance with an Environmental Management Plan specific to the **Industrial or Trade Activity** which:
  - (i) specifies how conditions (a) to (h) will be complied with;
  - (ii) identifies **environmentally hazardous substances** associated with the **Industrial or Trade Activity**;
  - (iii) sets out the methods to be used to avoid discharges of **environmentally hazardous substances** onto or into land or water where practicable, and to remedy or mitigate the effects of discharges where they cannot be avoided;
  - (iv) For **stormwater** runoff arising from land on which the **Industrial or Trade Activity** is undertaken, sets out the primary sediment treatment or source control methods that may be necessary to avoid, remedy, or mitigate more than minor adverse effects on the **receiving environment**;
  - (v) identifies assessment requirements to report on the performance of the Environmental Management Plan.
- (j) The **Industrial or Trade Activity** shall be inspected and assessed for compliance (either by way of self assessment or independent assessment) with the conditions (a) to (i) and the methods set out in the Environmental Management Plan by an assessor registered by the ARC, with the first assessment being undertaken no later than 12 months after this Rule becomes operative and forwarded to the ARC upon request, and thereafter inspections and assessments shall be undertaken:
  - (i) Annually until such time as the Environmental Management Plan has been fully complied with for three consecutive years, after which the inspections and assessments shall occur every two years (subject to (ii) below). Each assessment shall be made separately available to the ARC upon request.
  - (ii) If non-compliance with the Environmental Management Plan is discovered under (i) above, a second assessment shall be done within 30 working days or within a timeframe otherwise agreed with ARC. Non-compliance beyond the second assessment date will result in the **Industrial or Trade Activity** being authorised under Rule 5.5.14A instead of Rule 5.5.14.

Second assessments occurring under (ii) shall be forwarded to the ARC within 5 working days of the completion.

**Explanation:**

- (1) *An appropriate Environmental Management Plan can be formulated using the practices outlined in the ARC's 'Environmental Operations Plan', (2001);*
- (2) *A self assessor is someone who is a part of the environmental management of the **Industrial or Trade Activity**. The self assessor may be either an employee or a consultant who has contributed to the environmental management of the **Industrial or Trade Activity**. An independent assessor is someone who is independent of the management of the **Industrial or Trade Activity**. Other Method 5.6.8A advises that ARC will keep a register of competent assessors and Other Method 5.6.9 advises that ARC will establish a training programme for assessors.*

**Controlled Activity - All Industrial or Trade Activities unable to comply with Rule 5.5.14, or which have failed to comply with a second assessment carried out under Rule 5.5.14(j)**

**5.5.14A** The use of land for the purposes of an **Industrial or Trade Activity** that does not comply with one or more of the conditions or standards of Rule 5.5.14, or which have failed to comply with the second assessment carried out under Rule 5.5.14(j), is a Controlled Activity.

The ARC shall exercise its control over the following matters:

- (a) Avoiding, remedying or mitigating any adverse effects resulting from the non-compliance with any relevant conditions or standards of Rule 5.5.14;
- (b) The content of the Emergency Spill Response Plan and, where relevant, the content of the Environmental Management Plan and the inspection and assessment regime for that Plan;
- (c) The duration of the consent; and
- (d) The timing and nature of review of consent conditions.

Applications for Controlled Activities under Rule 5.5.14A will be considered without notification or the need to obtain the written approval of affected parties in accordance with Section 95A(3) and 95B(2) of the RMA unless, in the opinion of the ARC, there are special circumstances justifying notification in accordance with Section 95A(4) of the RMA.

**Discharge Controls****Permitted Activity – Consented Existing High Risk Activities**

**5.5.15** The discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the **Activity Area** of an **Industrial or Trade Activity** categorised as High Risk in Schedule 3: Industrial and Trade Activities is a Permitted Activity subject to the *site* being listed in Schedule 14: Consented Existing High Risk Activities, or the *site* being covered by a consent that was granted under the **Industrial or Trade Activities** provisions of this Plan prior to the date of this Plan becoming operative.

The activity shall cease to be a Permitted Activity under this Rule when the listed **stormwater** discharge consent or the **Industrial or Trade Activities** consent for the *site* reaches its stated expiry date, subject to:

- (a) The activity shall continue to be a Permitted Activity under this Rule if a replacement application has been made by the consent holder more than 6 months prior to the expiry date for that consent being reached and the application has yet to be finally determined;
- (b) The activity shall continue to be a Permitted Activity under this Rule if a replacement application was made prior to 1 October 2001, for authorisations and/or consents that were expiring at that time pursuant to Section 386(3) of the RMA, and the application has yet to be finally determined;

- (c) The activity shall continue to be a Permitted Activity under this Rule until applications under (a) and (b) above are finally determined;
- (d) The activity shall continue to be a Permitted Activity under this Rule if the ARC review the listed consent or the consent holder varies the conditions of the listed *stormwater* consent or the *industrial or trade activity* consent and the ARC assigns an alternative consent number to the reviewed or varied consent.

The ARC may, from time to time, extend the coverage of Rule 5.5.15 to other consents by way of public notice of the details of those consents.

**Permitted Activity – Unconsented Existing High Risk Activities and Discharges of contaminants including environmentally hazardous substances from the Activity Area of Unscheduled, Low or Moderate Risk Sites**

**5.5.16** Other than as provided for by Rule 5.5.15, the discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of either:

- (a) An *Industrial or Trade Activity* that is either not listed in Schedule 3, or is categorised as a Low or Moderate Risk activity in that Schedule; or
- (b) an *existing Industrial or Trade Activity* categorised as High Risk in Schedule 3: *Industrial or Trade Activities*, which was established at 23 October 2001;

is a Permitted Activity until such time as the listed time periods for each industry activity shown in Schedule 3 are reached, subject to:

- (i) If more than 6 months prior to a Schedule 3 time period being reached the ARC publicly notifies an *extension* to that time period (which shall not exceed 24 months), the Permitted Activity status of the relevant activity shall continue until the new Schedule 3 notified time period is reached;
- (ii) The activity shall continue to be a Permitted Activity under this Rule if a resource consent application for the *Industrial or Trade Activity* has been made by the consent holder under Rule 5.5.17 more than 6 months prior to the Schedule 3 time period being reached and the application has yet to be finally determined;
- (iii) If the discharge results in significant adverse effects on the *receiving environment* then the activity shall cease to be a Permitted Activity under this Rule and it shall require a resource consent under Rule 5.5.17;

**Explanation:**

*If an activity is required to obtain consent under this Rule and it is not listed in Schedule 3, then for the purposes of this Rule the activity shall be assigned a Schedule 3 description that in the opinion of the ARC most closely corresponds with the nature of the activity.*

**Controlled Activity – Activities that cease to be Permitted Activities under Rule 5.5.15 or 5.5.16 and the renewal of existing consents granted under the industrial or trade activities provisions of this Plan**

**5.5.17** The discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of an *Industrial or Trade Activity* is a Controlled Activity if:

- (a) the activity ceases to be a Permitted Activity under Rule 5.5.15 or 5.5.16; or
- (b) the activity was previously the subject of a consent granted under the *Industrial or Trade Activity* provisions of this Plan.

The ARC shall exercise its control over the following matters:

- (i) The quality of the discharge arising from the **Activity Area** of the **Industrial or Trade Activity**; where it discharges either to an authorised **stormwater** or **wastewater network** or after reasonable mixing in the **receiving environment**;
- (ii) The degree of adverse environmental effects on the receiving environment;
- (iii) Management practices, treatment systems or devices, to the extent that they are required to avoid, remedy or mitigate more than minor adverse effects having regard to (i) and/or (ii) above and Policy 5.4.18;
- (iv) The content of the Environmental Management Plan and the inspection and assessment regime for that Plan;
- (v) The duration of the consent; and
- (vi) The timing and nature of reviews of consent conditions.

#### Non-notification

Applications for Controlled Activities under Rule 5.5.17 will be considered without notification or the need to obtain the written approval of affected parties in accordance with Section 95A(3) and 95B(2) of the RMA unless, in the opinion of the ARC, there are special circumstances justifying notification in accordance with Section 95A(4) of the RMA.

#### Explanation:

*This Rule applies to applications to renew consents that are either listed in Schedule 14 (see Rule 5.5.15) or have been granted under **Industrial or Trade Activity** provisions of this Plan but are not listed in Schedule 14. It also applies to applications to discharge contaminants, including **environmentally hazardous substances**, from the **Activity Area** of existing or new **Unscheduled, Low or Moderate Risk** sites and existing **High Risk** sites whose industry sector expiry dates (as set out in the column titled "Months after Rule 5.5.16 becomes operative" in Schedule 3) have passed (see Rule 5.5.16). It does not apply to new **High Risk** sites as new **High Risk** sites are considered under Rule 5.5.18.*

*Where discharges contain **environmentally hazardous substances** any necessary approval must be obtained from the relevant **stormwater and/or wastewater network utility operator** prior to any discharges from the **Industrial or Trade Activity** entering a public **stormwater** or **wastewater network**.*

#### Restricted Discretionary Activity – New High Risk Activities

**5.5.18** The discharge of contaminants, including **environmentally hazardous substances**, onto or into land or water from the **Activity Area** of a new **Industrial or Trade Activity** categorised as High Risk in Schedule 3: Industrial or Trade Activities is a Restricted Discretionary Activity subject to the following standards and terms:

- (a) The **Industrial or Trade Activity** was not existing at its current location at 23 October 2001;
- (b) All treatment devices utilised for the **Industrial or Trade Activity** are installed and maintained in accordance with the manufacturer's recommendations or the best practicable option.

#### Explanation:

*One means of complying with the best practicable option referred to in Rule 5.5.18(b) is to adopt the practices outlined in the ARC guideline document 'Stormwater management devices: Design guidelines manual, Second edition, May 2003, ARC Technical Publication No. 10'.*

- (c) Where discharges include *environmentally hazardous substances* any necessary approval has been obtained from the relevant *stormwater* and/or *wastewater network utility operator* prior to any discharges from the *Industrial or Trade Activity* entering a public *stormwater* or *wastewater network*.

The ARC shall restrict the exercise of its discretion to the following matters under Rule 5.5.18:

- (i) The quality of the discharge arising from the *Activity Area* of the *Industrial or Trade Activity*, where it is discharged either to an authorised *stormwater* or *wastewater network* or after reasonable mixing in the *receiving environment*;
- (ii) The degree of adverse environmental effects on the receiving environment;
- (iii) Management practices, treatment systems or devices, to the extent that they are required to avoid, remedy or mitigate more than minor adverse effects having regard to (i) and/or (ii) above and Policy 5.4.18;
- (iv) The inspection and assessment regime for the Environmental Management Plan;
- (v) The duration of the consent; and
- (vi) The timing and nature of reviews of consent conditions.

#### Discretionary Activities

- 5.5.19** The discharge of contaminants, including *environmentally hazardous substances*, onto or into land or water from the *Activity Area* of an *Industrial or Trade Activity* that is unable to comply with the standards and terms of Rule 5.5.18 is a Discretionary Activity.

##### *Explanation:*

*Where consents are required under the rules for both Industrial or Trade Activities and the stormwater Rules 5.5.1 to 5.5.13, these will be processed and where necessary heard together as provided for in Section 103 of the RMA.*

(For Rule 5.5.19 see also Policies 5.4.1, 5.4.2, 5.4.16 to 5.4.18)

#### Sewage Treatment and Disposal

##### Permitted Activities

- 5.5.20** The discharge of *domestic wastewater* from one dwelling, commercial, industrial or other premise to land within a lot via a treatment and land application disposal system, from the date that this Rule becomes operative is a Permitted Activity, subject to conditions (a) - (i). For the purposes of conditions (c) and (g), TP58 means the ARC Technical Publication No. 58 "On-site Wastewater Systems: Design and Management Manual," August 2004 edition. In the event that the Auckland Council publishes a replacement design and management manual for on-site wastewater systems, all references within conditions (c) and (g) to TP58 will be treated as references to that replacement manual from the date of its publication, rather than as references to TP58:

- (a) The design flow is not greater than 2m<sup>3</sup> per day;
- (b) The ratio of gross lot area to discharge volume is equal to or greater than 1.5m<sup>2</sup> per litre per day;
- (c) All aspects of on-site *wastewater* treatment and land application disposal system, design, installation, and operation shall be in accordance with TP58, and in particular the following:
  - (i) The *site* assessment practices required to determine system suitability;
  - (ii) The flow allowances used to establish system design flow in (a) above, without any decrease below 120 litres per person per day for water reduction fixtures or grey water reuse;

- (iii) The septic tank with outlet filter; unless the equivalent level of treatment is provided within the aerobic treatment system;
- (iv) The secondary treatment system design criteria and parameter ranges;
- (v) The pressure compensating drip irrigation land application disposal system;
- (vi) The discharge quality standards to be achieved by the system; and
- (vii) The minimum reserve disposal area allocation.
- (d) The discharge does not result in actual or potential contamination of ground water at a point of extraction, any **surface water**, **stormwater** drain, neighbouring property, or any public health threat;
- (e) The treatment and land application disposal system are approved by the territorial local authority under the Building Act;
- (f) The lot is not contained or described in a title issued under the Unit Titles Act 2010 or a cross-lease form of title;
- (g) There is a programmed **maintenance** contract in accordance with the supplier's specifications or the requirements of TP58 whichever is the more stringent; and records of each **maintenance** action are retained and made available on the site for inspection by Council officers or their agents;
- (h) The activity shall not disturb any **wāhi tapu** or other **archaeological site** including those identified in any regional or district plan, in the NZ Archaeological Association's Site Recording Scheme, or by the Historic Places Trust except where the Historic Places Trust approval has been obtained; and
- (i) In the event that an **archaeological site** or **wāhi tapu** is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as practicable. The activity shall not be recommenced without the approval of the ARC.

**Explanation:**

- (1) *It is important to note that the relevant components of AS/NZS 1547:2000 have been included within the August 2004 edition of TP58 and that systems complying with TP58 requirements will also meet the requirements of AS/NZS 1547:2000.*
- (2) *It is recognised that new technologies will develop over time and that TP58 will therefore require amendments over the longer term. The Auckland Council intends to review and update TP58. When the updated TP58 is published, the new guidelines will apply.*

**5.5.21** The discharge of **domestic wastewater** to land via a treatment and land application disposal system lawfully in existence at the date this Rule becomes Operative is a Permitted Activity subject to the following conditions:

- (a) The nature of the discharge is the same as that existing at the date the Plan becomes operative; and
- (b) The discharge does not exceed 2 m<sup>3</sup> per day and the design flow is no greater than that existing at the date the plan becomes operative; and
- (c) The discharge does not result in actual or potential contamination of ground water at a point of extraction, any **surface water**, **stormwater** drain, neighbouring property, or any public health threat.



**5.5.22** The discharge of *domestic wastewater* from one dwelling, commercial, industrial or other premise without permanent power supply to land within a lot via a treatment and land application disposal system, from the date that this Rule becomes operative is a Permitted Activity, subject to conditions (a) - (i). For the purposes of conditions (c) and (g), TP58 means the ARC Technical Publication No. 58 "On-site Wastewater Systems: Design and Management Manual," August 2004 edition. In the event that the Auckland Council publishes a replacement design and management manual for on-site wastewater systems, all references within conditions (c) and (g) to TP58 will be treated as references to that replacement manual from the date of its publication, rather than as references to TP58:

- (a) The design flow is not greater than 2m<sup>3</sup> per day;
- (b) The ratio of gross lot area to discharge volume is equal to or greater than 1.5m<sup>2</sup> per litre per day;
- (c) All aspects of on-site *wastewater* treatment and land application disposal system, design, installation, and operation shall be in accordance with TP58, and in particular the following:
  - (i) The *site* assessment practices required to determine system suitability;
  - (ii) The flow allowances used to establish system design flow in (a) above, without any decrease below 100 litres per person per day for water reduction fixtures or grey water reuse;
  - (iii) The septic tank with outlet filter;
  - (iv) The disposal system comprising of either pressure compensating drip irrigation or the low pressure *effluent* distribution disposal system (LPED) or trenches or beds;
  - (v) The discharge quality standards to be achieved by the system; and
  - (vi) The minimum reserve disposal area allocation.
- (d) The discharge does not result in actual or potential contamination of ground water at a point of extraction, any *surface water*, *stormwater* drain, neighbouring property, or any public health threat;
- (e) The treatment and land application disposal system are approved by the territorial local authority under the Building Act;
- (f) The lot is not contained or described in a title issued under the Unit Titles Act 2010 or a cross-lease form of title;
- (g) There is a programmed *maintenance* contract in accordance with the supplier's specifications or the requirements of TP58 whichever is the more stringent; and records of each *maintenance* action are retained and made available on the *site* for inspection by Council officers or their agents;
- (h) The activity shall not disturb any *wāhi tapu* or other *archaeological site* including those identified in any regional or district plan, in the NZ Archaeological Association's Site Recording Scheme, or by the Historic Places Trust except where the Historic Places Trust approval has been obtained; and
- (i) In the event that an *archaeological site* or *wāhi tapu* is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as practicable. The activity shall not be recommenced without the approval of the ARC.

**5.5.23** The discharge of *domestic wastewater* to land via treatment and land application disposal systems from up to 3 dwellings, commercial, industrial or other *premises* within a lot, in circumstances where the *premises* are sufficiently remote from each other that the *wastewater* systems cannot be feasibly combined is a Permitted Activity, subject to conditions (a) - (j). For the purposes of conditions (c) and (h), TP58 means the ARC Technical Publication No. 58 "On-site Wastewater Systems: Design and Management Manual", August 2004 edition. In the event that the Auckland Council publishes a replacement design and management manual for on-site wastewater systems, all references within conditions (c) and (h) to TP58 will be treated as references to that replacement manual from the date of its publication, rather than as references to TP58:

- (a) The design flow for each system is not greater than 2m<sup>3</sup> per day;
- (b) The ratio of gross lot area to discharge volume is equal to or greater than 3m<sup>2</sup> per litre per day per dwelling;
- (c) All aspects of on-site *wastewater* treatment and land application disposal system, design, installation, and operation shall be in accordance with TP58, and in particular the following:
  - (i) The *site* assessment practices required to determine system suitability;
  - (ii) The flow allowances used to establish system design flow in (a) above, without any decrease below 160 litres per person per day for water reduction fixtures or grey water reuse;
  - (iii) The septic tank with outlet filter; unless the equivalent level of treatment is provided within an aerobic treatment system;
  - (iv) The disposal system comprising of either pressure compensating drip irrigation or low pressure *effluent* distribution systems (LPED) or trenches or beds; and
  - (v) The discharge quality standards to be achieved by the system;
- (d) No less than 100 percent reserve disposal area per system;
- (e) The discharge does not result in actual or potential contamination of ground water at a point of extraction, any *surface water*, *stormwater* drain, neighbouring property, or any public health threat;
- (f) The disposal area shall be fenced to prevent heavy vehicle or stock access;
- (g) The treatment and land application disposal systems are approved by the *territorial authority* under the Building Act;
- (h) There is a programmed *maintenance* contract in accordance with the supplier's specifications or the requirements of TP58, whichever is the more stringent; and records of each *maintenance* action are retained and made available on the site for inspection by Council officers or their agents;
- (i) The activity shall not disturb any *wāhi tapu* or other *archaeological site* including those identified in any regional or district plan, in the NZ Archaeological Association's Site Recording Scheme, or by the Historic Places Trust except where the Historic Places Trust approval has been obtained; and
- (j) In the event that an *archaeological site* or *wāhi tapu* is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as practicable. The activity shall not be recommenced without the approval of the ARC.

### Controlled Activities

**5.5.24** The discharge of *domestic wastewater*, from a *wastewater* treatment and land application disposal system which is not permitted by Rules 5.5.20, 5.5.21, 5.5.22, or 5.5.23, is a Controlled Activity, subject to the following standards and terms. For the purposes of condition (c) TP58 means the ARC Technical Publication No. 58 "On-site Wastewater Systems: Design and Management Manual", August 2004 edition. In the event that the Auckland Council publishes a replacement design and management manual for on-site wastewater systems, the reference in condition (c) to TP58 will be treated as references to that replacement manual from the date of its publication, rather than as references to TP58:

- (a) The design flow does not exceed 6m<sup>3</sup> /day;
- (b) It is maintained in a programmed manner approved by and reported to the ARC; and
- (c) Design and installation details are in accordance with the principles, procedures, and parameter ranges in TP58.

**5.5.25** The ARC shall exercise its control over the following matters under Rule 5.5.25:

- (a) The design of the treatment system, and the level of contamination;
- (b) The design of the disposal system, disposal method, rate of land application, reserve application area and the effects arising from the method chosen;
- (c) Effects on *archaeological sites*, *wāhi tapu*, and the matters listed in Policy 2.3.4.4;
- (d) The duration of the consent; and
- (e) The monitoring of the discharge including reporting in an approved format.

### Non Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

### Discretionary Activities

**5.5.26** The discharge of *domestic wastewater* by existing deep *bore* systems that do not comply with Permitted Activity Rule 5.5.21 and that require replacement *bores* where there is no viable alternative land disposal option is a Discretionary Activity.

**5.5.27** The discharge of *domestic wastewater* and/or *trade wastes* that are not provided for by any other Rule in this section is a Discretionary Activity.

(For Rules 5.5.26 – 5.5.27 see also Policies 5.4.1, 5.4.2, 5.4.19 to 5.4.24)

### Prohibited Activities

**5.5.28** The discharge of *domestic wastewater* by new *deep bore disposal* systems is a Prohibited Activity.

### Sewage Sludge (including Biosolids)

#### Permitted Activities

**5.5.29** In reference to the biosolids grading system detailed at section 4.3 of the Guidelines for the Safe Application of Biosolids to Land in New Zealand, (August 2003) the application of Grade Aa *biosolids* onto or into land is a Permitted Activity, subject to the following standards and terms:

- (a) There is no direct application or run-off into any surface water body;
- (b) The application is not to land used for food production or residential activities;
- (c) The Aa Grade biosolids, after any blending with other matter, meet the requirements including the soil limit concentrations in Tables 4.1 and 4.2 of the Guidelines for the Safe Application of Biosolids to Land in New Zealand (August 2003), including the soil limit concentrations and the requirement to obtain accredited quality assurance;
- (d) The application is not to any Water Supply Management Area(s);
- (e) The biosolids are stored and handled to avoid groundwater or surface water contamination;
- (f) The biosolids application does not occur at any identified *wāhi tapu* site;
- (g) The application must provide for buffer zones between the application area and neighbouring land uses or sensitive environments as follows:
  - (i) 20 metres from any property boundary;
  - (ii) 20 metres from any surface water body and the coastal marine area;
  - (iii) 20 metres from any water supply bore;
  - (iv) 20 metres from a significant geothermal feature;
- (h) The application must not result in any offensive or objectionable odour or dust beyond the property boundary on which the biosolids are applied;
- (i) The applier must keep the following records and make these records available to Council upon request:
  - (i) The nature of the biosolids including dry solids content, application volume, location and frequency;
  - (ii) The total nitrogen mass-load applied per hectare per annum.

#### Restricted Discretionary Activities

**5.5.30** In reference to the biosolids grading system detailed at section 4.3 of the Guidelines for the Safe Application of Biosolids to Land in New Zealand (August 2003), the application onto or into land of Grade Ab, Ba and Bb *biosolids*, and Grade Aa *biosolids* that do not meet the permitted activity controls, is a Restricted Discretionary Activity. In addition to the permitted activity standards and terms these activities are subject to the following standards and terms:

- (a) The Grade Ab, Ba and Bb biosolids, after any blending with other matter, meet the requirements including the soil limit concentrations in Tables 4.1 and 4.2 of the Guidelines for the Safe Application of Biosolids to Land in New Zealand (August 2003);
- (b) Resource consent applications for the application onto land of Grade Aa biosolids not meeting the permitted activity controls shall include specific information addressing the potential effects of not meeting the permitted activity controls, and how any such effects will be avoided or mitigated.

**5.5.31** The ARC shall restrict the exercise of its discretion under Rule 5.5.30 to the following matters:

- (a) The rate and frequency of application to control nutrient and contaminant loading rates;
- (b) The type of blending material;
- (c) Risk to the environment - land, air and surface and ground water resources - or to human or stock health in terms of concentrations of nutrients, heavy metals, pathogens and synthetic organic chemicals;

- (d) The effects on:
  - (i) archaeological sites as defined by the Historic Places Act (1993);
  - (ii) registered historic places, areas or *wāhi tapu* sites as defined by the Historic Places Act (1993);
  - (iii) Water Supply Management Areas, Wetland Management Areas, Natural Stream Management Areas, Natural Lake Management Areas, High Use Stream or Aquifer Management Areas;
- (e) The effect of odour and dust beyond the application site boundary;
- (f) Contingency measures in the event of mechanical failure or prolonged wet weather;
- (g) Monitoring and information requirements;
- (h) Duration of consent;
- (i) Review of consent conditions;
- (j) Compliance monitoring.

#### Non Notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

**5.5.31A** The application onto or into land of *biosolids* that do not meet the permitted or restricted discretionary activity standards and terms, and the application of *biosolids* that are not otherwise listed, is a discretionary activity.

**5.5.31B** The application onto or into land of *sewage sludge* that does not meet the product specifications to become *biosolids* and the storage of *sewage sludge* on land is a discretionary activity.

#### Prohibited Activities

**5.5.31C** The direct application of *sewage sludge* and *biosolids* to water is a prohibited activity.

#### Land Management

*Note: Anyone undertaking land management activities in accordance with Rules 5.5.32 and 5.5.33 should also refer to Rule 6.5.57 in Chapter 6 Water Allocation relating to the establishment of a dam for the purpose of controlling sediment discharges from cultivated land.*

#### Permitted Activity

**5.5.32** The *cultivation* of soil and the associated management and discharge of sediment laden *stormwater* runoff from rainfall events is a Permitted Activity, subject to the following conditions (see Explanation 1):

- (a) The cultivated area is less than 0.25ha; or
- (b) The cultivated area is equal to or greater than 0.25ha and:
  - (i) A minimum separation distance of 10 metres is maintained in a *vegetated* condition at all times between the cultivated land and areas identified as Coastal Protection Area 1 or 2 in the Auckland Regional Plan: Coastal; or any Wetland Management Area, or Natural Lake Management Area (providing however that any regrassing of the land within the 10 metre separation distance shall not be deemed to breach this condition); and

- (ii) The **slope** of the **cultivated** area is less than an average of 15 degrees (27%), other than where the purpose of the cultivation is for regrassing or for planting a crop from pasture with the intention of regrassing the cultivated area once the crop has been harvested or grazed, in which case there shall be no restriction on the **slope** of the cultivated area (see Explanation 2); and
- (iii) That appropriate **stormwater** management measures are implemented and maintained, in accordance with recognised best management practices, in order that there is no significant **off-site** movement of soil, including deposition in **road-side drains** or onto public roads, or to natural environments such as waterbodies, wetlands, **lakes** and the Coastal Marine Area.

Except that compliance with Condition 5.5.32(b)(iii) shall not be required where the purpose of the **cultivation** is for regrassing or for planting a crop from pasture with the intention of regrassing the cultivated area once the crop has been harvested or grazed, and no more than 21 days passes between the initial disturbance of the soil and the planting of the seed or seedling.

**Explanation:**

- (1) While the **cultivation** of land is permitted by this Plan (subject to conditions), regard should be had to any controls in the relevant District Plan for the area.
- (2) **Slope** is to be determined as the average **slope** over 90% of a contiguous parcel of land. 15 degrees (27%) is the **slope** above which the potential erosion and movement of soil has been measured to greatly increase. Whilst there are many other factors which contribute to erosion potential, (e.g. soil type, crop type and stage, and soil water status), **slope angle** remains a dominant factor.
- (3) Compliance with Rule 5.5.32(b)(iii) can be achieved by adopting the principles and practices outlined in the **best management practice guideline** as set out in Schedule 12, which is derived from the document 'Doing it Right – Franklin Sustainability Project Guide to Sustainable Land Management' (2000). Reference should also be made to the full Guideline document as it provides good practice options for sustainable land management, including methods to reduce sediment generation.

**Controlled Activities**

**5.5.33** Any **cultivation** of soil and discharge of sediment laden **stormwater** runoff from rainfall events that is not authorised by Rule 5.5.32 is a Controlled Activity.

The ARC will have control over the following matters under Rule 5.5.33:

- (a) Avoiding, remedying or mitigating any actual or potential adverse effects associated with the discharge of sediment or sediment laden **stormwater** that arise from non-compliance with any of the conditions (b)(i) to (b)(iii) of Rule 5.5.32, including through:
  - (i) **Soil conservation** measures;
  - (ii) Alternative **cultivation** practices;
  - (iii) The use of cover crops;
  - (iv) The continuous length of time the soil surface or a percentage of the soil surface is left exposed (not **vegetated**);
  - (v) The time of year when the **cultivation** activity is able to be undertaken.
- (b) Avoiding, remedying or mitigating any actual or potential effects of the discharge of sediment or sediment laden **stormwater** on the following Management Areas:
  - (i) Wetland;
  - (ii) Natural **Lake**;

(iii) Natural Stream;

(iv) **Urban River and Stream** (Stream Mouths/Tidally Affected Channels, and High Value Low Disturbance Streams);

(v) High Use Stream; and

(c) Requirements for environmental offset mitigation; and

(d) Monitoring, reporting and review requirements; and

(e) Consent duration.

### Non Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

## Discharges From Production Land Activities

### Permitted Activities

**5.5.34** Discharges from production land activities listed in (a) to (i) of this Rule onto or into land are Permitted Activities, subject to the conditions in Rule 5.5.35:

- (a) **Composting** and stockpiling of solid **vegetative material** or animal **waste** that is not decomposing at such a rate or in such a manner as to produce **leachate** which discharges from the material overland to **surface water**;
- (b) **Composting** and stockpiling of solid vegetative **waste** or animal **waste** that is decomposing and producing **leachate** on an impervious surface that collects all discharges from the material, and directs it to a treatment system. Note: Treatment of liquid **waste** must be treated in accordance with the appropriate provisions for liquid **wastes**;
- (c) **Vegetative material** related to forest harvesting and preparation;
- (d) The spreading of **vegetative material** or solid animal **waste**;
- (e) The storage of liquid contaminants from production land activities;
- (f) Discharges to land of liquid contaminants from production land activities that is less than 10m<sup>3</sup> per **discharge system** per day;
- (g) Discharges to land of **greenhouse nutrient solution** from greenhouses with a total floor area of 1 ha or less;
- (h) The emergency land application of milk on the property from which it was produced;
- (i) Stockdip liquid contaminants disposal in accordance with the manufacturer's recommendations; or
- (j) The disposal of livestock and **offal**, using **offal holes**, shallow trenches or **composting**, except where the material originates from a commercial animal processing business, providing that material to be composted does not create odour or pest problems.



### 5.5.35 All Permitted Activities in Rule 5.5.34 are subject to the following conditions:

- (a) There is no discharge into any **surface water** body, or contamination of **groundwater** body;

**Explanation:**

*One way to avoid direct discharges into water is to leave a separation distance between the application area and waterbodies. A 20 metre separation distance from **surface water** bodies and a 100 metre separation distance from water supply bores is a useful guide, however the actual distance will be dependent on site-specific conditions (including weather) at the time of application.*

- (b) Any discharge to land shall not result in hydraulic overloading; and

**Explanation:**

*Overland flows and/or the presence of ponding of liquid contaminants more than 5 hours after application provides evidence that hydraulic overloading has occurred. In addition, excessive levels of organic materials may lead to anoxic conditions especially if for prolonged periods.*

- (c) The application rate of nitrogen from any combination of contaminants and **nitrogenous fertiliser**

- (i) onto grazed pasture shall be:

1. at a rate not exceeding the equivalent of 150kgN/ha/year and 30kgN/ha in any 31 day period in those areas underlain by aeolian sands and volcanic basalt;

*(This includes Awhitu, Kaipara, Taporā, Pakiri, Omaha Flats, Pukekohe, Puni, Waiuku, Bombay and Mangere).*

2. at a rate not exceeding the equivalent of 200kgN/ha/year and 50kgN/ha in any 31 day period on soils other than those stated above

**Explanation:**

*The daily application rate is based on maximum recommended nitrogen application rates for grazed pasture that minimises leaching rates of nitrates to soil water.*

- (ii) onto ground other than grazed pasture, shall be in a manner and at a rate that does not exceed the reasonable nitrogen requirements of the crop being grown.

**Explanation:**

*Nitrogen applications at rates in excess of those described in Rule 5.5.35(c) (i) shall be considered to have complied with this rule if the application is consistent with crop uptake. This may be determined by an appropriate nutrient budget.*

- (d) The discharge is not an **environmentally hazardous substance**;
- (e) The discharge shall not result in any significant adverse effects from the spread of pathogens or the attraction of pests; and
- (f) Additional condition for discharges of liquid contaminants from production land activities (Rule 5.5.34 (f) and (g)):

There shall be contingency measures in place to ensure that there is no contravention of rule 5.5.34 in the event of system failure.

**Explanation:**

*The contingency plan shall be implemented in the event of system failure or inclement weather conditions preventing land application, and consideration must be given to alternative options of storage and/or disposal in the event that normal land application of **washwater** or liquid contaminants cannot be undertaken.*

*Note: Rules relating to **Fertiliser Use** are set out in Rules 5.5.38 and 5.5.39. Products discharged as part of a **waste** treatment **process** are not considered **fertilisers**.*

**Controlled Activities**

**5.5.36** Discharges from the activities listed in Rule 5.5.34 onto or into land which exceed the thresholds or conditions identified are Controlled Activities and the conditions specified in Rule 5.5.35 (a) to 5.5.35 (g) inclusive, shall be the standards and terms for Rule 5.5.36.

The ARC will exercise its control over the following matters under Rule 5.5.36:

- (a) The suitability of the disposal area, including consideration of adjacent land uses;
- (b) The provision of adequate equipment for the collection, treatment and disposal of any discharge;
- (c) The capacity and security of any storage, including design and construction methods and materials used;
- (d) The degree of soil contamination;
- (e) Measures to avoid, remedy or mitigate adverse effects on the following;
  - (i) the values identified in Chapter 2; and
  - (ii) the following Management Areas:
    - 1. High Use **Aquifers**
    - 2. Quality Sensitive **Aquifers**; and
  - (iii) any **surface water** body;
- (f) Monitoring requirements for the discharge.

**Non Notification**

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Discretionary Activities**

**5.5.37** Discharges from rural activities onto or into land and into water that are not specifically provided for by any rule in this plan; or is specifically provided for but does not meet the conditions, standards or terms of any rule in this chapter are Discretionary Activities.

*(For Rules 5.5.37 see also Policies 5.4.1, 5.4.2, 5.4.29, 5.4.30, 5.4.31)*

**Fertiliser Use****Permitted Activities**

**5.5.38** Subject to Rule 5.5.35(c) the application of **fertiliser** into or onto land in circumstances where it may enter water is a Permitted Activity, subject to the following conditions:

- (a) All reasonable steps (see Explanation 1 below), shall be taken to ensure that the **fertiliser** is applied in a manner, which is consistent with the relevant Code of Practice (see Explanation 2 below), to minimise the potential for nutrients from the **fertiliser** to directly or indirectly enter water;
- (b) All reasonable steps shall be taken to ensure that **fertiliser** is not directly applied within 20 metres (see Explanation 3 below) of:
  - a *Wetland Management Area*;
  - the shoreline of any **lake** in a *Natural Lake Management Area*; or
  - a stream in a *Natural Stream Management Area*.

except for hand applications for the purposes of revegetation, landscaping, horticulture and domestic use.

**Explanation:**

- (1) "Reasonable steps" include avoiding **fertiliser** application:
  - a. immediately preceding heavy rain (as predicted by the New Zealand Meteorological Service), which is likely to cause **fertiliser** runoff;
  - b. during high wind, which is likely to result in drift and deposition of **fertiliser** into water;
  - c. when soils are saturated;
  - d. directly over surface waterbodies, where possible.
- (2) The relevant Code of Practice for the appropriate application of **fertiliser** is The Code of Practice for Fertiliser Use (New Zealand Fertiliser Manufacturers' Research Association, August 1998 (updated 2002)).
- (3) The 20 metre separation distance is based on:
  - a. collective scientific opinion on appropriate minimum separation distance for reasonable risk reduction, taking into account a range of factors including **slope angle** and length, riparian vegetation type and width, and soil type and conditions;
  - b. the need to provide certainty to users regarding separation distances for most situations. A greater separation distance is encouraged where land management and weather conditions could result in nutrients entering water.
- (4) The application of **nitrogenous fertiliser** onto areas that do not receive discharges from production land activities is covered under Rules 5.5.38 and 5.5.39. The application of **nitrogenous fertiliser** onto areas that also receive discharges from production land activities is covered by Rule 5.5.35(c). The discharge of dairy sludge and/or farm dairy **washwater** from farm dairies is covered by the Auckland Regional Plan: Farm Dairy Discharge (ARP: FDD). Rule 6.2.1 of the ARP: FDD specifies maximum nitrogen application rates onto land.

**Restricted Discretionary Activities**

**5.5.39** The application of **fertiliser** into or onto land in circumstances where it may enter water which does not comply with one or more of the conditions of Rule 5.5.38 is a Restricted Discretionary Activity.

The ARC shall restrict the exercise of its discretion under Rule 5.5.39 to:

- (a) Measures to prevent or minimise the potential for nutrients from the **fertiliser** to directly or indirectly enter water;
- (b) Measures to avoid, remedy or mitigate any actual or potential adverse effects resulting from the close proximity of application of **fertiliser** to any Wetland, Natural Lake, or *Natural Stream Management Area*;

- (c) Monitoring, reporting and review requirements;
- (d) Consent duration.

**Explanation:**

*Discharges from production land activities onto or into land are managed by Rules 5.5.34 and 5.5.35 and are not considered as **fertilisers**.*

**Non Notification**

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Contaminated Land**

**General Explanation:**

- (1) *The **remediation** (or decontamination) and development of **land containing elevated levels of contaminants** including **contaminated land** may also be subject to provisions in District Plans.*
- (2) *Discharges of contaminants to air from **land containing elevated levels of contaminants** including **contaminated land** need to be authorised and comply with any relevant provisions of Chapter 4 – Air Quality of this Plan.*
- (3) *A resource consent from the ARC for **land containing elevated levels of contaminants** including **contaminated land** is only required if a discharge is occurring. Discharges include the situation where contaminants move through the soil profile and consequently may enter groundwater.*
- (4) *If soil or material from **land containing elevated levels of contaminants** including **contaminated land** is to be removed offsite it can only be disposed of at a facility or **site** authorised to accept such material.*
- (5) *For all of the rules in this section the preparation of investigation and other technical reports only needs to be undertaken to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land.*
- (6) *The Rules in this section do not relate to the routine discharge of **stormwater** from **impervious areas**, the accumulation of contaminants in authorised **stormwater** treatment or detention devices, nor to any authorised discharge of **stormwater** or **environmentally hazardous substances** arising from an **industrial or trade activity**, which are covered elsewhere in this Plan.*
- (7) *The term “**land containing elevated levels of contaminants**” is defined in Chapter 12 of the Plan.*

**Permitted Activities**

**Trenching, small scale disturbance and intrusive investigations**

**5.5.40** The discharge of contaminants to land or water arising from the trenching or the similar small scale disturbance of **land containing elevated levels of contaminants**, and intrusive investigations of land that involve chemical testing or monitoring (excluding soil fertility testing), is a Permitted Activity subject to:

- (a) The ARC is advised in writing prior to the commencement of the activity;
- (b) The discharge shall not give rise to any of the effects referred to in section 70(1) of the RMA;
- (c) Any water encountered shall be discharged or disposed of without causing more than minor adverse effects on the environment;

- (d) The duration of the trenching or disturbance activity is less than one month;
- (e) The volume of **earthworks** at any one time is less than 200m<sup>3</sup>;
- (f) Erosion and **sediment controls** are implemented in general accordance with ARC Technical Publication No. 90 'Guidelines for land disturbing activities in the Auckland Region';
- (g) The land, material or discharge shall not contain **separate phase liquid contaminants**, including **separate phase hydrocarbons**;
- (h) Any contaminated soil or materials removed from the **site** shall be disposed of at a facility or site authorised to accept such materials; and
- (i) The disturbed area is reinstated to an erosion-resistant state within one month of the completion of the works.

**Explanation:**

- (1) *The purpose of this Permitted Activity is to allow short duration land disturbance activities (such as trenching for services), but not land remediation, that may encounter contaminants in land on sites and for which the activity is incidental to the land use or contamination on the site.*
- (2) *If trenching or small scale land disturbance activities encounter land containing elevated levels of contaminants once those activities have already commenced, then the ARC should be advised in writing of that as soon as is reasonably practicable.*
- (3) *Investigations of land are undertaken to determine whether or not a site is contaminated and what, if any, site remediation is required. The information obtained from the notification of site investigations will assist the ARC in the delivery of its RMA Section 30(1)(ca) function which is "the investigation of land for the purposes of identifying and monitoring contaminated land". This information will be used to complement the register of land referred to in Method 5.6.23.*

### Low Level Contamination

**Explanation:**

*For land where the degree of contamination generates only low level risks to the environment or human health, the ongoing discharge of contaminants from that land is a Permitted Activity.*

**5.5.40A** The discharge of contaminants to land or water from **potentially contaminated land** that is production land is a Permitted Activity subject to:

- (a) the land shall not previously have been used for non-primary production purposes (such as for commercial or industrial activities that may have led to the contamination of the land), nor for the dumping of chemicals;
- (b) the land shall not be redeveloped or used for non-primary production land purposes;
- (c) the discharge shall not give rise to any of the effects referred to in section 70(1) of the RMA; and
- (d) the discharge shall not have adverse effects on **potable water supplies**.

**Explanation:**

*Production land has the same meaning as defined in the RMA. Where land that is currently rural land is to be redeveloped for urban use, then that land is subject to Rule 5.5.41. Activities that cannot comply with any other conditions of the Rule are dealt with under Rule 5.5.43.*

*The ARC intends to review the adequacy of this Rule once there has been some monitoring of its operation and experience of its appropriateness.*

**5.5.41** Other than as provided by Rule 5.5.40A, the discharge of contaminants to land or water from land is a Permitted Activity subject to:

- (a) Concentrations of target contaminants, or the 95% upper confidence limit of the mean which shall be determined in accordance with the Contaminated Land Management Guidelines No 5 Site Investigation and Analysis of Soils (MfE, February 2004), shall not exceed the greater of (i) or (ii) below:
  - (i) for in situ soil and material imported and/or deposited onto the land:
    1. the criteria specified in Schedule 10: Permitted Activity Criteria. The human health values in Schedule 10 apply unless the effects of land use on human health have been expressly authorised either through District Plan rules or a resource consent granted by a *territorial authority*. For contaminants not included in Schedule 10;
    2. the Tier 1 soil acceptance criteria for the current land use or, in the case of a proposed change in land use, the proposed land use and for the more stringent of either the *protection* of human health or sensitive *groundwater* specified in the 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', MfE 1999; or for contaminants not included in Schedule 10 or the Petroleum Hydrocarbon guidelines;
    3. the soil quality guidelines for the current land use or, in the case of a proposed change in land use, the proposed land use in the 'Canadian Environmental Quality Guidelines', Canadian Council of Ministers of the Environment, CCME 1991 (update 2002) for the currently zoned landuse, or for contaminants not included in Schedule 10, the Petroleum Hydrocarbon guidelines or the CCME guidelines;
    4. for dieldrin and lindane only, the soil quality guidelines in "Identifying, Investigating and Managing Risks Associated with Former Sheep-dip Sites: A guide for local authorities", MfE 2006.
  - (ii) for in situ soil and material imported and/or deposited onto the land the natural *background levels* for that soil or material or the relevant *background levels* specified in ARC Technical Publication "Background concentrations of inorganic elements in soils from the Auckland region", TP153, October 2001.
- (b) The in situ soil or material historically imported shall not contain *separate phase liquid contaminants* including *separate phase hydrocarbons*.

**Explanation:**

- (1) 'Target contaminants' are potential contaminants identified during a non-intrusive or desk top environmental site investigation.
- (2) For the purposes of Condition (a)(i)(2) 'sensitive groundwater' is defined in section 5.2.3 of the 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', MfE 1999.
- (3) The 'Canadian Environmental Quality Guidelines', Canadian Council of Ministers of the Environment, CCME 1991 (update 2002) have been referenced to provide criteria for a wide range of contaminants. These are to only be used for contaminants not already listed within the other Guidelines referenced in Rule 5.5.41(a)(i).
- (4) The various contaminant guidelines referred to in Rule 5.5.41(a)i and ii are attached in Schedule 11 – Compilation of acceptance guidelines.
- (5) Land that cannot comply with standards, terms and conditions (a) or (b) of Rule 5.5.41 is dealt with under either Rule 5.5.43 if it is to remain in its current state and Rules 5.5.42A or 5.5.44 if it is to be disturbed or remediated.

### Petroleum Underground Storage Tanks

- 5.5.42** The discharge of contaminants to land or water from land<sup>1</sup> resulting from either:
- (a) underground tanks and associated underground systems used or previously used for the storage of petroleum **hydrocarbons** that are covered by the 'Guidelines for Assessing and Managing Petroleum **Hydrocarbon** Contaminated Sites in New Zealand', (MfE, 1999) is a Permitted Activity subject to (a) and (c); or
  - (b) the removal of underground tanks and associated underground systems previously used for the storage of petroleum **hydrocarbons** that are covered by the 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', (MfE, 1999) is a Permitted Activity subject to (i)(1), (i)(2), (ii), (iii), (iv) and (v) and additionally (i)(3) once the tank removal is completed.
    - (i) The concentration of soluble contaminants shall not exceed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines (October 2000 version) Table 3.4.1 toxicant trigger levels for marine or freshwater, where relevant, at the level of protection for 80% of species in any of:
      1. **stormwater** discharged as overland flow from the land at the **site boundary**, excluding **stormwater** from buildings and impervious surfaces; or
      2. **surface water** within the site; or
      3. **groundwater** at the site boundary.
    - (ii) The concentration of contaminants remaining in the soil on the **site** following the removal of underground tanks and associated underground systems shall not exceed the Tier 1 soil acceptance criteria for the current land use or, in the case of a proposed change in land use, the proposed land use and for the **protection of groundwater** within a sensitive **aquifer** specified in the 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', MfE 1999.
    - (iii) The discharge shall not contain separate phase hydrocarbons.
    - (iv) Any contaminated materials removed from the site shall be disposed of to a facility or site authorised to accept such materials.
    - (v) The tank removal investigation, remediation, validation and management processes shall be carried out in accordance with 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', (MfE, 1999) and 'Contaminated Land Management Guidelines for Reporting on Contaminated Sites in New Zealand', (MfE, November 2003). This shall include the preparation of a tank removal report a copy of which shall be retained and provided to the ARC upon request.

#### **Explanation:**

- (1) For the purposes of Condition (2)(b) 'sensitive aquifer' is defined in section 5.2.3, page 5-3 of the 'Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand', MfE 1999.
- (2) Condition (2)(a)(i) is intended to capture **stormwater** which has come into direct contact with soil on the land.
- (3) The various guidelines referred to in Rule 5.5.42(2)(a) and (b) are attached in Schedule 11 – Compilation of acceptance guidelines.

<sup>1</sup> This Rule does not apply to land bounded by the coastal marine area and a line drawn along the middle of Pakenham Street to a point where it meets the boundary of the coastal marine area at each end.



- (4) *Land that cannot comply with Rule 5.5.42 is dealt with under Rule 5.5.43 if it is to remain in its current state and Rules 5.5.42A or 5.5.44 if it is to be remediated.*

**Permitted Activity – discharges from the remediation of land containing contaminants to allow existing uses to continue in a sustainable manner.**

**5.5.42A** The discharge of contaminants to land or water arising from the *remediation of land containing elevated levels of contaminants* is a Permitted Activity subject to:

- (a) The land is owned or controlled by a *territorial authority* as defined in Section 5 of the Local Government Act 2002;
- (b) The *remediation* is to enable existing land uses to meet public health or environmental *protection* criteria consistent with their current use;
- (c) The ARC is advised in writing of the *remediation* prior to the commencement of the *remediation* works. This advice shall include:
  - (i) The proposed date of commencement of the *remediation* works;
  - (ii) A (intrusive) Site Investigation Report (SIR) prepared for the *site* in general accordance with Schedule 13 (A3) - Schedules for Reporting on Contaminated Land;
  - (iii) A Remedial Action Plan (RAP) prepared for the *site* in general accordance with Schedule 13 (A4) – Schedules for Reporting on Contaminated Land;
- (d) The duration of the *remediation* works is less than 6 months;
- (e) The *remediation* works do not intersect soil that contains *separate phase liquid contaminants* including *separate phase hydrocarbons*;
- (f) Any off-site discharge of water or *stormwater* that has come into contact with land exposed during the *remediation* works meets the following:
  - (i) The soluble contaminants do not exceed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines (October 2000 version) Table 3.4.1 toxicant trigger levels for freshwater at the level of *protection* for 80% of species; and
  - (ii) The concentrations of contaminants in suspended sediment shall not exceed the ANZECC Guidelines (October 2000 version) Table 3.5.1 ISQG-Low trigger values for the *protection* of aquatic *ecosystems* multiplied by a factor of five (5);
- (g) The discharge shall not give rise to any of the effects referred to in section 70(1) of the RMA;
- (h) The discharge shall not have adverse effects on *potable water* supplies;
- (i) The *remediation* works either:
  - (i) Do not intersect *groundwater*; or
  - (ii) Are not likely to cause soluble contaminants in *groundwater* at the *site boundary* to exceed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines (October 2000 version) Table 3.4.1 toxicant trigger levels for freshwater at the level of *protection* for 80% of species;
- (j) A Site Validation Report (SVR) for the land is undertaken in general accordance with Schedule 13 (A5) - Schedules for Reporting on Contaminated Land and provided to the ARC within 3 months of the *remediation* works being completed;
- (k) Any discharges of contaminants to air as a result of the *remediation* works shall comply with the relevant provisions of Chapter 4 – Air Quality; and
- (l) Any contaminated materials removed from the site shall be disposed of to a facility or *site* authorised to accept such materials.

**Explanation:**

- (1) The purpose of Rule 5.5.42A is to allow the **remediation** of **sites** undertaken by a **territorial authority** to provide for their existing use in an environmentally sustainable manner. This includes **remediation** to protect the health of users of the **site** or to mitigate existing effects on the environment. This recognises that territorial authorities also have statutory responsibilities for managing **contaminated land**.
- (2) Rule 5.5.42A does not authorise the **remediation** of **sites** as part of development, redevelopment or land use change. Such **remediation** is typically of a larger scale and often results in the creation of more sensitive land uses. Accordingly, it is appropriate for such **remediation** to be subject to a higher level of control through a Controlled Activity resource consent process under Rule 5.5.44.
- (3) ARC recognises that the RAP prepared under Condition c(iii) may change as the **remediation** process progresses. Such changes will be reflected in the SVR prepared once **remediation** is completed. Land that cannot comply with Rule 5.5.42A is dealt with under Rule 5.5.44.

**Controlled Activities****Contamination above Permitted Activity levels****Explanation:**

For land where the degree of contamination has the potential to generate greater than low level risks to the environment or human health, the ongoing discharge of contaminants from that land is a Controlled Activity.

**5.5.43** The discharge of contaminants to land or water from **land containing elevated levels of contaminants** that does not meet the standards, terms and conditions of Rule 5.5.40A, or standards, terms and conditions (a) or (b) of Rule 5.5.41, or standards, terms and conditions (i), (ii) or (iii) of Rule 5.5.42 is a Controlled Activity subject to:

- (a) Standards and terms (i), (ii) and (iii); or alternatively
- (b) Standards and terms (i) and (iv); or alternatively
- (c) Standards and terms (i) and (v).

**Standards and terms:**

- (i) The resource consent applicant preparing an (Intrusive) Site Investigation Report (SIR) which shall be provided to the ARC. The SIR shall be prepared in general accordance with Schedule 13 (A3) – Schedules for Reporting on Contaminated Land to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land. The SIR shall include a **groundwater** investigation unless such an investigation is shown to be unnecessary by a **site** specific risk assessment; and
- (ii) The concentration of soluble contaminants in any of:
  1. **stormwater** discharged as overland flow from the land at the **site boundary**, excluding **stormwater** from buildings and impervious surfaces; or
  2. **surface water** within the **site**; or
  3. **groundwater** at the **site boundary**.

shall not exceed the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines (October 2000 version) Table 3.4.1 "Trigger values for toxicants at alternative levels of protection" for marine or freshwater, where relevant, at the level of **protection** for 80% of species.

- (iii) The concentrations of contaminants in suspended sediments entrained in **stormwater** discharged as overland flow from the land at the **site boundary**, excluding **stormwater** from buildings and impervious surfaces, shall not exceed the greater of either the criteria listed in Schedule 10 or the ANZECC Guidelines (October 2000 version) Table 3.5.1 "Recommended Sediment Quality Guidelines": ISQG-Low trigger values for the **protection of aquatic** ecosystems multiplied by a factor of five (5) except for zinc which is multiplied by a factor of two (2).
- (iv) The applicant for resource consent shall complete an environmental and human health risk assessment undertaken in accordance with Schedule 13 (A1) - Schedules for Reporting on Contaminated Land to demonstrate that the contaminated **stormwater** or **groundwater** will either meet (b) and (c) above, or will not cause significant adverse effects on human health or the environment.
- (v) The in situ soil or material imported and/or deposited onto the land shall be contained beneath a continuous **impervious layer** and shall be located above the highest seasonal **groundwater** level beneath the **site**.

The ARC shall exercise its control over the following matters under Rule 5.5.43, having regard to any relevant consents granted or required for the **site** from the relevant **territorial authority**:

1. The preparation and implementation of a Monitoring and Management Plan (MMP) for the land which specifies how the relevant standards and terms of this Rule will be complied with on an ongoing basis. The MMP shall set out any future requirements specified in an environmental and human health risk assessment prepared under (iv) above. The MMP shall be prepared by the applicant in general accordance with Schedule 13 (A6) - Schedules for Reporting on Contaminated Land to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land;
2. Methods to avoid adverse effects on **potable water** supplies;
3. Methods to control vapour migration;
4. In relation to land, materials or discharges containing **separate phase liquid contaminants** including **separate phase hydrocarbons**, the preparation, contents and implementation of any necessary Remedial Action Plan. Having regard to the potential mobility of the **separate phase liquid contaminants** and the risk posed by any such mobility, the Remedial Action Plan shall address the level of residual **separate phase liquid contaminants** sought to be achieved and any monitoring to be undertaken;
5. The duration of the consent; and
6. The timing and nature of reviews of consent conditions.

#### Non-notification

Applications for controlled activities under Rule 5.5.43 will be considered without publicly notifying them in accordance with Section 95A(3) of the RMA unless, in the opinion of the ARC, there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA. However, the applications will be served on the landowner and may be served on neighbouring properties in accordance with Section 95E of the RMA.

#### Explanation:

Conditions (b)(i) and (c) are intended to capture **stormwater** which has come into direct contact with soil on the land.

*Land containing elevated levels of contaminants that cannot comply with Rule 5.5.43 is dealt with under Rule 5.5.44 if it is to be disturbed or remediated or otherwise under Rule 5.5.44A.*

*Where groundwater contamination at the site boundary exceeds standard and term 5.5.43(ii)(1) the ARC will generally directly serve the application on neighbouring properties (undertake limited notification).*

#### Sites Undergoing Land Disturbance or Remediation above Permitted Activity Levels

**5.5.44** The discharge of contaminants to land or water from *land containing elevated levels of contaminants* that is undergoing *remediation* or land disturbance that does not meet the standards, terms or conditions of Rules 5.5.40, 5.5.42(b) or 5.5.42A, is a Controlled Activity, subject to the following standards and terms:

- (a) An (Intrusive) Site Investigation Report (SIR) shall be provided to the ARC. The SIR shall be prepared in general accordance with Schedule 13 (A3) - Schedules for Reporting on Contaminated Land to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land. The SIR shall include a *groundwater* investigation unless such an investigation is shown to be unnecessary by a *site* specific risk assessment; and
- (b) A Remedial Action Plan (RAP) shall be provided to the ARC. The RAP shall state the level of residual *site* contamination sought to be achieved by the disturbance or *remediation* and any monitoring to be undertaken during the *site* disturbance or *remediation*. The RAP shall also be prepared in general accordance with Schedule 13 (A4) - Schedules for Reporting on Contaminated Land to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land.

The ARC shall exercise its control over the following matters under Rule 5.5.44, having regard to any relevant consents granted or required for the *site* from the relevant *territorial authority*:

- (i) Methods to avoid adverse effects on *potable water* supplies;
- (ii) Methods to control vapour migration;
- (iii) The adequacy and implementation of the RAP for the land;
- (iv) The preparation and implementation of a Site Validation Report (SVR) for the land. The SVR shall be prepared by the applicant in general accordance with Schedule 13 (A5) - Schedules for Reporting on Contaminated Land to a scale and degree of detail commensurate with the potential effects of the discharge and the contaminants concerned and the physical conditions of the land;
- (v) The duration of the consent; and
- (vi) The timing and nature of reviews of consent conditions.

#### Non-notification

Applications for controlled activities under Rule 5.5.44 will be considered without publicly notifying them in accordance with Section 95A(3) of the RMA unless, in the opinion of the ARC, there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA. However, the applications will be served on the landowner and may be served on neighbouring properties in accordance with Section 95E of the RMA.

#### *Explanation:*

*Contaminated land that cannot comply with Rule 5.5.44 is dealt with under Rule 5.5.44A.*

Applicants can apply for a resource consent for **remediation** under Rule 5.5.44 and at the same time can apply for a resource consent to authorise the ongoing discharge from the **site** under Rule 5.5.43.

### Restricted Discretionary Activities

Activities that do not meet the Controlled Activity rules

**5.5.44A** The discharge of contaminants to land or water from **land containing elevated levels of contaminants** that does not comply with the standards and terms Rule 5.5.43 or Rule 5.5.44 is a Restricted Discretionary Activity.

The ARC shall restrict the exercise of its discretion to the following matters under Rule 5.5.44A:

- (a) The particular matter of non-compliance with the standards and terms of Rule 5.5.43 or Rule 5.5.44;
- (b) Methods to avoid adverse effects on **potable water** supplies;
- (c) Methods to control vapour migration;
- (d) The preparation, adequacy and implementation of an (Intrusive) Site Investigation Report (SIR), an environmental and human health risk assessment, a Remedial Action Plan (RAP), a Monitoring and Management Plan (MMP), and a Site Validation Report (SVR) for the land prepared in accordance with the requirements of Rules 5.5.43 and 5.5.44;
- (e) The duration of the consent; and
- (f) The timing and nature of reviews of consent conditions.

### Discretionary Activities

**5.5.45** The discharge of contaminants to land or water from **land containing elevated levels of contaminants** including **contaminated land** that is not otherwise provided for is a Discretionary Activity.

#### Landfills

*Note: The operation of a landfilling activity is subject to the provisions of the Auckland Regional Plan: Sediment Control (2001).*

### Permitted Activities

**5.5.48** The discharge of contaminants onto or into land from a **cleanfill** is a Permitted Activity, subject to the following conditions:

- (a) The siting, design, installation and management shall be in accordance with 'A Guide to the Management of Cleanfills' Ministry for the Environment (2002);
- (b) It is not located in a Wetland, Natural **Lake**, Natural Stream or High Use Stream Management Area(s); and
- (c) It is not located in a floodplain or **watercourse**, an area with a high risk of instability or a site with a **slope** greater than 15°.

**5.5.49** The discharge of contaminants to **groundwater** or **surface water** from a **solid waste landfill** that was lawfully being carried out and that has been closed for at least 30 years, is a Permitted Activity subject to the following conditions:

- (a) The contaminants in the discharge shall not exceed the 95 per cent trigger values for:
  - (i) freshwater; or

- (ii) marine waters where the discharge is to a saline environment that is outside of the Coastal Marine Area, as identified in the Auckland Regional Plan: Coastal;

both as specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), at the downgradient edge of the **landfill** footprint; and

- (b) **Leachate** generation and discharge shall be managed through the implementation of the following measures:
  - (i) The surface of the **landfill** is capped to facilitate **surface water** runoff and to minimise ponding;
  - (ii) The final capping layer is topsoiled and planted with vegetation that will maintain groundcover to manage surface erosion and **surface water infiltration**;
  - (iii) Minimise catchment runoff entering the **landfill**; and
  - (iv) **Stormwater** drains shall be adequately maintained so as to minimise **leachate infiltration** from the **landfill** and **stormwater exfiltration** into the **landfill**.

**Explanation:**

*The operation of landfilling operations may be subject to the Air Quality provisions set out in Chapter 4 of this Plan.*

**5.5.50** The discharge of contaminants to **groundwater** or **surface water** from a **solid waste landfill** that closed prior to the enactment of the Resource Management Act on 1<sup>st</sup> October 1991, is a Permitted Activity, subject to the following conditions:

- (a) The fill materials shall consist of at least 80% **cleanfill** by volume; or
- (b) The total volume does not exceed 1,000m<sup>3</sup>; and
- (c) No significant quantities of **hazardous substances** are known to have been deposited in the **landfill**;
- (d) The contaminant discharged shall not exceed the 95 per cent trigger values for:
  - (i) freshwater; or
  - (ii) marine waters where the discharge is to a saline environment that is outside of the Coastal Marine Area, as identified in the Auckland Regional Plan: Coastal;

both as specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), at the downgradient edge of the **landfill** footprint; and

- (e) **Leachate** generation and discharge shall be managed through the implementation of the following measures:
  - (i) The surface of the **landfill** is capped to facilitate **surface water** runoff and to minimise ponding;
  - (ii) The final capping layer is topsoiled and planted with vegetation that will maintain groundcover to manage surface erosion and **surface water infiltration**;
  - (iii) Minimise catchment runoff entering the **landfill**; and
  - (iv) **Stormwater** drains shall be adequately maintained so as to minimise **leachate infiltration** from the **landfill** and **stormwater exfiltration** into the **landfill**.

### Controlled Activities

**5.5.51** The discharge of contaminants to *groundwater* or *surface water* from a closed *solid waste* landfill, which does not meet Permitted Activity conditions (Rules 5.5.49 and 5.5.50) is a Controlled Activity.

The ARC shall exercise its control over the following matters in Rule 5.5.51:

- (a) The adequacy of the measures used for *protection* from *saltwater*, freshwater and *groundwater* intrusion;
- (b) The mitigation measures necessary to protect *receiving water* quality, including such measures as containment, treatment and disposal systems, and capping design and *maintenance*;
- (c) The design and operation of *stormwater* systems;
- (d) The frequency, location and method of sampling, and the contaminants to be measured and method of measurement;
- (e) The duration of the consent; and
- (f) The timing and nature of reviews of consent conditions.

### Non Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

### Restricted Discretionary Activities

**5.5.52** The discharge of contaminants onto or into land from *a cleanfill* that does not comply with the conditions of Permitted Activity Rule 5.5.48 is a Restricted Discretionary Activity.

The ARC shall restrict the exercise of its discretion to the following matters under Rule 5.5.52:

- (a) The siting, design, installation and management of the *cleanfill*;
- (b) The duration of the consent; and
- (c) The timing and nature of reviews of consent conditions.

### Non Notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

### Discretionary Activities

**5.5.53** The discharge of contaminants to *groundwater* or *surface water* from a *solid waste landfill* that is not otherwise provided for is a Discretionary Activity.

(For Rule 5.5.54 see also Policies 5.4.1, 5.4.2, 5.4.39 to 5.4.43)



## Other Discharges of Contaminants to Land or Water

### Permitted Activities

- 5.5.54** The discharge of *wastewater* and/or *washwater* from the following activities is a Permitted Activity (subject to the conditions in Rule 5.5.55):
- (a) Concrete/asphalt laying or reworking;
  - (b) *Drilling* activities excluding *bore* development and testing;
  - (c) Mobile cleaners (including carpets, blinds, domestic animals etc);
  - (d) The washing of vehicles, plant or machinery;
  - (e) The cleaning, *maintenance* and preparation of surfaces of buildings and associated structures (e.g. driveways, garages etc);
  - (f) The *maintenance* and repair of buildings, bridges or other structures that do not span, is immediately adjacent to, or otherwise extend over any water body;
  - (g) Road construction activities;
  - (h) The construction, installation, *maintenance*, *alteration*, removal or upgrading of any component of the *stormwater* or *wastewater network* that does not span, is immediately adjacent to, or otherwise extends over any water body;
  - (i) The installation, repair, *maintenance*, *alteration* or removal of *network utility infrastructure* that does not span, is immediately adjacent to, or otherwise extends over any water body;
  - (j) Dust suppression;
  - (k) *Site* dewatering during building construction and excavation;
  - (l) Emergency services response training activities; and
  - (m) The maintenance and cleaning of Quay Cranes.
- 5.5.55** The activities in Rule 5.5.54 are subject to the following conditions:  
The discharge shall be either:
- (a) collected for reuse; or
  - (b) discharged to land so that runoff or the accumulation of contaminants does not occur;
  - (c) recycled or collected for disposal at an *authorised facility*; or
  - (d) discharged onto land resulting in runoff, including to any natural or man-made *stormwater drainage* system, where the discharge has been minimised to the greatest extent practicable, in a manner that does not give rise, after reasonable mixing, in the receiving waterbody to any or all of the following:
    - (i) the production of any conspicuous oil or grease films, scum, foams, of floatable or suspended material;
    - (ii) any conspicuous change in the colour or visual clarity;
    - (iii) a change in the natural pH of more than 1 pH unit; or
    - (iv) any significant adverse effect on aquatic life.
- 5.5.56** Discharge of dye or tracer material for investigative purposes is a Permitted Activity, subject to the following conditions:
- (a) Notice of the intended discharge shall be given to the ARC and the relevant *territorial authority* at least 12 hours before the discharge occurs;

- (b) The dye or tracer shall be of a type that is designed to be used in natural water and shall be used in accordance with manufacturer's recommendations and any relevant and recognised standards and practices.

**5.5.57** The discharge of water from the following is a Permitted Activity:

- (a) Testing or emptying of pipelines, tanks or *bunds*;
- (b) A reticulated water supply system, excluding backwash water from water treatment plants;
- (c) Swimming pools, other than saltwater pools and filter backwash water, into any waterbody;
- (d) *Bore* development, testing or purging (dewatering), except for contaminated *groundwater*;
- (e) Temporary and permanent discharge of diverted uncontaminated *groundwater*;
- (f) The discharge of water used for freshwater fish farming ponds, tanks or other containment structures operating without chemical additives on a continuous flow-through basis.

**5.5.58** The activities in Rule 5.5.57 are subject to the following conditions:

- (a) As far as practicable no welding residues or other debris contained within the pipeline shall be discharged to the *receiving water*;
- (b) Swimming pool water shall be discharged into a reticulated *wastewater* system where available and connection is approved by the *TA* or Local Network Operator. If a reticulated system is not available, the swimming pool shall be left uncovered and shall not be dosed with chemical additives for at least 14 days before the discharge;
- (c) The contaminant discharged shall not either by itself or in combination with other contaminants after reasonable mixing exceed the greater of the 95 percent trigger values for freshwater (*groundwater*) specified in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000), or the natural *background level*, with the exception of the discharge of treated water by a network utility operator where the discharged water has been dechlorinated and does not exceed a chlorine level of 0.02mg/L;
- (d) The discharge does not change the natural temperature of the *receiving water* by more than 3°C after reasonable mixing;
- (e) The discharge does not enter into any Wetland (excluding Wetland Management Area Number 450), Natural *Lake* or *Natural Stream Management Area* except in the case of a discharge by a network utility operator carrying out maintenance, routine operations, or emergency works on any component of a water or wastewater network and provided there are no adverse effects on the Wetland, Natural *Lake* or *Natural Stream Management Area*;
- (f) The discharge does not change the natural pH of the water by more than 1.0 pH unit after reasonable mixing;
- (g) The discharge does not cause erosion or scouring at the point of discharge or alter the natural course of the water body;
- (h) The discharge does not, after reasonable mixing, give rise to the production of:
  - (i) Any conspicuous oil or grease film, scum or foam, or floatable or suspended materials;
  - (ii) Any conspicuous change in the colour or visual clarity;
  - (iii) Any emission of objectionable odour; or

- (iv) The rendering of freshwater unsuitable for consumption by farm animals; and
- (i) The discharge does not include **washwater** used for the external cleaning of a reticulated water supply system (i.e. water discharged under Rule 5.5.54).

**5.5.59** The discharge of swimming pool filter backwash water to land, in a manner that does not result in runoff into **surface water** is a Permitted Activity.

**5.5.60** The discharge of geothermal water from any **site** at Parakai or Waiwera Thermal Aquifer Management Areas (as shown in Map Series 2), is a Permitted Activity, subject to the following conditions:

- (a) Any discharge of backwash water shall only take place from pools with a volume of less than 10m<sup>3</sup>;
- (b) Except as provided for by (a), the discharge shall comprise geothermal water only and shall contain no residual added chemicals;
- (c) The temperature of the discharge shall be less than 35°C;
- (d) The discharge shall be less than 100m<sup>3</sup> per day;
- (e) The discharge shall not be directly into any water body and if directed to a territorial **stormwater** system, shall occur through a connection approved by the owner and/or operator of that **stormwater** system.

**5.5.61** Any discharge from a New Zealand Defence Force weapons system to land within areas designated for “Defence Purposes” is a Permitted Activity, subject to the following conditions:

- (a) Any unexploded munitions are located and destroyed as soon as practicable;
- (b) Any metallic debris is removed from **site** where practicable;
- (c) The discharge does not result in the contamination of other land not designated for defence purposes;
- (d) The discharge does not result in the contamination of **groundwater** used by other parties; and
- (e) The discharge does not lead to contamination of **surface water**.

**5.5.62** The discharge of contaminants into a waterbody that are incidental to, or derived from or generated during the normal operation of a vessel provided adverse effects are minimised to the greatest extent practicable is a Permitted Activity.

#### Controlled Activities

**5.5.63** The discharge of **wastewater** and/or **washwater** into water or onto land where it will enter water, arising from:

- (a) the cleaning, **maintenance** and repair of buildings, bridges and other structures;
- (b) the installation, repair, **maintenance** and removal of **network utility infrastructure**; or
- (c) the construction, installation, **alteration**, removal or upgrading of any component of the **stormwater** or **wastewater network**;

that span, is immediately adjacent to, or otherwise extend over any waterbody, is a Controlled Activity, subject to the following standards and terms:

- (i) The discharge is not permitted by Rule 5.5.54;
- (ii) The discharge does not enter any Wetland, Natural **Lake** or **Natural Stream Management Area**.

The ARC shall exercise its control over the following matters under Rule 5.5.63:

- (a) the volume and level of contamination;
- (b) the method of discharge and effects arising from the method chosen;
- (c) the provision and adequacy of equipment for the collection, treatment and disposal of any discharge; and
- (d) the requirements for and specifications of consent monitoring.

**5.5.64** The discharge of wastes as a result of wet or *dry abrasive blasting* activities is a Controlled Activity, subject to the following standards and terms:

- (a) The discharge is not permitted by Rule 5.5.54;
- (b) The discharge does not enter any Wetland, Natural *Lake* or *Natural Stream Management Area*.

The ARC shall exercise its control over the following matters under Rule 5.5.64:

- (i) the duration of the discharge;
- (ii) the volume and level of contamination;
- (iii) the method of discharge and effects arising from the method chosen;
- (iv) the provision and adequacy of equipment for the collection, treatment and disposal of any discharge;
- (v) the notification of affected parties prior to works commencing; and
- (v) the requirements for and specification of consent monitoring.

**5.5.65** The discharge of geothermal water at Parakai or Waiwera Thermal *Aquifer* Management Areas (as shown in Map Series 2) that does not comply with Permitted Activity Rule 5.5.60, is a Controlled Activity, subject to the following standards and terms:

- (a) The discharge shall comprise geothermal water, with or without the addition of pool chemical treatments;
- (b) The discharge shall not contain any filter backwash water;
- (c) The contaminant discharged shall not either by itself or in combination with other contaminants exceed the 95 per cent trigger values for freshwater (*groundwater*) specified in the ANZECC (2001) Water Quality Protection Guidelines;
- (d) The temperature of the discharge shall be less than 35°C;
- (e) The discharge after reasonable mixing does not change the natural temperature of the *receiving water* by more than 30°C;
- (f) The discharge after reasonable mixing does not change the natural pH of the water by greater than 1.0 pH unit;
- (g) The discharge does not cause erosion or scouring at the point of discharge or cause downstream channel erosion or alter the natural course of the water body; and
- (h) The discharge does not result in significant flooding.

The ARC shall exercise its control over the following matters:

- (i) the volume, rate and frequency of any discharge;
- (ii) the method of discharge and the effects arising from the chosen method;
- (iii) the quality of any discharge including methods for the treatment and disposal of contaminants, including pool treatment chemicals and filter backwash water;

- (iv) the location of any discharge point; and
- (v) the monitoring of the consent.

#### Non Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

- 5.5.66** The discharge of geothermal water at Parakai or Waiwera that does not comply with Controlled Activity Rule 5.5.65 is a Restricted Discretionary Activity. The ARC shall restrict the exercise of its discretion under Rule 5.5.66 to the effects of failing to comply with any condition(s) of the Controlled Activity (Rule 5.5.65).

#### Non Notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

- 5.5.67** Any discharge of geothermal water outside of Parakai and Waiwera Thermal Aquifer Management Areas (as shown in Map Series 2) is a Discretionary Activity.
- 5.5.68** Any discharge, which is not otherwise provided for in any other rule in this chapter is a Discretionary Activity.

(For Rules 5.5.68 – 5.5.69 see also Policies 5.4.1, 5.4.2, 5.4.44 to 5.4.48)

## 5.6 Other Methods

### Stormwater Diversions and Discharges & Wastewater Overflow Discharges

- 5.6.1** The ARC will encourage TAs to prepare an *Integrated Catchment Management Plan* to support any proposal for land-use intensification in the District Plan. As part of the land intensification proposal *TA's* should ensure that increases in demand are managed to remain within the existing, or an upgraded, hydraulic capacity of the *stormwater* and *wastewater networks*.
- 5.6.2** The ARC will encourage *TA's* to:
- (a) Include *low impact design* principles for *stormwater* within *structure planning* or similar planning for urban and higher intensity rural development; and
  - (b) Enable *low impact design* solutions for *stormwater* to be implemented during land development by ensuring that Council Standards and Codes of Practice facilitate these concepts.
- 5.6.3** The ARC will facilitate the development of common methodologies (such as a common harbour model) amongst *stormwater* and *wastewater network utility operators* to improve understanding of environmental performance of their systems and discharges, and of their effects on *receiving environments*.

**5.6.4** The ARC will consider transferring powers for the regulation of *stormwater* diversions and discharges, and minor stream works, within specific catchments to ***Territorial Authorities***, where:

- (a) The ARC and the ***Territorial Authority*** agree that a Transfer of Powers will result in the more efficient and integrated management of those activities within the specific catchment;
- (b) There is an agreed ***Integrated Catchment Management Plan*** and *stormwater network* discharge consent for the specific catchment, prepared in accordance with Policies 5.4.6, 5.4.10 and 5.4.11 of this Plan;
- (c) The ***Territorial Authority*** has demonstrated that it has the capability (institutional capacity and appropriately qualified and experienced personnel) to effectively implement a Transfer of Powers.

**5.6.5** The ARC will continue to investigate and record the effects of *stormwater* and sediment discharges on ***receiving environments*** and make this information publicly available.

**5.6.6** The effectiveness of rules relating to *stormwater* management at sites conducting an ***industrial or trade activity*** will continue to be assessed by the ARC.

**5.6.7** The ARC has developed Environmental Indicators for monitoring contaminant levels in the urban Coastal Marine Area and these are contained in the Regional Plan: Coastal. The Environmental Indicators address bathing water quality, sediment quality and water quality. These indicators will be monitored or will be used by the ARC and ***stormwater and wastewater network utility operators***. Chapter 20 of the Regional Plan: Coastal identifies how this information is to be used.

#### **Industrial or Trade Activities**

**5.6.7A** The ARC will work with industry associations and representative groups in order to facilitate the provision of relevant and cost effective training to affected industries regarding the implementation of the provisions of this Plan.

**5.6.8** The ARC will establish and maintain a publicly available register of assessors (both self assessors and independent assessors) confirmed by the ARC as having the appropriate combination of qualifications and experience to assess the implementation of Environmental Management Plans for ***Industrial or Trade Activities***.

Individuals can become registered assessors where they either:

- (a) Have passed the ARC assessor training programme; or
- (b) Are experienced practitioners in the field of industrial *site* assessments and are approved by a panel to appointed by the ARC.

An assessor's registration may be withdrawn by the ARC through assessment and recommendation by the panel.

#### **Explanation:**

- (1) *The Permitted Activity rules for Industrial or Trade Activities require periodic assessment of the activities and the implementation of their Environmental Management Plans. These assessments need to be undertaken by ARC registered individuals. Through the ARC maintaining a register of such individuals all parties will have certainty over who is properly able to undertake the assessments. There is nothing to prevent the employees of a company operating the Industrial or Trade Activity from seeking to become a registered self assessor for that particular activity.*

(2) *There is no expectation that the adequacy of Environmental Management Plans will be assessed by **Industrial or Trade Activity** assessors. For High Risk activities the adequacy of the Plans will generally be assessed by the ARC during the processing of consents for those activities and/or compliance monitoring visits. For Moderate Risk activities the adequacy of the Plans will generally be assessed by ARC during compliance monitoring visits. For other categories of activity the adequacy of the Plans may be checked by ARC if the sites of those activities are inspected in response to complaints or contamination incidents.*

**5.6.8A** The ARC will develop and make available the **Industrial or Trade Activity** assessor training programme referred to in Policy 5.4.18A and Other Method 5.6.8. The programme will cover a range of topics, including:

- (a) **Drainage** systems (e.g. **drainage**, treatment, location, design standards);
- (b) Site features (e.g. storage, **bunds**, roofing, refueling);
- (c) Housekeeping (e.g. loading, **stormwater** systems, **waste** treatment, historical issues, vehicle maintenance);
- (d) Spill related issues (e.g. assessment of risk, risk reduction, education);
- (e) **Waste** management issues;
- (f) Air quality issues;
- (g) Soil contamination; and
- (h) Environmental Management Plan.

#### **Sewage Treatment and Disposal**

**5.6.9** The ARC will work in partnership with **TA's** in the development and delivery of an education and training strategy and develop an advocacy role by facilitating regional forums on a regular basis for information transfer between on-site **wastewater** management industry, regulators, practitioners and system users.

**5.6.10** The ARC will work in partnership with **TA's** to develop monitoring and inspection procedures associated with **maintenance** certification under the Permitted Activity Rules 5.5.22, 5.5.23 or 5.5.24 and to report to the ARC the number of Permitted Activities assessed by that authority for the preceding 6 months.

**5.6.11** The ARC will facilitate the development and implementation of a consultative forum to undertake regular reviews of new types of on-site treatment and disposal systems and the development of design guidelines for adoption by TP58. The forum will comprise as a minimum, representatives from ARC, TAs, consulting engineers, system installers and the Auckland Area Health Board.

**5.6.12** The ARC will establish a database of on-site **wastewater** disposal systems with the assistance of **Territorial Authorities**.

#### **Land Management**

**5.6.15** The ARC will advocate **best management practices** for **soil conservation** and sustainable land management, including the following:

- (a) Advancing the integrated management of land and soil resources through liaison between landowners, resource users and tangata whenua; and
- (b) Providing input when individuals, communities, local and central government are considering the Region's land management issues.

**5.6.16** The ARC will support and promote industry initiated Codes of Practice and guidelines, and help landowners prepare individual property plans that identify opportunities and risks associated with sustainable land management.



### Discharges from Production Land Activities

**5.6.17** The ARC will encourage public education programmes regarding sustainable re-use of **waste** from production land activities.

**5.6.18** The ARC will carry out a range of activities in relation to Rural Wastes and Fertiliser Use, including;

- (a) Developing partnerships with industry, resource users and community groups to increase awareness of the adverse effects on the environment;
- (b) Undertaking and sharing research;

Providing up to date information on good management practices through publications, pamphlets, seminars, field days and workshops.

**5.6.19** The ARC will, following consultation with relevant industry groups undertake further monitoring to effectively measure the state, pressure and response of the impact of various production land use activities, including **waste** disposal and discharges of **waste** from production land activities on the health, versatility, quantity, productiveness and integrity of regions land and water resources. This consultation will consider incorporating the Council compliance monitoring into established independent audit procedures.

**5.6.19A** The ARC will promote the use of nutrient management tools as one means of avoiding potential adverse effects on **groundwater** and **surface water** quality.

### Fertiliser Use

**5.6.20** The ARC will encourage the use of **fertilisers** in accordance with codes of practice promulgated by industry.

**5.6.21** The ARC will promote the development of a holistic farm planning process for landowners including good farming practices that minimise adverse environmental effects.

**5.6.22** The ARC will facilitate training in, and promote the use of, nutrient management practices.

### Contaminated Land

**5.6.23** The ARC will identify and classify in a publicly available register all land in the Auckland Region that is confirmed as contaminated by the ARC using the Contaminated Land Management Guidelines No. 4, Classification and Information Management Protocols, (MfE June 2004). This information will also be supplied to the relevant territorial local authority.

**5.6.24** The ARC will assist with the development of national guidelines for the identification, assessment and management of **contaminated land**.

**5.6.25** The ARC will educate the public on the potential risks associated with existing **land containing elevated levels of contaminants** including **contaminated land** and the need to avoid future contamination.

**5.6.26** The ARC will undertake a proactive programme of investigating land for contamination, focusing first on those listed as high risk in the Contaminated Land Management Guidelines No. 3, Risk Screening System, (MfE February 2004).

**5.6.27** The ARC will encourage the development and implementation of non-regulatory and regulatory methods by Local Authorities for the management of **contaminated land**.

- 5.6.28** Where *contaminated land* is disclosed the ARC will work proactively with Local Authorities and landowners/occupiers to determine an appropriate management or *remediation* strategy on a *site by site* basis utilising both regulatory and non-regulatory methods, with regard to any relevant industry guidelines.

#### Landfills

- 5.6.29** The ARC will assist *territorial authorities* and other *landfill* owners with guidance regarding the potential risks associated with discharges to *groundwater* and/or *surface water* and the need for post-closure care to avoid, remedy or mitigate contaminant discharges.

#### Other Discharges of Contaminants to Land or Water

- 5.6.30** The ARC will produce and disseminate education material that details the importance of appropriately disposing of *wastewater* and *washwater* from the activities listed as Permitted Activities under Rules 5.5.54 to 5.5.60 inclusive, including acceptable methods of disposal with input and support from the industries concerned.

#### Stock Access

- 5.6.31** The ARC will take a long-term co-operative approach to working with landowners, Federated Farmers, Landcare Groups and other interested parties to promote the *protection* of rural streams from uncontrolled access of stock. This includes:
- (a) education and advocacy to increase landowner awareness of the potentially adverse effects of stock in streams and the methods available to restrict stock access;
  - (b) the use of financial incentives to support voluntary landowner initiatives to retire and protect vulnerable areas; and
  - (c) the establishment and operation of demonstration *sites* to prove the effectiveness of a variety of practices/techniques to protect or enhance vulnerable areas while maintaining sustainable farming practices.
- 5.6.32** To support existing District Plan provisions that require the *protection* of riparian zones and the beds of *lakes* and rivers through the subdivision approval process.
- 5.6.33** To encourage the inclusion of District Plan provisions that require the *protection* of riparian zones and the beds of *lakes* and rivers through the subdivision approval process.
- 5.6.34** The ARC will work in conjunction with landowners, Landcare groups, Fonterra and all other relevant groups to encourage riparian planting of the margins of *lakes*, rivers and streams.

## 5.7 Anticipated Environmental Results

The following are the results anticipated from the provisions of this plan in relation to the provisions of Chapter 5 – Discharges to Land or Water.

This chapter of the plan includes a wide range of activities, including the discharges of *stormwater* and *wastewater* from *network* systems to *contaminated land* and the application of *fertilisers*. All of these activities are different and they have differing environmental effects. However all of these activities potentially contribute to degraded land and water quality which can adversely affect the natural functioning of aquatic and terrestrial *ecosystems*. Therefore while there are a number of specific results set out below the overarching anticipated result that is expected from the provisions of this section, as well as the other sections, is:

“that the values of aquatic and terrestrial *ecosystems* are maintained where they are currently high and that they are enhanced where they are degraded”

The following are the more specific results anticipated particularly for the relevant management areas.

- 5.7.1** The *maintenance* and *protection* of freshwater stream *ecosystems* and habitats and their associated riparian zones, no barriers to *fish passage*, within the *Natural Stream Management Area*, characterised by the presence of an appropriate full range of native fish and stream invertebrates including freshwater crayfish, a keystone species, along with a healthy range of native aquatic vegetation. The riparian zone will consist of a natural assemblage of healthy native plants covering a minimum zone of 40 metres either side of the *watercourse* and 600 metres in length.
- 5.7.2** That the water quality in degraded rural streams and rivers (outside of the Natural Stream Management Area) will at least be maintained and where practicable improved, characterised by reduced bacterial levels, nutrients, turbidity, temperature and increased dissolved oxygen levels and *minimum flows*. Also instream physical habitat will be extensive and diverse with stable stream banks. An increase, over time, in the diversity and abundance of native fish, invertebrates and aquatic plants is expected.
- 5.7.3** The *maintenance* and *protection* of aquatic and terrestrial *ecosystems* associated with the rural *lakes* within Natural Lake Management Area which have existing high water quality characterised by the presence of an appropriate full range of native fish and *lake* invertebrates including the freshwater crayfish, a keystone species, along with a healthy range of native aquatic plants including planktonic species. The riparian zone will consist of a natural assemblage of healthy terrestrial and wetland plants.
- 5.7.4** That the *lakes* within the Natural Lakes Management Area which have degraded aquatic and associated terrestrial *ecosystems* will, where practicable, be improved, characterised by reduced bacterial levels, nutrients, turbidity and *maintenance* of minimum water levels so that marginal emergent vegetation and wetlands are enhanced.
- 5.7.5** That the biological communities and water quality in urban streams (within the Urban River and Stream Management Area) will be maintained where it is currently good, characterised by healthy and diverse fish and invertebrate communities, stable, diverse stream channels, low levels of bacteria, nutrients, turbidity, settleable solids, contaminants, oil, foams etc, and water temperatures and normal dissolved oxygen levels.
- 5.7.6** That the biological communities and water quality in degraded urban streams (within the Urban Streams Management Area) will at least be maintained and where practicable enhanced, characterised by an increase in the abundance and diversity of fish aquatic invertebrates, reduced levels of bacteria, nutrients, turbidity, settleable solids, contaminants, oil, foams, temperature and increased dissolved oxygen levels.
- 5.7.7** The preservation and *protection* of wetlands within the Wetland Management Area and other wetlands characterised by healthy and diverse wetland flora and fauna, and normal water quality.
- 5.7.8** The improvement where practicable of degraded wetland *ecosystems* within the Wetland Management Area and other wetlands characterised by improved health and diversity of wetland flora and fauna, and water quality.
- 5.7.9** High Quality Coastal and Estuarine *ecosystems* adjacent to where streams and rivers discharge will be protected or where adverse effects are unavoidable these will be minimised characterised by low bacterial levels and contaminants in water, sediments and aquatic organisms, absence of nuisance plant growths, a normal range of turbidity, dissolved oxygen and sediment characteristics, and aquatic biota will be abundant, diverse and healthy.

- 5.7.10** Degraded Coastal and Estuarine *ecosystems* adjacent to where streams and rivers discharge will be characterised by reduced levels of bacteria and contaminants in water, sediments and aquatic organisms, reductions or absence of nuisance plant growths, a more normal range of turbidity, dissolved oxygen and sediment characteristics leading to reduced levels of adverse effects on the abundance, diversity and health of aquatic biota.
- 5.7.11** The *maintenance* and *protection* of water quality within those *aquifers* identified in the Quality Sensitive Aquifer Management Area characterised by water that is not degraded.
- 5.7.12** The recognition of the relationship of tangata whenua with the wetlands, *lakes*, and rivers of the region in accordance with Section 6 (e) of the RMA.
- 5.7.13** That the quality of urban and rural land within the region, is maintained and where practicable enhanced.
- 5.7.14** That the management of *stormwater* and *wastewater networks* is undertaken in an integrated way to ensure:
- (a) the efficient removal of contaminants from within the urban parts of the region;
  - (b) that the quality of the discharges is as high as practicable thereby reducing adverse effects on the aquatic and terrestrial *ecosystems* to give effect to the 'anticipated environmental results' specified above;
  - (c) that the affordability and social and economic impacts of *network* improvements are considered through the consent process;
  - (d) the healthy and safety of people and communities from flooding; and
  - (e) the efficient management of flooding and overland flow so as to prevent or minimize the flooding of habitable floors.
- 5.7.15** Sustainable land use through the appropriate management or *remediation* of *contaminated land* resulting in reduced risks to human health and the environment.



## 6 Water Allocation

### 6.1 Introduction and Principal Reasons

#### 6.1.1 Statutory Framework

This chapter contains provisions relating to fresh and geothermal water quantity and allocation. Sections 14(1) and 14(3) of the RMA provide that:

14 Restrictions relating to water –

(1) No person may take, use, dam, or divert any –

- (a) Water (other than open coastal water); or
- (b) Heat or energy from water (other than open coastal water); or
- (c) Heat or energy from the material surrounding any geothermal water –

unless the taking, use, damming, or diversion is allowed by subsection (3).” .....

“(3) A person is not prohibited ... from taking, using, damming, or diverting any water, heat, or energy if ...

- (a) The taking, use damming or diversion is expressly allowed by a rule in a regional plan (or any proposed regional plan), or a resource consent or
- (b) In the case of fresh water, the water, heat, or energy is required to be taken or used for –
  - (i) An individual’s reasonable domestic needs; or
  - (ii) The reasonable needs of an individual’s animals for drinking water,
 and the taking or use does not, or is not likely to, have an adverse effect on the environment; or
- (c) In the case of geothermal water, the water, heat or energy is taken or used in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area and does not have an adverse effect on the environment, or .....
- (e) The water is required to be taken or used for fire-fighting purposes.”

#### 6.1.2 Scope of Chapter

This chapter deals with issues associated with water quality and allocation, that is:

- the taking and use, of fresh water and geothermal water,
- the *damming* of *surface water*
- the diversion of *groundwater* and
- the quantity, level and flow of water in any water body.

*Drilling* is also addressed in this chapter because of its association with the taking of *groundwater*. *Drilling* is controlled by section 9(4)(b) of the RMA which allows land to be used in any manner unless a land use is restricted by a rule in a Plan.

Note that the diversion of:

- *stormwater* is addressed in Chapter 5 of this Plan and
- rivers and streams are addressed in Chapter 7 of this Plan.

Note also that while *dam* construction is controlled in part by the Building Act, the ARC must consider the potential effects of *dam* failure under the RMA.

### 6.1.3 Water Resource Use and Management

Water is essential to the social, economic and cultural wellbeing of the Auckland region and is highly valued for both its 'instream qualities', and its 'out-of-stream' benefits for consumptive uses. These values are also discussed in the Introduction and Values chapters of this plan.

#### 6.1.3.1 Geographic Distribution

Major sources of water supply in the Auckland region include the municipal bulk water supply *dams* in the Waitakere and Hunua Ranges, Hays Creek, and the Onehunga Aquifer.

Significant quantities of water are also taken in the Franklin Lowlands, the north-western periphery of Metropolitan Auckland, industrialised parts of the Auckland Isthmus and Manukau City and Clevedon Valley. Rural towns and townships with individual reticulated water supplies include Wellsford, Warkworth, Helensville, Snells Beach/Algies Bay, Pukekohe and Waiuku.

The presence of geothermal *groundwater* at Waiwera and Parakai has led to the development of local tourism industries (public pools, motels) based on the perceived therapeutic benefits of bathing in natural geothermal water.

#### 6.1.3.2 Consumptive Values

The biggest 'out-of-stream' water use in the Auckland region is for municipal supply which accounts for 75 per cent of *surface water* and 30 per cent of *groundwater takes*. Much of this water then needs disposing to sensitive aquatic receiving environments, raising issues addressed in the Discharges to Land and Water Chapter of this plan.

The horticultural sector accounts for the second highest water demand; the Pukekohe area, for example, produces over a quarter of the country's fresh vegetables. Other water uses include industrial processes and irrigation of recreational facilities like golf courses and sports fields.

#### 6.1.3.3 Non-Consumptive Values

Water's essential 'in-stream' ecological value is providing habitat for fish and other freshwater biota. Socially, water may comprise or complement natural and landscape values and provide outdoor recreational opportunities like kayaking, swimming, fishing and picnicking which often coincide with times of high abstractive demand. Culturally, water is perhaps the most highly regarded natural resource to tangata whenua. Water facilitates social obligations of *manakitanga*, and holds significant spiritual value, elements of which include:

- Associations with the *mauri* of the surrounding environment (including people)
- Cultural use and purposes, and
- *Iwi*, *hapū* and whānau identity.

#### 6.1.3.4 Key Constraints

Auckland has small, short streams, small *lakes* (often with degraded water quality), low-yielding *aquifers* (the region is dominated by the low yielding Waitemata Sandstone Aquifer) and moderate rainfall. The absence of riparian vegetation, stock trampling of stream margins, and point source and non-point source discharges contribute to water quality degradation which can also limit the amount of water that can be abstracted from a water body.

Inefficient taking and use of water can limit the number of users that can benefit from a water source; taking more water than is needed, wasting water, poor matching of water use with actual needs and supply system losses all reduce the amount of water available for other people to use and can also unnecessarily increase the volume of *wastewater* needing disposal.



Parts of the region are water short in summer. Demand from some waterbodies already equals or exceeds availability. Current allocations are equivalent to the quantity available in rivers, streams and *lakes* such as the Kaipara River, Ngakaroa Stream, Mauku Stream and Slipper and Spectacle Lakes, and in *aquifers* such as Pukekohe, Omaha and parts of the Kumeu sandstone *aquifers*.

Auckland has also experienced temporary municipal water shortages. The Region's population is expected to double within the next 50 years and competition will place even greater pressure on what is already a limited resource. Although a major source has recently been secured from the Waikato River in the Waikato Region, a further municipal bulk water supply source is likely to be required before 2030 to meet the *drought security standard* of the region's major supplier of bulk water (Watercare Services Ltd).

Potential municipal water supply problems also exist in projected future growth towns such as Wellsford, Warkworth, Helensville, Snells-Algies, Kumeu and Pukekohe. Demand may exceed availability more frequently and in more places in the future.

Section 14(3) of the RMA refers to the rights of individuals to *take* and use water for their reasonable domestic needs and for drinking water for their animals. In most instances this will not be a problem. However, because there is a lot of pressure on water resources in the Auckland Region there will be times when taking and using water even for these purposes may cause adverse effects either on others who *take* water or on freshwater ecosystems.

Several waterbodies cross the boundary between the Auckland and Waikato Regions (the Mangatangi and Tuatenui Streams, the Mangatawhiri River, and the Pukekohe Volcanic and Franklin Kaawa Aquifers) requiring careful consideration of inter-regional demands for water.

These constraints demonstrate the need to use water efficiently so as to maximise the consumptive benefits of water for present and future generations of Aucklanders.

#### 6.1.3.5 Effects of Taking Surface Water

Abstracting *surface water* can reduce water levels and change flow regimes in rivers and streams and water levels in *lakes, dams* and wetlands. An increase in the frequency and duration of low flows can result in reduced contaminant assimilation capacity, poorer water quality and a reduction in available habitat. These may all have adverse effects on freshwater ecosystems and on tangata whenua values. Numerous small and high use streams in the region such as the Mahurangi, Kaukapakapa, Puhinui, Taiataia, Hays, Ngakaroa, Mauku and Waitangi, and larger waterbodies where water quality is already degraded such as the Kaipara and Hoteo Rivers, are all potentially vulnerable to these effects. Water allocation from rivers and streams, especially in summer when flows are at their lowest and demand is generally at its highest, will be carefully managed so as to safeguard the life-supporting capacity of these water bodies.

*Water intake structures* may cause fish and other freshwater biota to be drawn into the structures or trapped on intake screens. These effects will be avoided by ensuring that *water intake structures* are suitably designed and operated.

#### 6.1.3.6 Effects of Taking Groundwater

Changed water level and flow regimes in *aquifers* caused by the taking of *groundwater* may lead to reductions in spring and *base flow*, the degradation of freshwater ecosystems and wetlands, the degradation of water quality through *saltwater intrusion* and contaminant transport, loss of recharge to adjacent *aquifers*, *aquifer* consolidation and reduction in the temperature of geothermal waters. Such changes can result in reduced *water availability*, both for present and future generations.

High use *aquifers* particularly vulnerable to these effects include: the Kumeu Waitemata Aquifers, Omaha Waitemata Aquifers, Tomarata Waitemata Aquifers, Onehunga and Mt Wellington Volcanic Aquifers, Waiheke Aquifers, Manukau City Waitemata Aquifers, Manukau Kaawa Aquifers, Clevedon East and West Waitemata Aquifers, Franklin Volcanic and Kaawa Aquifers, Drury Sand Aquifer, Waiwera Geothermal Aquifer and Parakai Geothermal Aquifer.

The potential of *aquifers* in the Auckland Region, particularly in high use areas, will be sustained for current and future generations through the careful management of *groundwater* allocation.

Geothermal *aquifers* have particular resource attributes and are only found in a limited number of places in the Auckland Region. The taking of geothermal water from the Waiwera and Parakai Geothermal Aquifers for purposes other than therapeutic bathing and tangata whenua uses reduces opportunities for people and communities to provide for the perceived health benefits of bathing in natural geothermal water.

Certain activities, such as land *drainage* and the seepage of water into *stormwater* and sewer pipes, involve the passive taking of *groundwater* and minor lowering of shallow water tables. Such activities are unlikely to result in a significant reduction in recharge to the region's *aquifers* or other adverse effects, as long as land *drainage* avoids areas of wetlands.

#### 6.1.3.7 Effects of Bore Drilling

*Drilling* is carried out for geotechnical, geological and hydrogeological investigations, monitoring, installing underground services, installing *bores* for the purpose of taking water and for a wide variety of other purposes.

*Groundwater* quality can be degraded by *drilling*, constructing and sealing new *bores* and by poor operation, *maintenance* and/or abandonment of existing *bores* through introducing contaminated waters, linking *aquifers* of different water quality and linking *surface water* and *groundwater* of different quality. This plan distinguishes between *hole* and *bore drilling* because drilled *holes* are backfilled or, in the case of quarry blast *holes*, destroyed thereby reducing the potential for adverse effects, whereas *bores* remain open in the long term.

Degrading *groundwater* quality can indirectly affect the quantity of water available, while poorly installed *bores* can also dewater *aquifers*.

Selecting a *drilling* location appropriate to the purpose helps achieve the *drilling* purpose whilst ensuring that *wāhi tapu* and significant surface features are not destroyed, *groundwater* quality is not compromised by nearby sources of contamination, stream or spring flows are not depleted, and the potential for saline intrusion is minimised.

The location and construction of *bores* will be controlled so as to avoid *surface water* and *groundwater* contamination and damage to *archaeological sites*.

#### 6.1.3.8 Effects of Dams and Damming Water

Rivers and streams are dammed for many reasons, including storing water, controlling sediment runoff from earthworks, controlling flooding and *stormwater* quality and in order to create weirs and flow measuring structures. Several of the region's largest rivers have been dammed for bulk municipal water supply, while thousands of small *dams* have been constructed both off and on streams for irrigation, animal drinking water, wildlife habitat, and many for aesthetic purposes.

In highly urbanised catchments natural unmodified streams may no longer exist and water quality is potentially severely degraded by contaminants in *stormwater*. In such catchments streams may be dammed to reduce the flooding caused by increased runoff from impervious urban surfaces and to reduce further water quality degradation

by providing **stormwater** treatment. The adverse effects of urban development on water quality and flooding will be avoided, remedied or mitigated by providing for the **damming** of rivers and streams for the purposes of **stormwater** management in the **Urban Areas**.

**Dams** and weirs are also used to control water levels so as to maintain and restore natural wetlands. The ARPS recognises the scarcity of freshwater wetlands in the Auckland Region.

In such circumstances the environmental benefits of **damming** can outweigh the costs. However whilst the **damming** of water can have social and economic benefits, any adverse effects resulting from **damming** water must be avoided, remedied or mitigated. The effects of erecting structures, including **dams**, is discussed in Chapter 7.2.

**Damming** water and taking water from **dams** can reduce water levels and change flow regimes (including the natural **flow variability**) in rivers, streams, **lakes** and wetlands. Unless **dams** are built offstream or adequate provision is made for the bypassing or release of flows, these changes can result in an increase in the frequency and duration of low flows, reduced contaminant assimilation capacity, poorer water quality, and a reduction in available instream habitat attributable to the drowning or inundation of the section of stream behind the **dam**. These factors may have adverse effects on freshwater ecosystems or on **water availability** for downstream water users.

**Dams** also pose barriers that can prevent fish from accessing habitat necessary for specific life-cycle stages. Populations of 13 of the 15 indigenous species recorded in the Auckland Region depend on annual upstream migrations of juveniles. Providing **fish passage** may not help species that are non-climbers and there is, moreover, some uncertainty as to the effectiveness of possible **fish passage** options for all but strong climbing species. **Damming** rivers and streams and taking water from those **dams** is likely to be a contributing factor in the decline of New Zealand's freshwater fish populations.

Objectives, policies and methods in this chapter seek to avoid, remedy or mitigate the adverse environmental effects of the **damming** of perennial rivers and streams on freshwater ecosystems including the passage of fish.

First and second order streams (the fingertip tributaries at the head of catchments) in the region are likely to house around 90 per cent of the region's freshwater diversity. **Damming** these streams has the potential to undermine their life-supporting capacity. The regulation of **dams** is therefore based on encouraging offstream **dams** and affording maximum **protection** for rivers and streams with high natural values. Not enough is yet known about the habitat significance of **Intermittent streams**, so this plan does not attempt to restrict their **damming**. However, further research may indicate a need to do so in the future.

In some parts of the Region there are many unauthorised small **dams**. Their high density can have significant cumulative effects on flows, water quality, instream habitat and **water availability**. Further rural subdivision could lead to additional intensification of small **dams** in these and other areas with a resulting escalation of these cumulative effects.

The **damming** of water carries with it a risk that the **dam** will fail, with potential damage to the downstream environment, including freshwater ecosystems, property, people, communities and infrastructure. In the Auckland Region **dams** have failed for a number of reasons including inadequate investigation of foundation conditions, poor design and construction of embankments and conduits, undersized spillways and poor **maintenance**, including excessive vegetation growth. There have not been any failures involving the municipal water supply **dams** operated by Watercare Services Ltd or any **dam** authorised by a resource consent and which complied with all the conditions of the consent.

The *maintenance* and enforcement of standards on *dam* design, construction, operation and *maintenance* will reduce the risk of *dam* failure.

#### 6.1.3.9 Effects of Diverting Groundwater

*Groundwater* may be either temporarily or permanently diverted to facilitate the excavations associated with quarrying and the building of underground basements/ car parks, tunnels and so on. *Groundwater diversions* are often associated with large urban developments, for example, high rise buildings with deep basements that can be below *groundwater* tables. If an inground development below the ambient *groundwater* level is sealed to resist hydrostatic pressure or has a higher permeability than the local *aquifer*, *groundwater* will continue to be diverted after construction by the physical presence of the structure. *Groundwater diversion* is also a common method in the Auckland Region for improving land stability.

Changing the permeability of an *aquifer* or re-routing *groundwater* flow can cause building instability and/or surface flooding. Draining layers of weak, compressible sediments may cause ground subsidence and consequently damage to susceptible structures or inground services. If *groundwater* flow paths are blocked, consequent increases in *groundwater* levels may cause an increase in the frequency and intensity of flooding. Careful management of *groundwater diversions* will avoid, remedy or mitigate adverse effects on *groundwater* regimes, *surface water* bodies, neighbouring structures and services and on people and communities.

### 6.1.4 Water Allocation Management Approach

Chapter 3 of this plan delineates various Management Areas in order to recognise different values and focus on managing cumulative effects in areas where activities are concentrated. The taking of water, for example, is likely to have an effect on the life-supporting capacity of Natural Streams and Wetlands and on ecosystems associated with and those who *take* water from High Use Streams and High Use *Aquifers*. Rules for taking, using, and *damming* water reflect the values of these Management Areas.

In order to achieve the objectives of this chapter, the management approach focuses on:

- Encouraging *groundwater* use in preference to taking water from rivers and streams (subject to *groundwater* availability) and encouraging the taking and storing of water off-stream in winter for use in summer;
- Providing for the setting of *minimum flows* in high-use rivers and streams;
- Setting *aquifer* levels and *water availability* in high-use *aquifers*;
- Implementing the NZ Environmental Standard for Drilling of Soil and Rock;
- Requiring the installation and monitoring of water meters so that users only *take* as much as they are allocated, freeing up *water availability* for other users;
- Maximising the benefit derived from the use of available water by encouraging conservation and efficient use of water and use of alternative sources such as *wastewater* re-use and rainfall capture (e.g. saving *stormwater* in suitable tanks to supplement water supply for such things as clothes washing and garden watering). Rules limit the quantities that can be *taken* as permitted or controlled activities, especially during the summer period, in order to manage the potential cumulative effects of these activities;
- Encouraging riparian planting to provide shading and limit the effects of taking water on stream water temperature and consequently on freshwater biota;
- Minimising the adverse effects of *damming* by encouraging *off-stream dams*, strongly discouraging *dams* on *Permanent* rivers and streams, and considering *decommissioning* of *dams* that are no longer needed or are causing adverse

effects that cannot be avoided, remedied or mitigated;

- Recognising that the benefits of *damming* water, for example, those associated with *stormwater* management within the *Urban Areas* and the social, cultural and economic well being derived from the provision of the Region's bulk water supply, are relevant matters to consider when determining the extent to which any adverse effects resulting from the *damming* of water are avoided, remedied or mitigated;
- Developing a strategy for addressing issues associated with existing *dams* in the Region which have been constructed without authorisation or which may fail to meet the requirements of this plan or resource consent conditions;
- Requiring works and/or services to be undertaken, particularly for addressing the cumulative effects of activities;
- Integrated catchment management through the concurrent expiry or review of consents to *take*, use and *dam surface water* or discharge contaminants to *surface water* in a specific catchment or water body;
- Integrated management where surface and ground *water availability* are closely related;
- Involving stakeholders and water users in water management;
- Education on matters such as tangata whenua issues and perspectives, efficient water use, the design of *water intake structures*, *fish passage*, *bore drilling* and alternatives to the *damming* of *Permanent rivers and streams*;
- On-going investigations into *water availability*, water demand and efficient water use;
- Developing a water conservation strategy; and
- Providing Water Resource Assessment Reports and Catchment Management Plans, as provided for by the ARPS.

## 6.2 Issues

- 6.2.1** The Auckland Region has a large population, small streams, few large rivers, moderate rainfall and some low yielding *aquifers*. Current demand for water already equals or exceeds availability in some *surface water* bodies and *aquifers* in the Auckland Region. Projected future growth is likely to increase competition for water and may limit the opportunities for people and communities in some areas, particularly some of the High Use Streams and High Use Aquifer Management Areas, to provide for their social, economic and cultural wellbeing.
- 6.2.2** The taking and using of water for domestic and animal drinking purposes is provided for in Section 14(3)(b) of the RMA. In parts of the Auckland Region that taking has the potential to cause adverse effects on the environment.
- 6.2.3** Abstracting water from *surface water* bodies can reduce water levels and change flow regimes. The freshwater ecosystems of Auckland's numerous small streams, especially those in the Wetlands, Natural Streams, and High Use Streams Management Areas are particularly vulnerable at times of low flow in summer when water quality can be at its most degraded and when demand is generally at its peak. Taking water from rivers, streams and *lakes* can also have adverse effects on other users.
- 6.2.4** The taking and using of geothermal water from the Waiwera and Parakai geothermal High Use Aquifer Management Areas for purposes other than therapeutic bathing and tangata whenua use reduces opportunities for people and communities to provide for the perceived therapeutic benefits of bathing in natural geothermal water.

- 6.2.5** *Drilling* activities, inappropriate siting and poor *maintenance* and operation of *bores* may have an adverse effect on surface and *groundwater* quality by introducing contaminated waters, linking *aquifers* of different water quality and linking *surface water* and *groundwater* of different quality (including geothermal water).
- 6.2.6** Abstracting water from *aquifers*, especially those in High Use Aquifer Management Areas, can reduce water levels, especially in summer when demand is generally at its peak. This can lead to reduced spring and stream flow and *saltwater intrusion* into the *aquifer*. Taking *groundwater* can also have adverse effects on other users depending on *bore* location and depth.
- 6.2.7** Water may not be used efficiently when the quantity or quality exceeds the needs of an activity. The inefficient use of water, particularly in water-short areas of the region (some High Use Streams and High Use Aquifer Management Areas), can result in potential water users being denied access to water resources. It can also lead to excessive generation of *wastewater* that requires subsequent disposal to sensitive aquatic receiving environments.
- 6.2.8** The *damming* of *Permanent rivers and streams* and the taking of water from *dams* can increase the frequency and duration of low flows, change *flow variability*, degrade water quality and reduce available instream habitat. This can have significant adverse effects on freshwater ecosystems (including wetlands) and reduce water available to downstream users. In the Auckland Region the cumulative effects may be significant as there are thousands of small *dams*, many unauthorised, in catchments with small streams and high *dam* densities. *Dam* construction can degrade water quality and involve the removal of habitat. Wetlands, Natural Streams, and High Use Streams Management Areas are the most vulnerable to these adverse effects.
- 6.2.9** *Dams* on *Permanent rivers or streams*, particularly in Wetland, Natural Stream, Urban Stream (Types 1 and 2), and High Use Stream Management Areas, can act as a barrier to the movement and migration of indigenous freshwater fish. *Fish passage* measures may not be effective at avoiding, remedying or mitigating the adverse effects of *dams* on species without a well-developed climbing ability. Fish and other freshwater biota can be entrained and impinged on *water intake structures* that have inappropriate screen mesh sizing, intake velocities and locations.
- 6.2.10** While *damming* can cause adverse effects on streams in the Auckland Region there may be circumstances such as *stormwater* management where *damming* is the best practicable option to avoid, remedy or mitigate the adverse environmental effects of *stormwater* discharges to streams within the *Urban Areas*, and in particular Urban Stream Management Areas Types 3, 4, 5 and 6, and where *damming* to restore or maintain wetlands remedies or mitigates the previous degradation or loss of wetlands.
- 6.2.11** Inappropriate location, design, construction, operation and *maintenance* of *dams* can lead to *dam* failure. *Dam* failure can pose a risk to freshwater ecosystems, property, stock, people, communities and infrastructure.
- 6.2.12** The diverting of *groundwater* for excavations such as quarries, tunnels, service trenches, building basements or other structures may cause a change in *groundwater* levels. This may give rise to adverse effects on *groundwater* regimes, *surface water* bodies, neighbouring structures and services and may cause flooding or ground settlement particularly in areas with layers of weak, compressible sediments. The Auckland Region has considerable areas of unstable land. *Groundwater diversions* are a common method of improving land stability.



## 6.3 Objectives

- 6.3.1** To maintain **water availability** for consumptive use, to enhance access to water resources and to minimise **wastewater** generation so that the people of the Auckland Region can provide for their social, economic and cultural well-being.  
(This Objective relates to Issues 6.2.1, 6.2.2 and 6.2.7)
- 6.3.2** To maintain the quantity, quality, levels and flows in the region's **surface water** bodies sufficient to safeguard their life-supporting capacity, preserve and protect their **natural character**, protect their outstanding landscapes from inappropriate use and development, protect significant habitats of indigenous freshwater fauna, recognise and provide for the relationship of Maori and their culture and traditions with water, and have particular regard to maintaining and enhancing their **amenity** values and protecting habitats of trout.  
(This Objective relates to Issues 6.2.2, 6.2.3 and 6.2.8)
- 6.3.3** To maintain the quantity and levels of water in the Region's **aquifers** in the long term so as to safeguard spring flows, stream **base flows**, water quality, and geothermal temperature and **amenity**.  
(This Objective relates to Issues 6.2.2, 6.2.4 and 6.2.6)
- 6.3.4** To provide for **drilling** activities and on-going use of **bores** while maintaining the quality of the Auckland Region's **groundwater** and avoiding damage to the values of heritage sites, buildings, places or areas.  
(This Objective relates to Issue 6.2.5)
- 6.3.5** To avoid, remedy or mitigate the adverse environmental effects of erecting **dams** and the **damming** of **permanent** rivers and streams on the passage of fish and to minimise the risk of fish and other freshwater biota being drawn into **water intake structures**.  
(This Objective relates to Issue 6.2.9)
- 6.3.6** To avoid, remedy or mitigate the adverse environmental effects of **stormwater** discharges to streams within the **Urban Areas** by facilitating the **damming** of water where it is the best practicable option for **stormwater** management within the **Urban Areas**, and in particular in Urban Stream Management Areas Types 3, 4, 5 and 6.  
(This Objective relates to Issue 6.2.10)
- 6.3.7** To avoid the adverse effects of **dam** failure on people, communities, ecosystems, properties and infrastructure.  
(This Objective relates to Issue 6.2.11)
- 6.3.8** To enable people and communities to divert **groundwater** while avoiding, remedying or mitigating adverse effects on **groundwater** regimes, **surface water** bodies, neighbouring structures and services and on people and communities.  
(This Objective relates to Issue 6.2.12)

## 6.4 Policies

### General

- 6.4.1** The taking and use of water from rivers, streams, **lakes**, wetlands, and **aquifers**, the erection of **dams** and the **damming** of water shall not result in more than minor adverse effects on the values of the Wetland, Natural Stream (excluding those in Water



Supply Management Areas), High Use Stream and High Use Aquifer Management Areas, and Urban River and Stream Management Areas

– Type 1 Streams where biological communities and water quality are currently good, as characterized by Anticipated Environmental Result 5.7.5 in Chapter 5 and

– Type 2 Streams.

In considering the effects on Natural Stream and Wetland Management Areas in Water Supply Management Areas, regard shall be had to Policies 3.5.4.1 to 3.5.4.2 in Chapter 3 Management Areas.

*(This Policy relates to Objectives 6.3.2 and 6.3.3)*

- 6.4.2** To have regard to the objectives and policies of Chapters 2.1, 2.2 and 2.3, and to the objectives and policies in Chapter 3.5. Water Supply Management Areas where relevant, in assessing any resource consent to **take** and use water from a river, stream, **lake**, wetland, **dam** or **aquifer**, and any proposal to erect a **dam** and **dam** or divert water, and any proposal to drill a **hole** or **bore**.

*(This Policy relates to Objectives 6.3.1, 6.3.2 and 6.3.3)*

#### **Taking and Using Water – General**

- 6.4.3** Priority shall be given to the taking and use of water for the purposes of **municipal water supply** from Water Supply Management Areas.

- 6.4.4** No restrictions will be placed on the taking and using of water for domestic and animal drinking purposes in accordance with Section 14(3)(b) of the RMA unless the taking or use has or is likely to have adverse effects on the environment.

*Note: Water taken for the purposes of supply to domestic or food processing premises should meet the Ministry of Health's current Drinking – Water Standards for New Zealand.*

*(This Policy relates to Objectives 6.3.1, 6.3.2 and 6.3.3)*

- 6.4.5** Any proposal to **take** and use water for which a resource consent is required shall demonstrate that:
- (a) The water quantity and quality taken is consistent with the requirements of the activity to promote efficient use of water resources;
  - (b) In situations where it is likely that the activity will result in significant adverse effects on the environment, there are no practicable **alternative water sources** available;
  - (c) Consideration has been given to water conservation and **wastewater** re-use methods;
  - (d) The consequential environmental effects of **wastewater** generation have been considered concurrently;
  - (e) The taking of water will not adversely affect the water quality of the water body; and
  - (f) Consideration has been given to existing lawful **takes** and priorities of **take** (including those granted by neighbouring regional councils where water bodies cross regional boundaries) including but not limited to:
    - (i) the location (including distance from existing lawful **takes**);
    - (ii) quantity, rate and timing of the **take**; and
    - (iii) depth of **groundwater take** other than provided for by Policy 6.4.35 (e).
  - (g) Regard has been had to the purpose and values for which the water body is being managed (including those identified by neighbouring Regional Councils).

*(This Policy relates to Objectives 6.3.1, 6.3.2 and 6.3.3)*

- 6.4.6** In areas where *groundwater* is available the taking of *groundwater* shall be considered in preference to the taking of water from rivers and streams.  
(This Policy relates to Objective 6.3.2)
- 6.4.7** Water allocated for abstractive use shall not exceed *water availability*.  
(This Policy relates to Objectives 6.3.2 and 6.3.3)
- 6.4.8** In areas where water allocated to users currently equals or exceeds *water availability*, water allocation shall be reduced to *water availability* by:
- (a) encouraging voluntary reductions in the authorised allocations of existing consent holders;
  - (b) ceasing any further allocation until such time that the availability again exceeds the quantity allocated; and
  - (c) reviewing the conditions of existing consents in accordance with General Policy 6.4.14 below.
- (This Policy relates to Objectives 6.3.1, 6.3.2 and 6.3.3)
- 6.4.9** In situations where it is appropriate to establish priorities of allocation or use, including but not limited to situations in which the total demand for water exceeds its availability, priority of allocation or use shall be given to:
- (a) In the case of freshwater, in the following order:
    - (i) Reasonable domestic needs and reasonable animal drinking needs;
    - (ii) Municipal water supply;
    - (iii) Existing lawfully established water users;
    - (iv) Those uses of water for which *alternative water sources* are unavailable or unsuitable;

except, in the case of (iii) and (iv), where this is contrary to the strategic direction and regional development priorities of the ARPS;
  - (b) In the case of geothermal water, the taking and use of geothermal water, heat or energy in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area; and
- the quantity of water allocated shall be consistent with the efficient requirements of the activity.
- (This Policy relates to Objectives 6.3.1, 6.3.2 and 6.3.3)
- 6.4.10** In circumstances when:
- (a) a water shortage direction is issued under section 329 of the RMA;
  - (b) water restrictions are enacted in accordance with Policy 6.4.21
- priority shall be given to water supply for public health needs (including municipal supply).
- (This Policy relates to Objective 6.3.1)
- 6.4.11** Any proposal for the taking and use of water for municipal supply shall provide, in addition to the provisions of other relevant policies in this plan:
- (a) A *demand management plan/programme*;
  - (b) A *drought management plan*;
  - (c) *Network efficiency procedures*; and

- (d) An analysis of the **wastewater** disposal requirements associated with the water **take**.

*(This Policy relates to Objective 6.3.1)*

**6.4.12** The social and economic benefits of the taking and use of water for the purposes of municipal water supply shall be recognised in assessing the effects of any proposal for municipal water supply.

**6.4.13** Where a resource consent is granted to **take**, use and/or **dam** water, the consent shall include a condition setting the duration and review date of the consent such that:

- (a) Consents to **take** and use **surface water**, to **dam** water and to discharge contaminants to **surface water** within a catchment shall be reviewed concurrently and shall expire at a date that coincides with a future review date so that water quantity and quality issues within that catchment can be considered on an integrated and comprehensive basis;
- (b) All consents to **take groundwater** from an **aquifer** shall be reviewed concurrently and shall expire at a date that coincides with a future review date so that effects on **groundwater** quantity and quality can be considered on a comprehensive basis; and
- (c) Where surface and **groundwater** availabilities are closely related, all consents to **take surface water** and **groundwater** within the combined catchment/**aquifer** system shall be reviewed concurrently and shall expire at a date that coincides with a future review date so that water quantity and quality issues within that catchment/**aquifer** system can be considered on an integrated and comprehensive basis;

unless it is appropriate to set a different expiry or review date for any individual consent in order to avoid, remedy or mitigate the adverse effects of that activity.

*(This Policy relates to Objective 6.3.2 and 6.3.3)*

**6.4.14** Where a resource consent is granted to **take** and use water, the consent shall include a condition/s enabling a review of the consent conditions (in accordance with Sections 128 and 129 of the RMA). The purposes for which the ARC will review the conditions of consent may include, but shall not be limited to:

- (a) Varying the quantities and, in particular, to reduce authorised quantities in areas of highly - or over- allocated water resources; monitoring and reporting requirements; and performance standards in order to take account of information, including the results of previous monitoring and changed environmental knowledge, on:
  - (i) **water use efficiency**;
  - (ii) water flow and level regimes;
  - (iii) **water availability**, including **alternative water sources**;
  - (iv) actual and potential water use;
  - (v) water quality;
  - (vi) instream biota, including the functioning of freshwater ecosystems, and
  - (vii) the relationship of Maori with water.
- (b) Avoiding, remedying or mitigating any adverse effect on the environment arising or potentially arising from the exercise of the consent.

*(This Policy relates to Objective 6.3.1, 6.3.2 and 6.3.3)*

### Taking and Using Surface Water

- 6.4.15** The taking of water from rivers and streams during the six month period from May to October inclusive for use and/or storage off-stream will be considered more appropriate than taking water during the six month period from November to April inclusive.
- (This Policy relates to Objective 6.3.2)*
- 6.4.16** The need to set *minimum flows* and/or other flow regime requirements for rivers or streams shall be determined according to, but not limited to, the following criteria:
- (a) Level of actual or potential water demand in comparison to flow;
  - (b) Sensitivity of ecosystems and water quality to changed flow regimes;
  - (c) Sensitivity of Maori relationships with water to changed flow regimes;
  - (d) Sensitivity of significant *amenity* values (landscape and *recreation*) to changed flow regimes;
  - (e) Demonstrating that the taking of water is causing significant adverse effects on the environment; and
  - (f) Availability of alternative mitigation options.
- (This Policy relates to Objective 6.3.2)*
- 6.4.17** Having established the need for flow regime requirements in accordance with the criteria of Policy 6.4.16, *minimum flows* and other flow regime requirements will be determined:
- (a) In catchments where a number of consents to *take* and use *surface water* are due to expire, or at times when the conditions of consents are reviewed; or
  - (b) In circumstances where it is appropriate to set a *minimum flow* or other flow regime requirement in relation to individual applications for resource consent, through the consent process.
- (This Policy relates to Objective 6.3.2)*
- 6.4.18** Any *minimum flows* and other flow requirements determined in accordance with policy 6.4.17 will be set and implemented through the conditions of resource consents and/or variation to this plan.
- (This Policy relates to Objective 6.3.2)*
- 6.4.19** *Minimum flows* and other flow regime requirements shall be set using the following method:
- (a) Management objectives shall be determined from an assessment of the following values of the river or stream:
    - (i) instream: ecological, Maori, *amenity* (including landscape and *recreation*); and
    - (ii) out of stream: consumptive use, including municipal water supply and its associated infrastructure; and
  - (b) When selecting methods for setting flow regime requirements that will ensure that these management objectives are met, regard shall be had to relevant technical publications, codes of practice, guidelines and design manuals, including but not limited to "Flow Guidelines for Instream Values (Ministry for the Environment, 1998) and "Guidelines for Setting Streamflow Regimes in the Auckland Region" - draft (Auckland Regional Council, 2000).
- (This Policy relates to Objective 6.3.2)*

**6.4.20** Where a *minimum flow* or other flow regime requirement has been set in accordance with Policy 6.4.19 of this plan or through the determination of a resource consent application, the maximum amount of water that can sustainably be allocated from a river or stream (the *water availability*) shall be determined using the following method:

- (a) A '*management flow*' shall be determined at a flow greater than any *minimum flow* set for the river or stream, taking into account matters which include, but are not limited to:
  - (i) the total actual or potential water demand; and
  - (ii) the potential frequency of restrictions on *takes* associated with the setting of the *management flow*; and
- (b) Availability shall equal a quantity of no more than the difference between the *management flow* and the *minimum flow*.

Further *water availability* may be set for *takes* by either:

- (c) Raising the *management flow*; or
- (d) Setting one or more higher *management flows* with corresponding higher *minimum flows*.

(This Policy relates to Objective 6.3.2)

**6.4.21** In any water body for which a *minimum flow* and *water availability* has been set in accordance with Policies 6.4.19 and 6.4.20 of this plan or through the determination of a resource consent application, adverse effects on the environment will be avoided, remedied or mitigated by allowing the taking of water only at times when *minimum flow* requirements are met. Restrictions on *takes* will include, but not be limited to the cessation, rostering or rationing of *takes* at times when the *takes* would otherwise cause the flow to fall below the *minimum flow*. The implementation of restrictions on *takes* may involve water user groups where appropriate.

**Explanation:**

Policies 6.4.19, 6.4.20 and 6.4.21 describe the process by which a *minimum flow*, *water availability* and *take* restrictions may be determined for any river or stream.

Fundamental to this approach is that the taking of water should not cause flow to fall below a *minimum flow*. One way of ensuring this is to establish a threshold at which pumping must cease that is actually higher than the *minimum flow*. This is best explained by way of an example:

It is determined that a *minimum flow* of 100 litres per second (l/sec) should be maintained in a river. There are several water users upstream of the *minimum flow* site taking a combined quantity of 50 l/sec. To provide for a *water availability* of 50 l/sec, the *management flow* in this example would be set at no less than 150 l/sec.

Policy 6.4.21 provides for a range of alternative means by which the *minimum flow* can be maintained. In this example the *minimum flow* could be maintained by requiring all *takes* to cease when flow falls below 150 l/sec because, if all users were to pump concurrently when the flow was, for example, 149 l/sec, the flow would fall to 99 l/sec and the *minimum flow* would not be maintained.

An alternative option would require *takes* to be rostered between two groups of users (each with a total *take* of 25 l/sec) when flows are in the range 125 to 150 l/sec. *Takes* would only have to cease once flows fall below 125 l/sec. Rostering can, for example, be on a 'one day on, one day off' basis or provide users with priority use at different times of year reflecting their key periods of demand.

Any system of water allocation needs to be flexible to reflect different circumstances and changing demand over time. Policy 6.4.20 provides for *water availability* to be up to the full difference between the *management* and *minimum flows* which allows more water to be taken when flows are higher than the *management flow*

but with restrictions on those **takes** being more frequent when flows are below the **management flow**. The policy also provides for **water availability** to be increased by setting a higher **management flow** but with a consequent raising of the threshold below which **takes** would be restricted. This trade-off between increased availability and reduced access can be avoided by catering for additional water use only at higher flows. In the above example, an additional 50 l/sec could be made available, but only when flows exceed 200 l/sec. This additional availability could be taken by existing users to supplement their **take** allowed at lower flows, or by new users, or both.

(This Policy relates to Objective 6.3.2)

- 6.4.22** The implementation of Policies 6.4.9, 6.4.19, 6.4.20 and 6.4.21 that determine management objectives, flow regime requirements, **water availability** and **take** restrictions will involve consultation with water users, tangata whenua, local communities, neighbouring regional councils where water bodies cross regional boundaries and interested parties.
- (This Policy relates to Objective 6.3.1 and 6.3.2)
- 6.4.23** The taking of water from **dams** on **Permanent rivers or streams** shall be subject to any **minimum flows** and/or other flow regime requirements for rivers or streams set in accordance with the policies of this plan.
- (This Policy relates to Objective 6.3.2)
- 6.4.24** Any proposal to **take** and use water from rivers, streams, springs, **lakes**, wetlands and **dams** on **Permanent rivers or streams** for which a resource consent is required shall demonstrate that:
- (a) **Water availability** for the water body will not be exceeded;
  - (b) Maintenance of downstream flow regimes and water levels will be provided for, including:
    - (i) low flows;
    - (ii) **flow variability**;
    - (iii) levels and flows in wetlands;
    - (iv) **lake** levels;
  - (c) The taking of water will be at times of the day or year that will safeguard the life-supporting capacity of freshwater ecosystems;
  - (d) Mitigation options have been incorporated where appropriate, including but not limited to:
    - (i) alternative rates and timing of **takes**;
    - (ii) riparian planting;
    - (iii) wetland creation;
    - (iv) provision for **fish passage**;
    - (v) reducing both point source and non-point source discharges; and
    - (vi) water conservation options in times of reduced **water availability**; and
  - (e) Monitoring of a type and scale appropriate for the activity has been incorporated including but not limited to:
    - (i) measurement and recording of water use; and/or
    - (ii) measurement and recording of water flows and levels; or
    - (iii) sampling and assessment of water quality and freshwater biota.

(This Policy relates to Objective 6.3.2)

- 6.4.25** *Surface water intake structures* will be designed, constructed, operated and maintained to avoid adverse effects on biota, including the *entrainment* and *impingement of fish*.

*(This Policy relates to Objective 6.3.5)*

#### **Drilling**

- 6.4.26** The location, design, and construction of any *drilling* activity shall:
- (a) Prevent contaminants from entering an *aquifer*;
  - (b) Prevent cross-*aquifer* contamination;
  - (c) Avoids disturbance of any *wāhi tapu* or other *archaeological site*; and
  - (d) Comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.

*(This Policy relates to Objective 6.3.4)*

- 6.4.27** Any *bore* shall be operated, used and maintained in a manner that:
- (a) Complies with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock;
  - (b) Prevents contaminants from entering an *aquifer*; and
  - (c) Prevents cross-*aquifer* contamination.

*(This Policy relates to Objective 6.3.4)*

#### **Taking and Using Groundwater – General**

- 6.4.28** The maximum amount of water that can sustainably be allocated from an *aquifer* (the *water availability*) shall be determined by taking into account
- (a) *Aquifer* recharge;
  - (b) The spatial distribution of *bores*; and
  - (c) Outflow requirements of the *aquifer*, including
    - (i) flow at the coast, to prevent *saltwater intrusion*;
    - (ii) requirements of streams and springs;
    - (iii) recharge of adjacent or underlying *aquifers*; and
    - (iv) in the case of geothermal *aquifers*, water levels or outflow to prevent cold *groundwater* or seawater intrusion and reduction in *aquifer* temperatures.

*(This Policy relates to Objective 6.3.3)*

- 6.4.29** Water allocated to users in an *aquifer* shall not exceed the *water availability* for that *aquifer* as specified in Schedule 2 of this plan.

*(This Policy relates to Objective 6.3.3)*

- 6.4.30** If changes occur in *aquifer water availability* due to changes in recharge attributable to land use or climate change, the spatial distribution of *bores*, or *aquifer* outflow requirements, alterations to availability as specified in Schedule 2 of this plan will be notified by way of a variation to the plan.

*(This Policy relates to Objective 6.3.3)*

- 6.4.31** In locations where *groundwater* levels have fallen below minimum levels set in Schedule 2 of this plan, adverse effects on the environment shall be avoided, remedied or mitigated by:

- (a) Ceasing any further allocation in the *aquifer* or parts of the *aquifer* until *groundwater* levels return to above the minimum level; and



- (b) Temporarily restricting the taking of water by the issuing of a water shortage direction under Section 329 of the RMA until **groundwater** levels return to above the minimum level; and
- (c) Reviewing the conditions of existing consents in accordance with General Policy 6.4.14.

*(This Policy relates to Objective 6.3.3)*

**6.4.32** In **aquifers** where monitoring shows that outflow requirements are not being met (as indicated by, for example, the occurrence of **saltwater intrusion**, reduction of stream and spring **base flow** to levels where an adverse effect is occurring or where adequate recharge to adjacent or underlying **aquifers** is not occurring), adverse effects on the environment shall be avoided, remedied or mitigated by:

- (a) Ceasing any further allocation of **groundwater**;
- (b) Temporarily restricting the taking of water by the issuing of a water shortage direction under Section 329 of the RMA;
- (c) Reviewing the conditions of existing consents in accordance with General Policy 6.4.14.

*(This Policy relates to Objective 6.3.3)*

**6.4.33** Priorities for setting **water availability** and minimum **groundwater** levels for **aquifers** and/or **groundwater** Management Areas that are not set out in Schedule 2 shall be determined according to the following criteria:

- (a) The **aquifer** is listed as a High Use Aquifer Management Area; and
- (b) **Aquifers** not listed as a High Use Aquifer Management Area where there is an increase in use to the point where **aquifer** outflow requirements may not be met,

and shall be notified by way of variation or change to this plan.

*(This Policy relates to Objective 6.3.3)*

**6.4.34** The implementation of policies 6.4.31, 6.4.32 and 6.4.33, that provide for the determination and implementation of management objectives, **aquifer** levels or **water availability** and **take** restrictions, will involve consultation with water users, tangata whenua, local communities and interested parties.

*(This Policy relates to Objective 6.3.3)*

**6.4.35** Any proposal to **take** and use **groundwater** for which a resource consent is required shall demonstrate that:

- (a) **Water availability** for the **aquifer** will not be exceeded;
- (b) The taking of **groundwater** will not reduce **groundwater** levels to below a minimum level at a location in an **aquifer** set by this plan;
- (c) The taking of **groundwater** will avoid, remedy or mitigate adverse effects on **surface water** flows, including:
  - (i) **base flow** of streams and springs; and
  - (ii) any stream flow requirements;
- (d) The taking of **groundwater** will not cause **saltwater intrusion** or any other contamination;
- (e) The taking of **groundwater** will not cause adverse interference effects on neighbouring **bores** to the extent where the neighbouring **bore** owner is prevented from obtaining their lawfully established water requirements. This requirement will not apply in the following circumstances:

- (i) where it is practicably possible to locate the pump intake at a greater depth within the affected **bore**; and
  - (ii) where it can be demonstrated that the **bore** accesses, or could access, the resource at a deeper level within the same **aquifer**, if drilled or cased to a greater depth;
- (f) That the proposed **bore** is capable of extracting the quantity applied for;
- (g) The taking of **groundwater** will sustain the potential of **aquifers** to meet the reasonably foreseeable needs of future generations and to avoid, remedy or mitigate adverse effects on the environment, particularly:
  - (i) maintaining recharge to other **aquifers**; and
  - (ii) avoiding **aquifer** consolidation and surface subsidence;
- (h) Mitigation options have been incorporated where appropriate, including but not limited to:
  - (i) alternative rates and timing of **takes**;
  - (ii) providing alternative water supplies; or
  - (iii) water conservation options in times of reduced **water availability**; and
- (i) Monitoring of a type and scale appropriate for the activity has been incorporated, including but not limited to:
  - (i) measurement and recording of water use;
  - (ii) measurement and recording of water flows and levels; or
  - (iii) sampling and assessment of water quality and freshwater biota.

*(This Policy relates to Objective 6.3.3)*

**6.4.36** The efficient **taking** of water from **groundwater** resources shall be encouraged through the **drilling** of **bores** that fully penetrate the **aquifer**.

*(This Policy relates to Objective 6.3.1 and 6.3.3)*

#### **Taking and Using Geothermal Water**

**6.4.37** Any proposal to **take** and use geothermal water for which a resource consent is required shall demonstrate that:

- (a) **Aquifer** water levels and pressures will be managed to avoid, remedy or mitigate:
  - (i) cold **groundwater** or seawater intrusion; and
  - (ii) reduction in **aquifer** temperatures,
- (b) The taking will not adversely affect the potential for restoration, maintenance and enhancement of surface geothermal water springs;
- (c) Adverse effects on the taking of geothermal water, heat or energy in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area (as provided for by s.14(3)(c) of the RMA) will be avoided, remedied or mitigated; and
- (d) The taking and use of geothermal water will be thermally efficient in terms of:
  - (i) **bore** construction;
  - (ii) sharing of **bores** between/amongst geothermal pool users;
  - (iii) retention of heat in conveyance of water from **bore** to use;
  - (iv) disposal of geothermal **wastewater** in a manner that contributes to efficient use of geothermal energy;

- (v) the relationship between pool dimensions, desired pool temperatures, hours of pool use and numbers using the pool; and
- (vi) the use of thermal conservation techniques for controlling heat loss.

*(This Policy relates to Objective 6.3.3)*

- 6.4.38** Any proposal to transfer the whole or part of a consent holder's interest in a water permit for taking and using water to another site in the same geothermal field shall demonstrate that the quantity transferred is used in a thermally efficient manner.

*(This Policy relates to Objective 6.3.3)*

- 6.4.39** The taking and use of geothermal water from Waiwera and Parakai Geothermal Aquifer Management Areas shall be considered inappropriate unless it is for the communal benefit of the tangata whenua of the area in accordance with s.14(3)(c) of the RMA or for heating for bathing pools.

*(This Policy relates to Objective 6.3.3)*

### **Damming**

*Note 1: The policies and rules relating to **damming** and authorisations for the use of the bed of a river, stream or **lake** for **dam** structures encompass, but are not limited to, **damming** for the purposes of: storing water, **stormwater** detention and treatment ponds, controlling sediment discharges from cultivated land, habitat creation, maintenance and restoration, weirs, and flow measuring structures.*

*Note 2: Anyone proposing to establish a **dam**, and wanting guidance regarding the design, construction, operation and maintenance of a **dam** are referred to ARC Technical Publication No. 109 Dam Safety Guidelines and the New Zealand Dam Safety Guidelines (New Zealand Society on Large Dam, November 2000).*

- 6.4.40** The conditions of any resource consent to **dam** water relating to the design, construction, operation or maintenance and monitoring of the **dam** shall be consistent with:
- (a) any prior building consent for the **dam** issued under the Building Act 2004; and
  - (b) any prior **dam** safety assurance programme for the **dam** approved under the Building Act 2004,

unless the conditions are necessary for the purposes of avoiding, remedying or mitigating adverse effects on the environment.

*Note: Policy 6.4.40 is to avoid inconsistency between the RMA and Building Act 2004 processes.*

- 6.4.41** The erection or placement of a **dam** on the bed of a **lake** or **Permanent river or stream** shall be subject to assessment against Policies 7.4.1 to 7.4.8 in Chapter 7: Beds of Lakes and Rivers.

*(This Policy relates to Objective 6.3.2)*

- 6.4.42** The adverse effects of **dams** existing at the date of notification of this Plan shall be avoided, remedied or mitigated by:
- (a) Riparian planting;
  - (b) Installing a low flow by-pass;
  - (c) Providing for appropriate **fish passage**;
  - (d) Providing for flow and water level variability;
  - (e) Wetland creation;

- (f) Remedial measures which ensure *dam* safety performance standards are being met;
- (g) *Decommissioning*/removal; or
- (h) Any other appropriate remedy or mitigation.

*(This Policy relates to Objective 6.3.2, 6.3.5 and 6.3.7)*

**6.4.43** The off stream *damming* of water shall be preferred to the *damming* of *Permanent rivers or streams*.

*(This Policy relates to Objective 6.3.2 and 6.3.5)*

**6.4.44** The *damming* of *Permanent rivers or streams, lakes* and wetlands shall be avoided unless, in addition to the other relevant policies in this plan, the proposal to *dam* a water body can demonstrate that either:

- (a) (i) There are no practicable alternative methods or locations that would result in lesser adverse environmental effects than *damming Permanent rivers or streams*; and
- (ii) There are significant positive environmental effects sufficient to mitigate adverse effects resulting from the *damming* of *Permanent rivers or streams, lakes* and wetlands; or
- (b) The *damming* is consistent with the best practicable option determined in accordance with relevant policies in Chapter 5 (Discharges to Land and Water and Land Management) of this Plan for the management of *stormwater* diversions and discharges in Type 3, 4, 5 or 6 Urban River and Stream Management Areas; or
- (c) The *damming* of water with a *dam* on the bed of a *Permanent river or stream* is for the purposes of *municipal water supply* in a Water Supply Management Area.

*(This Policy relates to Objective 6.3.2 and 6.3.5)*

**6.4.45** Any proposal to *dam* a *Permanent river or stream, lake* or wetland for which a resource consent is required shall demonstrate that:

- (a) Adverse effects on *fish passage* are avoided, remedied or mitigated where appropriate (depending on the actual or potential existence of native fish and/or habitat upstream);
- (b) Maintenance of any downstream flow regimes and water levels will be provided for, including:
  - (i) *minimum flows*;
  - (ii) *flow variability*;
  - (iii) levels and flows in Wetlands Management Areas; and
  - (iv) *lake* levels;
- (c) Existing lawfully established upstream and downstream water uses are not adversely affected by the *damming* proposal;
- (d) The design, construction, operation and *maintenance* of the *dam*
  - (i) is consistent with the hazard rating determined for the *dam*; and
  - (ii) avoids, remedies or mitigates:
    - (a) flooding;
    - (b) bank or bed erosion or aggradation;

- (c) restriction of **drainage** of any property;
- (d) land instability;
- (e) Adverse effects on people and communities are avoided, remedied or mitigated;
- (f) Adverse effects on any habitat of fauna or flora, including wetlands, either upstream or downstream of the **dam** are avoided, remedied or mitigated;
- (g) Adverse cumulative effects that may arise from the scale, location or number of **dams** in the catchment are avoided, remedied or mitigated;
- (h) The requirement for, and conditions of, a bond have been considered; and
- (i) Monitoring has been incorporated where appropriate, including but not limited to:
  - (i) inspection of **dam** embankments and spillways;
  - (ii) measurement and recording of embankment internal water levels and pressures; or
  - (iii) sampling and assessment of water quality and freshwater biota.

*Note: In assessing proposals to **dam** a **Permanent river or stream**, **lake** or wetland, the ARC will have regard to ARC Technical Publication 131: Fish Passage Guidelines for the Auckland Region or equivalent recognised guidelines.*

*(This Policy relates to Objective 6.3.2, 6.3.5 and 6.3.7)*

**6.4.46** Any proposal to establish an **off-stream dam** for which a resource consent is required shall demonstrate that:

- (a) The design, construction, operation and **maintenance** of the **dam**
  - (i) is consistent with the hazard rating determined for the **dam**
  - (ii) avoids, remedies or mitigates:
    - (a) flooding;
    - (b) restriction of **drainage** of any property; and
    - (c) land instability;
- (b) Adverse effects on ecosystem habitat, both terrestrial and freshwater and people and communities are avoided, remedied or mitigated; and
- (c) Monitoring has been incorporated where appropriate, including but not limited to:
  - (i) inspection of **dam** embankments and spillways; and
  - (ii) measurement and recording of embankment internal water levels and pressures.

*(This Policy relates to Objective 6.3.7)*

**6.4.47** Where a resource consent is granted to **dam** water the consent shall include a condition(s) enabling a review of the consent conditions (in accordance with Sections 128 and 129 of the RMA). The purposes for which the ARC shall review the conditions may include, but shall not be limited to:

- (a) Varying the operating, monitoring and reporting requirements, mitigation measures and performance standards in order to **take** account of information, including the results of previous monitoring and changed environmental knowledge, on:
  - (i) water flow and level regimes;
  - (ii) **water availability**, including **alternative water sources**;

- (iii) water quality;
- (iv) instream biota, including the functioning of aquatic ecosystems; and
- (v) **dam** safety performance;
- (b) Addressing any adverse effect on the environment arising or potentially arising from the exercise of the consent; and
- (c) Addressing water shortage under drought conditions in relation to municipal water supply.

*(This Policy relates to Objective 6.3.1, 6.3.2, 6.3.5 and 6.3.7)*

**6.4.48** The requirement for a bond will be considered to avoid, remedy or mitigate potential adverse effects of **damming** water, except where a resource consent to dam water is held by a **TA**, a **stormwater** or **wastewater Network Utility Operator**, or a **Highway Network Operator**.

*(This Policy relates to Objective 6.3.2, 6.3.5 and 6.3.7)*

#### **Diverting Groundwater**

**6.4.49** Any proposal to divert **groundwater** for which a resource consent is required shall demonstrate that the diversion:

- (a) Ensures the flow regime required for the life supporting capacity of water bodies is provided for including:
  - (i) low/**minimum flows**;
  - (ii) levels and flows in wetlands; and
  - (iii) **lake** levels;
- (b) Ensures existing lawful **groundwater** users are not adversely affected by the proposal;
- (c) Ensures that the proposal avoids, remedies or mitigates any ground settlement that may result in any adverse effects including:
  - (i) damage to structures;
  - (ii) damage to buildings; and
  - (iii) damage to services (e.g. roads, pavements, power, gas, electricity, and fibre optic cables);
- (d) Ensures that the **groundwater diversion** does not cause or exacerbate any flooding;
- (e) Avoids any actual or potential adverse cumulative effects that may arise from the scale, location and/or number of **groundwater diversions** in the same area;
- (f) Avoids any actual or potential adverse effects of the discharge of **groundwater** containing:
  - (i) sediment;
  - (ii) contaminants;
- (g) Ensures that adverse effects on ecosystem habitat, both terrestrial and freshwater, are avoided, remedied or mitigated; and
- (h) Monitoring has been incorporated where appropriate, including but not limited to:

- (i) measurement and recording of water levels and pressures; and
- (ii) measurement and recording of the movement of ground, buildings and other structures.

*(This Policy relates to Objective 6.3.8)*

## 6.5 Rules

*Note: The assessment of effects submitted with an application for resource consent needs to be sufficiently detailed to correspond to the scale and significance of the actual and potential effects that the activity may have on the environment. Refer to Section 10.3 of this Plan for further guidance on the information requirements associated with making an application for resource consent.*

### **Taking and Using Water in Accordance with Section 14 (3) (b) and (c) of the RMA**

#### **Explanation:**

*The following section refers to the rights of individuals to **take** and use water for their reasonable domestic needs and for drinking water for their animals, and the taking of geothermal water, heat or energy for tangata whenua in accordance with section 14(3)(b) and (c) of the RMA. In most instances the taking and using of water under this provision will not result in adverse effects. However, because of the high level of demand for water resources in the Auckland Region there will be times when taking and using water even for these purposes may cause adverse effects either on others who **take** water or on freshwater ecosystems. For that reason the Plan sets out provisions in case those circumstances arise. The most likely circumstances are:*

- (a) the taking of water from small streams at a rate or quantity which does or is likely to effect downstream water users; or*
- (b) the taking of **groundwater** from a **bore** at a rate or quantity which does, or is likely to interfere with the operation of other **bores** in close proximity.*

*Section 14 of the RMA provides that:*

*“(3) A person is not prohibited ... from taking, using, **damming**, or diverting any water, heat, or energy if ...*

- (b) In the case of fresh water, the water, heat, or energy is required to be taken or used for –*

- (i) An individual's reasonable domestic needs; or*
- (ii) The reasonable needs of an individual's animals for drinking water,*

*and the taking or use does not, or is not likely to, have an adverse effect on the environment; or*

- (c) In the case of geothermal water, the water, heat or energy is taken or used in accordance with tikanga Maori for the communal benefit of the tangata whenua of the area and does not have an adverse effect on the environment;...”*

*Note that resource users may also **take** water where provided for under the following rules in addition to the taking and using of water in accordance with Section 14(3)(b) of the RMA.*



- 6.5.1** The taking and using of *surface water* under section 14(3)(b) of the RMA is likely to have an adverse effect on the environment unless it complies with the following condition:
- (a) The location and/or rate of the taking does not adversely affect any lawfully established taking of water.
- 6.5.2** If the taking and use of *surface water* in accordance with section 14(3)(b) of the RMA does not comply with the conditions of Rule 6.5.1, then the taking and use shall cease until a resource consent for the taking and use under Rule 6.5.18 has been applied for and granted by the ARC.
- 6.5.3** The taking and use of fresh *groundwater* in accordance with section 14(3)(b) of the RMA is likely to have an adverse effect on the environment unless it complies with the following condition:
- (a) The location and/or rate of the taking does not adversely affect any lawfully established taking of water.
- 6.5.4** If the taking and use of fresh *groundwater* in accordance with section 14(3)(b) of the RMA does not comply with the condition of Rule 6.5.3, then the taking and use shall cease until a resource consent for the taking and use under Rule 6.5.48 has been applied for and granted by the ARC.
- 6.5.5** The taking and use of geothermal water in accordance with section 14(3)(c) of the RMA is likely to have an adverse effect on the environment unless it complies with the following conditions:
- (a) Any new *take* of geothermal water, heat or energy
- (i) is located at least 20 metres from any other existing lawful geothermal *take*; and
- (ii) does not reduce *groundwater* levels to below any minimum level set in Schedule 2 of this Plan.
- 6.5.6** If the taking and use of geothermal water in accordance with section 14(3)(c) of the RMA does not comply with the conditions of Rule 6.5.5, then the taking and use shall cease until a resource consent for the taking and use under Rule 6.5.47 has been applied for and granted by the ARC.

#### **Taking And Using Water – General**

*Note: An advice note is to be appended to all consents for **groundwater** and **surface water takes** for **potable water** recommending the need for regular water quality testing and treatment. The advice note should advise that water being extracted for community supplies should meet the Ministry of Health's current Drinking Water Standards for New Zealand. Guidelines for Drinking Water Quality for New Zealand (Ministry of Health, 1995) assist in determining how those standards can be met.*

#### **Taking and Using Rainwater**

*Note: Rainwater is water collected before it enters the ground or a waterbody.*

#### **Permitted Activity**

- 6.5.7** The taking and use of rainwater is a Permitted Activity.

#### **Taking and Using Surface Water (Excluding From Dams)**

*Note: The following rules relate to **surface water** taken and used for purposes other than provided for by section 14(3)(b) (reasonable domestic needs or reasonable needs for animal drinking) and (c) (geothermal water by the tangata whenua) of the RMA and Rules 6.5.1 and 6.5.2 of this Plan.*

### Permitted Activities

- 6.5.8** The taking and use of no more than 20m<sup>3</sup>/day of water from a *lake* is a Permitted Activity, subject to the following conditions:
- (a) The **water intake structure** shall be designed and constructed so that:
    - (i) the maximum water velocity into the entry point of the intake structure is no greater than 0.3 metres per second;
    - (ii) the intake screen mesh spacings are no greater in one dimension than 1.5 millimetres; and
    - (iii) the intake screen is located no less than 0.5 metres instream from the water's edge; and
  - (b) Notice on the prescribed form shall be received by the Auckland Regional Council at least 15 working days before exercising this permitted activity.

- 6.5.9** The taking and use of no more than 5 m<sup>3</sup>/day of water from a river, stream or spring at times when any relevant flow regime requirement specified in this Plan is met is a Permitted Activity, subject to the following conditions:
- (a) The **water intake structure** shall be designed and constructed so that
    - (i) the maximum water velocity into the entry point of the intake structure is no greater than 0.3 metres per second;
    - (ii) the intake screen mesh spacings are no greater in one dimension than 1.5 millimetres; and
    - (iii) the intake screen is located no less than 0.5 metres instream from the water's edge, or, in streams of less than 1 m width, as far as practicable from the water's edge; and
  - (b) Notice on the prescribed form shall be received by the Auckland Regional Council at least 15 working days before exercising this permitted activity.

*Note: The prescribed form referred to in the Permitted Activity rules to **take** water can be obtained by contacting the Auckland Regional Council or by visiting the ARC's website ([www.arc.govt.nz](http://www.arc.govt.nz)).*

### Controlled Activities

- 6.5.10** The taking and use of no more than 100m<sup>3</sup>/day of water from a river, stream or spring during the six month period May 1 – October 31 inclusive at times when any relevant flow regime requirement specified in this Plan is met is a Controlled Activity.
- 6.5.11** The taking and use of more than 20m<sup>3</sup>/day and no more than 100m<sup>3</sup>/day of water from a *lake* is a Controlled Activity.
- 6.5.12** Rules 6.5.10 and 6.5.11 are subject to the following standards and terms:
- (a) The taking of water is not from any Wetlands, and High Use Stream Management Areas;
  - (b) The **water intake structure** shall be designed and constructed so that:
    - (i) the maximum water velocity into the entry point of the intake structure is no greater than 0.3 metres per second;
    - (ii) the intake screen mesh spacings are no greater in one dimension than 1.5 millimetres; and

- (iii) the intake screen is located no less than 0.5 metres instream from the water's edge, or, in streams of less than 1 m width, as far as practicable from the water's edge;
- (c) A water meter shall be installed and maintained on the outlet of the pump so that:
  - (i) The meter shall measure the total daily quantity of water being taken;
  - (ii) A quarterly return of water meter readings measured at daily intervals shall be provided to the ARC, by no later than 10 working days after 28 February, 30 May, 30 August and 30 November each year;
  - (iii) Records may be also viewed at any time during any working day by an ARC Enforcement Officer;
  - (iv) The water meter shall be capable of measuring to an accuracy of at least plus or minus 5 per cent and it is to read the water taken to at least 1 cubic metre; and
  - (v) The meter shall be installed to the manufacturer's specifications, and shall be maintained to the specified requirements and in a working condition at all times.

**6.5.13** The ARC will exercise its control over the following matters in Rules 6.5.10 and 6.5.11:

- (a) The maximum rate of *take*;
- (b) The location of the taking of water;
- (c) The monitoring and reporting requirements;
- (d) The duration of the consent; and
- (e) The timing and nature of reviews of consent conditions.

**Non notification**

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**Discretionary Activities**

**6.5.14** The taking and use of more than 100 m<sup>3</sup>/day of water from a river, stream or spring not in a Wetlands or High Use Streams Management Area during the six month period May 1 to October 31 inclusive is a Discretionary Activity.

**6.5.15** The taking and use of more than 5m<sup>3</sup>/day of water from a river, stream or spring not in a Wetlands or High Use Streams Management Area during the six month period November 1 to April 30 inclusive is a Discretionary Activity.

**6.5.16** The taking and use of more than 5m<sup>3</sup>/day of water from a river, stream or spring in a High Use Streams Management Area or from a wetland in a Wetlands Management Area is a Discretionary Activity.

**6.5.17** The taking and use of more than 100m<sup>3</sup>/day of water from a *lake* is a Discretionary Activity.

**6.5.18** The taking and use of water from a river, stream, spring *lake* or wetland that does not comply with Rules 6.5.1, 6.5.8, 6.5.9, 6.5.10 and 6.5.11 or is not provided for by any other rule in this plan is a Discretionary Activity.

*(For Rules 6.5.14 – 6.5.18 see also Policies 6.4.1 – 6.4.25)*

## Drilling

### Permitted Activities

- 6.5.19** The *drilling* of a *hole*, including those into a single *aquifer*, is a Permitted Activity, subject to the following conditions:
- (a) The *drilling* is not in a Wetlands Management Area;
  - (b) The *drilling* shall not disturb:
    - (i) an *archaeological site* (as defined in the Historic Places Act 1993); or
    - (ii) a registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined in the Historic Places Act 1993); or
    - (iii) a *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans or *iwi* planning documents;
  - (c) The *drilling* shall not be for the purpose of constructing a *bore* for the purpose of taking water;
  - (d) The *hole* shall be *decommissioned* within three months of the commencement of *drilling*;
  - (e) Before being *decommissioned*, the *hole* shall be secure so that contamination cannot enter the ground;
  - (f) Where more than one *aquifer* is accessed, the *hole* shall be *decommissioned* and the *aquifers* separated immediately upon completion of the *drilling*; and
  - (g) The *drilling* and *decommissioning* of the *hole* complies with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.
  - (h) If, during preparation for or *drilling* of the *hole*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken.
- 6.5.20** The *drilling* and construction of a *bore* for *groundwater* level or *groundwater* quality monitoring purposes is a Permitted Activity, subject to the following conditions:
- (a) The *drilling* and construction of the *bore* is not in a Wetlands Management Area;
  - (b) The *drilling* and construction of the *bore* shall not disturb:
    - (i) an *archaeological site* (as defined in the Historic Places Act 1993); or
    - (ii) a registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined in the Historic Places Act 1991); or
    - (iii) a *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans or *iwi* planning documents;
  - (c) If, during preparation for or *drilling* of the *bore*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken;
  - (d) The *drilling*, construction or *decommissioning* of the *bore* shall comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock;
  - (e) The *bore* shall not be for the purposes of taking of *groundwater* except for the removal of a sample for *groundwater* quality analysis;

- (f) Where more than one **aquifer** is accessed the construction of the **bore** shall be such that there is no connection between the **aquifers**; and
- (g) The ARC shall be notified on the prescribed form prior to the **bore** being **drilled** and shall be provided with details of the location and the purpose of the **bore**.

*Note: The prescribed form referred to in Rule 6.5.20(g) can be obtained by contacting the Auckland Regional Council or by visiting the ARC's website ([www.arc.govt.nz](http://www.arc.govt.nz)).*

- 6.5.21** The **drilling** of a **bore** or **hole** for the purpose of **stormwater** disposal, including those into a single **aquifer**, is a Permitted Activity, subject to the following conditions:
- (a) The **drilling** is not in a Wetlands Management Area;
  - (b) The **drilling** shall not disturb:
    - (i) an **archaeological site** (as defined in the Historic Places Act 1993); or
    - (ii) a registered historic place, area, **wāhi tapu** or **wāhi tapu** area (as defined in the Historic Places Act 1993); or
    - (iii) a **wāhi tapu** or sites and areas of significance to tangata whenua identified in regional and district plans or **iwi** planning documents;
  - (c) The **drilling** shall not be for the purpose of constructing a **bore** for the purpose of taking water;
  - (d) Where more than one **aquifer** is accessed, the **hole** shall be **decommissioned** and the **aquifers** separated immediately upon completion of the **drilling**; and
  - (e) The **drilling** and **decommissioning** complies with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.
  - (f) If, during preparation for or **drilling** of the **hole**, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken.

- 6.5.22** The use of land for the purpose of operating, using and maintaining a lawfully established **bore** is a Permitted Activity, subject to the following conditions:
- (a) The operation, use and **maintenance** of the **bore** complies with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock.

- 6.5.23** The restoration, alteration or replacement of a lawfully established **bore** to restore an existing lawful water **take** is a Permitted Activity, subject to the following standards and terms:
- (a) The replaced or altered **bore** shall be constructed in the same **aquifer** as the existing **bore**;
  - (b) The replaced **bore** shall be installed within 10 metres of the existing **bore**; and
  - (c) The **drilling** of the **bore** shall comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock; and
  - (d) The ARC shall be notified within 15 working days of the **bore** being drilled;
  - (e) The **drilling** of the **hole** shall not disturb:
    - (i) an **archaeological site** (as defined in the Historic Places Act 1993); or
    - (ii) a registered historic place, area, **wāhi tapu** or **wāhi tapu** area (as defined in the Historic Places Act 1993); or

- (iii) a *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans or *iwi* planning documents;
- (f) If, during preparation for or *drilling* of the *hole*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken;
- (g) The requirement to keep records as per NZS 4411:2001 and forward them to ARC within one month of the *bore* being drilled.

**6.5.24** The abandonment or *decommissioning* of a *hole* or a *bore* is a Permitted Activity, subject to the following standards and terms:

- (a) *Decommissioned holes* and *bores* shall be backfilled and sealed at the surface to prevent contamination of *groundwater*;
- (b) *Decommissioned holes* and *bores* intersecting *groundwater* shall be sealed to prevent the vertical movement of *groundwater*, and to permanently confine the *groundwater* to the specific zone (or zones) in which it originally occurred;
- (c) Sealing materials shall be suitable in terms of their composition, density, strength and corrosion resistance for the site and installation conditions and shall be placed from the bottom upward, by methods that will avoid segregation or dilution of material and the contamination of *groundwater*;
- (d) Cement used for grout shall be to New Zealand Standard NZS 3022-1995: Specification for Portland and Blended Cements (General and Special Purpose);
- (e) Backfill materials where used shall consist of clean sand, coarse stone, clay or drill cuttings. The material shall be non-toxic;
- (f) The *decommissioning* of the *hole* or *bore* shall comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock; and
- (g) The ARC shall be notified within 15 working days of the *bore* being *decommissioned*.

#### Controlled Activities

**6.5.25** The *drilling*, construction and alteration of a *bore* drilled into an *aquifer* other than provided for by Rule 6.5.23 or Rule 6.5.20 is a Controlled Activity, subject to the following standards and terms:

- (a) The *bore* is not in a Wetlands Management Area,
- (b) The *drilling* of the *bore* shall not disturb;
  - (i) an *archaeological site* (as defined in the Historic Places Act 1993); or
  - (ii) a registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined in the Historic Places Act 1993); or
  - (iii) a *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans or *iwi* planning documents;
- (c) The *drilling*, construction or alteration of the *bore* shall comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock; and
- (d) The requirement to keep records of *drilling* activities and the forwarding of the records to the ARC within one month of the *bore* being drilled;

- (e) If, during preparation for or *drilling* of the *hole*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken.

**6.5.26** The *drilling* of a *hole* or *bore* that does not comply with Rule 6.5.19(d), (e), or (f), or Rule 6.5.21(d) is a Controlled Activity, subject to the following standards and terms:

- (a) The *drilling* is not in a Wetlands Management Area; and
- (b) The *drilling* shall not disturb:
  - (i) An *archaeological site* (as defined in the Historic Places Act 1993); or
  - (ii) A registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined in the Historic Places Act 1991); or
  - (iii) A *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans or *iwi* planning documents;
- (c) The *drilling*, construction or alteration of the *bore* shall comply with the NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock; and
- (d) The requirement to keep records of *drilling* activities and the forwarding of the records to the ARC within one month of the *bore* being drilled; and
- (e) If, during preparation for or *drilling* of the *bore*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken;

**6.5.27** The ARC will exercise its control under Rules 6.5.25 and 6.5.26 over the following matters:

- (a) The location and design of the *bore*, including depth, and the design of the headworks;
- (b) The provision for *bore* identification;
- (c) The monitoring and reporting requirements;
- (d) The duration of the consent;
- (e) The timing and nature of reviews of consent conditions; and
- (f) The requirement for and conditions of a financial bond.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

**6.5.28** Any *drilling* activity in a Wetlands Management Area is a Discretionary Activity.

**6.5.29** Any *drilling* activity that does not comply with Rules 6.5.19(a)-(c) and (g)-(h), 6.5.20, 6.5.21(a)-(c) and (e)-(f), 6.5.22, 6.5.23, 6.5.24, and 6.5.2.23 or 6.5.26 or is not provided for under any other rule in this plan is a Discretionary Activity.

(For Rules 6.5.28 – 6.5.29 see also Policies 6.4.26 and 6.4.27)



### Taking and Using Groundwater

*Note: The following rules relate to **groundwater** taken and used for purposes other than provided for by section 14(3)(b) (reasonable domestic needs or reasonable needs for animal drinking) and (c) (geothermal water by the tangata whenua) of the RMA, and Rules 6.5.3 – 6.5.6 of this plan.*

#### Permitted Activities

- 6.5.30** The taking and use of no more than 5m<sup>3</sup>/day of fresh **groundwater** (not geothermal), when averaged over any consecutive 20 day period is a Permitted Activity, subject to the following conditions:
- (a) The taking is not from an **aquifer** in the Kumeu Waitemata or Omaha Waitemata High Use Aquifer Management Areas;
  - (b) Notice on the prescribed form is received by the ARC 15 working days before exercising this authorisation.
- 6.5.31** The taking and use of no more than 20m<sup>3</sup>/day, when averaged over any consecutive five day period, and no more than 5000m<sup>3</sup>/year of fresh **groundwater** (not geothermal) is a Permitted Activity, subject to the following conditions:
- (a) The taking is not from an **aquifer** in a High Use Aquifer Management Area;
  - (b) The taking is located 100 metres or more from any other existing lawfully established **groundwater take** from the same **aquifer**; and
  - (c) Notice on the prescribed form is received by the ARC 15 working days before exercising this authorisation.
- Note: The prescribed form referred to in the Permitted Activity rules to **take** water can be obtained by contacting the Auckland Regional Council or by visiting the ARC's website ([www.arc.govt.co.nz](http://www.arc.govt.co.nz)).*
- 6.5.32** The taking of **groundwater** for the purposes of a pumping test from a **bore** for up to 7 days at an average rate of no more than 1000 m<sup>3</sup>/day is a Permitted Activity.
- 6.5.33** The taking of **groundwater** for the purposes of **groundwater diversion** under Rule 6.5.76 of this plan is a Permitted Activity.
- 6.5.34** The taking of **groundwater** for the purposes of infiltration and leakage into **stormwater** and sewer pipes, manholes, **catchpits** and lined channels is a Permitted Activity, subject to the following condition:
- (a) The **take** is not for the purpose of dewatering or **groundwater** level control.
- 6.5.35** The taking and diversion of **groundwater** for land **drainage**, including **drainage** under roads, but excluding **land drainage for cultivation and pasture management**, is a Permitted Activity, subject to the following conditions:
- (a) The taking and diversion is not in a Natural Streams or Wetlands Management Area; and
  - (b) The depth of the **drainage** measures are not greater than 2 metres.
- 6.5.36** The taking and diversion of **groundwater** for **land drainage for cultivation and pasture management**, is a Permitted Activity, subject to the following conditions:
- (a) The taking and diversion is not in a Natural Streams or Wetlands Management Area.

#### Controlled Activities

- 6.5.37** The taking and use of no more than 20m<sup>3</sup>/day, when averaged over any consecutive

five day period, and no more than 5000m<sup>3</sup>/year of fresh **groundwater** (not geothermal) where the **take** is less than 100 metres from any existing lawfully established **groundwater take** from the same **aquifer** is a Controlled Activity.

**6.5.38** The taking and use of more than 20m<sup>3</sup>/day and more than 5,000m<sup>3</sup>/year, and no more than 100 m<sup>3</sup>/day and no more than 15,000 m<sup>3</sup>/year of fresh **groundwater** where the **take** is 100 metres or more from any existing lawfully established **groundwater take** from the same **aquifer** is a Controlled Activity.

**6.5.39** Rules 6.5.37 and 6.5.38 are subject to the following standards and terms:

- (a) The taking is not in a High Use Aquifer Management Area; and
- (b) A water meter shall be installed and maintained on the outlet of the pump so that:
  - (i) The meter shall measure the total daily quantity of water being taken;
  - (ii) A quarterly return of water meter readings measured at weekly intervals shall be provided to the ARC, by no later than 10 working days after 28 February, 30 May, 30 August and 30 November each year;
  - (iii) Records may be also viewed at any time during any working day by an ARC Enforcement Officer;
  - (iv) The water meter shall be capable of measuring to an accuracy of at least plus or minus 5 per cent and it is to read the water taken to at least 1 cubic metre; and
  - (v) The meter shall be installed to the manufacturer's specifications, and shall be maintained to the specified requirements and in a working condition at all times.

**6.5.40** The ARC will exercise its control under Rules 6.5.37 and 6.5.38 over the following matters:

- (a) The location and depth of the taking of water and the design of the **bore** to ensure that no existing lawful **take** or **surface water** body is adversely affected;
- (b) The monitoring and reporting requirements;
- (c) The duration of the consent; and
- (d) The timing and nature of reviews of consent conditions.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

**6.5.41** The taking of **groundwater** for the purposes of a pumping test from a **bore** for more than 7 days and/or at an average rate of more than 1000m<sup>3</sup>/day is a Restricted Discretionary Activity.

**6.5.42** The ARC will restrict the exercise of its discretion under Rule 6.5.41 to the following matter:

- (a) Any effects of the taking on existing lawfully established **takes of groundwater**.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in

accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

- 6.5.43** The taking of *groundwater* for the purposes of *groundwater diversion* under Rule 6.5.77 of this Plan is a Restricted Discretionary Activity. The ARC will restrict its discretion to the matters listed in Rule 6.5.77 of this Plan.

#### Discretionary Activities

- 6.5.44** The taking and use of no more than 100m<sup>3</sup>/day and no more than 15000m<sup>3</sup>/year of fresh *groundwater* (not geothermal) is a Discretionary Activity, subject to the following standards and terms:

- The taking is not from an *aquifer* in a High Use Aquifer Management Area; and
- The taking is located less than 100 metres from any existing lawfully established *groundwater take* from the same *aquifer*.

- 6.5.45** The taking and use of more than 100 m<sup>3</sup>/day and/or more than 15000m<sup>3</sup>/year of fresh *groundwater* (not geothermal) is a Discretionary Activity, subject to the following term:

- The taking is not from an *aquifer* in a High Use Aquifer Management Area.

- 6.5.46** The taking and use of *groundwater* from an *aquifer* in a High Use Aquifer Management Area is a Discretionary Activity.

- 6.5.47** The taking and use of geothermal water is a Discretionary Activity.

- 6.5.48** The taking and use of *groundwater* that does not comply with Rules 6.5.4, 6.5.34, 6.5.20, 6.5.35, 6.5.37 and 6.5.38 or is not provided for by another rule in this chapter is a Discretionary Activity.

*(For Rules 6.5.44 – 6.5.48 see also Policies 6.4.1 – 6.4.14 and 6.4.28 - 6.4.39)*

#### Non-complying Activity

- 6.5.49** The taking and use of geothermal water for non-bathing use from the Waiwera Geothermal Aquifer and the Parakai Geothermal Aquifer Management Areas unless it is for the communal benefit of the tangata whenua of the area in accordance with s.14(3) (c) of the RMA is a Non-Complying Activity.

#### Damming Surface Water

*Note 1: The Building Act 2004 contains requirements for dams. Section 17 of that Act requires all building work, including dams, to comply with the Building Code to achieve the purpose of that Act. Part 7, Safety of Dams, of the Building Act contains specific provisions for large dams, i.e. "a dam that retains 3 or more metres depth, and holds 20,000 or more cubic metres volume, of water or other fluid," to achieve the purpose of that Act.*

*The damming provisions relating to dam safety in this Plan are to achieve the purpose of the Resource Management Act. Any approvals required under the Building Act 2004 must be obtained from the relevant authority in addition to the requirements set out in these rules.*

*When considering the scope of the information that is provided with resource consent applications and the conditions that may be imposed on such consents, the ARC will take into account the need for dams to meet the requirements of the Building Act 2004, including those requirements relating to the safety of the dam. This is to avoid duplication or inconsistency between the RMA and Building Act 2004 requirements and processes.*

*Note 2: This section also contains rules relating to the use, erection or placement of a **dam** on the bed of a lake or **Permanent river or stream**.*

*Note 3: The Freshwater Fisheries Regulations 1983, Part 6, should be consulted with regard to **fish passage**.*

*Note 4: Refer to Rule 7.5.2 in Chapter 7: Beds of Lakes and Rivers with regard to the removal or demolition of **dams**.*

*Note 5: The Auckland Regional Plan: Sediment Control (ARP:SC) contains provisions relating to the **damming** of water for the purpose of controlling sediment associated with land disturbing activities, including temporary **damming** for **stormwater** purposes and quarrying. Rule 5.5.3 of the ARP: SC provides for the **damming** of water as a permitted activity as follows:*

*The **damming** and diversion of water in respect of the control of sediment laden runoff provided that the following conditions are met:*

- (i) The land use activity is a permitted activity under this Plan [the ARP: SC]; or*
- (ii) A resource consent given under this Plan [the ARP: SC] is obtained and complied with.*

*Note 6: Rule 7 of the Auckland Transitional Regional Plan 1991 (ATRP) authorised small low risk **dams** as a permitted activity, subject to a number of conditions. Rules 6.5.51 and 6.5.52 of this plan provide for the continued **damming** of water with **dams** constructed in accordance with Rule 7 of the ATRP as a permitted activity, subject to compliance with the conditions of Rule 6.5.51 which relates to **off-stream dams** or Rule 6.5.52 which relates to **dams** on **Permanent rivers and streams**, whichever is relevant.*

#### Permitted Activities

**6.5.50** The **damming** of water with an **off-stream dam**, including any existing **off-stream dam**, for the purpose of controlling sediment discharges from cultivated land is a Permitted Activity, subject to the following conditions:

- (a) The **cultivation** of soil and the associated management and discharge of sediment laden stormwater runoff from rainfall events is authorised by Rule 5.5.32 or by a resource consent granted in accordance with Rule 5.5.33 in Chapter 5 Discharges to Land and Water and Land Management (Land Management) of this Plan;
- (b) The **dam** embankment, outlets and spillways shall be designed, constructed, operated and maintained so as to avoid:
  - (i) Significant off-site movement of soil; and
  - (ii) Hazards to human safety, neighbouring properties or infrastructure as a result of **dam** failure or other non-performance; and
- (c) The **damming** of water shall not result in the loss, degradation or permanent flooding of any wetland except for the purposes of wetland enhancement, maintenance or restoration;
- (d) The **dam** structure shall be no greater than 4 metres in height when measured vertically from the downstream toe of the **dam** embankment to the highest point of the **dam** crest;
- (e) Either the surface area of the impounded water shall not exceed 5000m<sup>2</sup> or the storage volume of the impounded water shall not exceed 20,000m<sup>3</sup>;
- (f) The dammed water shall not adversely raise sub-surface or **surface water** levels or adversely impede **drainage** on adjacent properties;
- (g) The construction of the **dam** and the **damming** of water shall not disturb or inundate;
  - (i) an **archaeological site** (as defined in the Historic Places Act 1993); or

- (ii) a registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined in the Historic Places Act 1993); or
- (iii) a *wāhi tapu* or sites and areas of significance to tangata whenua identified in regional and district plans;
- (h) The *dam* shall be designed, constructed, operated and maintained with a flood spillway to pass a 100 year ARI flood event without overtopping the *dam* crest (see advice note below Rule 6.5.52);
- (i) The entry to the spillway(s) shall not be restricted by debris;
- (j) All spillways and bypass arrangements shall be constructed, terminated and maintained in such a way as to minimize erosion;
- (k) No trees or vegetation which could weaken the *dam* stability or prevent inspection of the *dam* embankment shall be allowed to grow on or near the embankment;
- (l) Stock shall not be allowed to cause damage to the crest and downstream face of the *dam*;
- (m) The *dam* structure and spillway shall be inspected at intervals of no more than 12 months and following any operation of the flood spillway. Any damage recorded at times of inspecting, or noticed at any other time, shall be remedied as soon as is practicable; and
- (n) If, during the construction of the *dam*, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bone), work shall cease immediately and the ARC shall be contacted so that the appropriate action can be undertaken.

*Note 1: Anyone damming water in accordance with Rule 6.5.50 should also refer to Rules 5.5.32 and 5.5.33 in Chapter 5 Discharges to Land and Water and Land Management relating to the cultivation of soil and management and discharge of sediment laden stormwater.*

**6.5.51** The *damming* of water with an *off-stream dam* for any purpose not covered by Rule 6.5.50, including any existing *off-stream dam* is a Permitted Activity, subject to the following conditions:

- (a) The *damming* of water shall not result in the loss, degradation or permanent flooding of any wetland except for the purposes of wetland enhancement, maintenance or restoration;
- (b) The *dam* structure shall be no greater than 4 metres in height when measured vertically from the downstream toe of the *dam* embankment to the highest point of the *dam* crest;
- (c) The contributing catchment area of *dams* constructed on or after 23 October 2001 shall not exceed 20 hectares;
- (d) The contributing catchment area of *dams* constructed prior to 23 October 2001 shall not exceed 40 hectares;
- (e) Either the surface area of the impounded water shall not exceed 5000m<sup>2</sup> or the storage volume of the impounded water shall not exceed 20,000m<sup>3</sup>;
- (f) The dammed water shall not adversely raise sub-surface or *surface water* levels or adversely impede *drainage* on adjacent properties;
- (g) The construction of the *dam* and the *damming* of water shall not disturb or inundate;
  - (i) an *archaeological site* (as defined in the Historic Places Act 1993); or
  - (ii) a registered historic place, area, *wāhi tapu* or *wāhi tapu* area (as defined

in the Historic Places Act 1993); or

- (iii) a **wāhi tapu** or sites and areas of significance to tangata whenua identified in regional and district plans;
- (h) The **dam** shall be designed, constructed, operated and maintained with a flood spillway to pass a 100 year ARI flood event without overtopping the **dam** crest (see advice note below Rule 6.5.52);
- (i) The entry to the spillway(s) shall not be restricted by debris
- (j) All spillways and bypass arrangements shall be constructed, terminated and maintained in such a way as to minimise erosion;
- (k) No trees or vegetation which could weaken the **dam** stability or prevent inspection of the **dam** embankment shall be allowed to grow on or near the embankment;
- (l) Stock shall not be allowed to cause damage to the crest and downstream face of the **dam**;
- (m) The **dam** structure and spillway shall be inspected at intervals of no more than 12 months and following any operation of the flood spillway. Any damage recorded at times of inspecting, or noticed at any other time, shall be remedied as soon as is practicable;
- (n) For **dams** constructed on or after 23 October 2001, notice on the prescribed form shall be received by the ARC at least 15 working days before exercising this permitted activity.
- (o) If, during the construction of the **dam**, archaeological evidence is uncovered (e.g. shell midden, hangi or ovens, pit depressions, defensive ditches or human bones), work shall cease immediately and the ARC Archaeologist shall be contacted so that the appropriate action can be undertaken.
- (p) For **dams** constructed for **stormwater** management purposes within the **Urban Areas**, the **dam** location and design shall be consistent with the proposed methods and works of any **integrated catchment management plan** required as part of a resource consent to divert and discharge **stormwater** under Chapter 5 of this Plan.

*Note 1: The Auckland Regional Plan: Sediment Control (ARP:SC) contains provisions relating to the **damming** of water for the purpose of controlling sediment associated with land disturbing activities, including temporary **damming** for **stormwater** purposes and quarrying. (See Note 5 above).*

*Note 2: The prescribed form referred to in the Permitted Activity rules to **dam** water can be obtained by contacting the Auckland Regional Council or by visiting the ARC's website ([www.arc.govt.nz](http://www.arc.govt.nz)).*

**6.5.52** The **damming** of water with and the use of an existing **dam** as at 23 October 2001 on the bed of a **Permanent river or stream** is a Permitted Activity, subject to the following conditions:

- (a) The **damming** of water shall not result in the loss, degradation or permanent flooding of any wetland except for the purposes of wetland enhancement, maintenance or restoration;
- (b) The **dam** structure shall be no greater than 4 metres in height when measured vertically from the downstream toe of the **dam** embankment to the highest point of the **dam** crest;

- (c) The contributing catchment area shall not exceed 40 hectares;
- (d) The maximum depth of the dammed water shall not exceed 3 metres;
- (e) The surface area of the impounded water shall not exceed 5000m<sup>2</sup>;
- (f) The dammed water shall not adversely raise sub-surface or **surface water** levels or adversely impede **drainage** on adjacent properties;
- (g) **Fish passage** shall be provided for;
- (h) The **dam** has been designed and constructed and is operated and maintained with a flood spillway to pass a 100 year ARI flood event without overtopping the **dam** crest (see advice note below);
  - (i) The entry to the spillway(s) shall not be restricted by debris;
- (j) All spillways and bypass arrangements shall be constructed, terminated and maintained in such a way as to minimise erosion;
- (k) No trees or vegetation which could weaken the **dam** stability or prevent inspection of the **dam** embankment shall be allowed to grow on or near the embankment;
- (l) Stock shall not be allowed to cause damage to the crest and downstream face of the **dam**; and
- (m) The **dam** structure and spillway shall be inspected at intervals of no more than 12 months, and following any operation of the flood spillway. Any damage recorded at times of inspecting, or noticed at any other time, shall be remedied as soon as is practicably possible.

*Note: A flood spillway having the following dimensions will comply with conditions 6.5.51 (h) and 6.5.52(h):*

- Depth of 0.75 metres from **dam** crest to spillway invert;
- Base width of between 0.3 metres (for flat catchments) to 0.5 metres (for steep catchments) for each hectare of catchment upstream of the **dam**; and
- Spillway side slopes of 2 horizontal to 1 vertical

*Reference should be made to the ARC's Dam Safety Guidelines (ARC Technical Publication 109, June 2000) for further guidance on spillway sizing.*

**6.5.53** The **damming** of water with, and the use, erection or placement of a **dam** on the bed of a **Permanent river or stream** for the purpose of controlling water levels for the measurement of river or stream flow is a Permitted Activity, subject to the following conditions:

- (a) The **damming** of water shall not result in the loss of, degradation or permanent flooding of any wetland;
- (b) The dammed water shall not adversely raise sub-surface or **surface water** levels or adversely impede **drainage** on adjacent properties;
- (c) **Fish passage** shall be provided for;
- (d) At all times that there is natural flow upstream of the control structure, an equivalent outflow shall be maintained downstream; and
- (e) The use, erection or placement of the **dam** shall be in accordance with General Performance Conditions (a) to (i) of Rule 7.5.6 and with the conditions listed in List of Structures clause vi of Rule 7.5.5.
- (f) The activity shall not disturb any **wāhi tapu** or other **archaeological site**



including those identified in any regional or district plan, in the NZ Archaeological Association's Site Recording Scheme, or by the Historic Places Trust except where the Historic Places Trust approval has been obtained.

- (g) In the event that an *archaeological site* or *wāhi tapu* is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as practicable. The activity shall not be recommenced without the approval of the ARC.

**6.5.54** The temporary *damming* of water with, and the use, erection or placement of a *dam* on the bed of a *Permanent river or stream* for the purpose of enabling works in the bed of a river is a Permitted Activity, subject to the following conditions:

- (a) The works in the bed of the river are provided for by a rule contained in Chapter 7 of this Plan or by a resource consent granted in accordance with a rule contained in Chapter 7 of this Plan;
- (b) Provision shall be made for the bypassing of flows up to and including the 20 year ARI event to the stream downstream of the *dam*;
- (c) The *dam* is constructed from non-erodible materials, including but not limited to sandbags;
- (d) The *dam* shall be removed as soon as is practicably possible, and no later than two weeks, following the completion of the works.

#### Controlled Activities

**6.5.55** The *damming* of water with an *off-stream dam* not covered by Rules 6.5.50 and 6.5.51 is a Controlled Activity, subject to the following standards and terms:

- (a) The *dam* was constructed prior to 23 October 2001; or
- (b) If not constructed prior to 23 October 2001, the *dam* is located within the *Urban Areas* and is required in order to meet the conditions of a consent to divert and discharge *stormwater* required under Chapter 5 of this plan; and
- (c) Where (b) applies, the application for consent is lodged within the period ending five years from the date of commencement of the relevant consent to divert and discharge *stormwater*; and
- (d) If not constructed prior to 23 October 2001, the *dam* is required for the purpose of controlling sediment discharges from cultivated land.

The ARC will exercise its control under Rule 6.5.55 over the following matters:

- (a) *Dam* design, construction, operating and *maintenance* requirements;
- (b) Effects on any wetland, *wāhi tapu* or *archaeological site*;
- (c) Monitoring and reporting requirements;
- (d) Duration of the consent; and
- (e) Timing and nature of reviews of consent conditions.

**6.5.56** The *damming* of water with, and the use of an existing *dam* as at 23 October 2001 on the bed of a *Permanent river or stream* within the *Urban Areas* for the purposes of controlling and treating *stormwater* is a Controlled Activity, subject to the following standards and terms:

- (a) The *dam* is required in order to meet the conditions of a consent to divert and discharge *stormwater* required under Chapter 5 of this plan and is not covered by Rule 6.5.52.

The ARC will exercise its control under Rule 6.5.56 over the following matters:

- (a) *Dam* operating and *maintenance* requirements;
- (b) Monitoring and reporting requirements;
- (c) Duration of the consent; and
- (d) Timing and nature of reviews of consent conditions.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

**6.5.57** The *damming* of water with, and the use, erection or placement of a new *dam* on the bed of a Type 3, 4, 5, or 6 *Urban River or Stream* for the purposes of controlling and treating *stormwater* is a Controlled Activity, subject to the following standards and terms:

- (a) The *dam* is required in order to meet the conditions of a consent to divert and discharge *stormwater* under Rules 5.5.10, 5.5.11 or 5.5.12;
- (b) The *dam* will be owned, constructed and maintained by a *TA*, a *stormwater or wastewater Network Utility Operator*, or a *Highway Network Operator*.

The ARC will exercise its control under Rule 6.5.57 over the following matters:

- (a) The location, design, construction, operation, and *maintenance* of the *dam* in terms of:
  - (i) Effects on freshwater biota, including the passage of fish;
  - (ii) Effects on downstream flow regimes, including low flows;
  - (iii) Adverse effects of the *damming* on water quality;
  - (iv) The potential effects of *dam* failure including effects on people and communities;
  - (v) Effects on flooding, erosion, stream bank or bed aggregation and land stability;
  - (vi) Effects on the habitat of fauna and flora, including wetlands;
  - (vii) Cumulative effects arising from the scale, location or number of *dams* in the catchment;
  - (viii) Effects on *natural character*, the relationship of Maori with water, sites, *wāhi tapu* and *taonga*, and *amenity* values;
- (b) Monitoring and reporting requirements;
- (c) Duration of the consent; and
- (d) Timing and nature of reviews of consent conditions.

#### Restricted Discretionary Activities

**6.5.58** The *damming* of water with an *off-stream dam* that is not covered by Rules 6.5.51 or 6.5.55 is a Restricted Discretionary Activity.

The ARC will restrict the exercise of its discretion under Rule 6.5.58 to the following matters:

- (a) Location of the *dam*;

- (b) *Dam* design, construction, operating and *maintenance* requirements;
- (c) Effects of the dammed water on sub-surface or *surface water* levels, land stability and *drainage* on adjacent properties;
- (d) Effects on the habitat of fauna and flora, including wetlands and terrestrial habitats;
- (e) Effects on people and communities, including the potential effects of *dam* failure;
- (g) Effects on *natural character*, the relationship of Maori with water, sites, *wāhi tapu* and *taonga*, and *amenity* values;
- (h) Monitoring and reporting requirements;
- (i) Duration of the consent;
- (j) Timing and nature of reviews of consent conditions; and
- (k) For *dams* constructed for *stormwater* management purposes within the *Urban Areas*, the consistency of the *dam* location and design with the proposed methods and works of any *integrated catchment management plan* required as part of a resource consent to divert and discharge *stormwater* under Chapter 5 of this Plan.

**6.5.59** The *damming* of water with and the use, erection or placement of a new *dam* on the bed of a Type 3, 4, 5, or 6 *Urban stream* for the purposes of controlling and treating *stormwater* not covered by Rule 6.5.57 is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) The *dam* is required in order to meet the conditions of a consent to divert and discharge *stormwater* required under Rules 5.5.10, 5.5.11 or 5.5.12 in Chapter 5 of this plan.

The ARC will restrict the exercise of its discretion under Rule 6.5.59 to the following matters:

- (a) The location, design, construction, operation, and *maintenance* of the *dam* in terms of:
  - (i) Effects on freshwater biota, including the passage of fish;
  - (ii) Effects on downstream flow regimes, including low flows;
  - (iii) Effects on existing lawfully established water users upstream and downstream of the *dam*;
  - (iv) Adverse effects of the *damming* on water quality;
  - (v) The potential effects of *dam* failure including effects on people and communities;
  - (vi) Effects on flooding, erosion, stream bank or bed aggradation and land stability;
  - (vii) Effects on the habitat of fauna and flora, including wetlands;
  - (viii) Cumulative effects arising from the scale, location or number of *dams* in the catchment;
  - (ix) Effects on *natural character*, the relationship of Maori with water, sites,

*wāhi tapu* and *taonga*, and *amenity* values;

- (b) The requirement for a bond;
- (c) Monitoring and reporting requirements;
- (d) Duration of the consent; and
- (e) Timing and nature of reviews of consent conditions.

**6.5.60** The damming of water as a result of the upgrading or *maintenance*, including increasing the storage capacity, of an existing *dam* on the bed of a *Permanent river or stream* in a Water Supply Management Area, is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) the *damming* is as a result of upgrading or maintenance in accordance with Rule 7.5.11 of this Plan; and
- (b) the *damming* is for *municipal water supply* purposes;

The ARC will restrict the exercise of its discretion under Rule 6.5.60 to the following matters:

- (a) The location, design, construction, and operation of the dam in terms of the actual and potential effects of any additional damming on:
  - (i) Freshwater biota, including the passage of fish;
  - (ii) Downstream water levels and flow regimes, including low flows;
  - (iii) Existing lawfully established water users upstream and downstream of the *dam*;
  - (iv) Water quality;
  - (v) Potential effects of *dam* failure including effects on people and communities;
  - (vi) Flooding, erosion, stream bank or bed aggradation and land stability;
  - (vii) The habitat of fauna and flora, including wetlands;
  - (viii) *Natural character* and *amenity* values;
  - (ix) The relationship of Maori with water, sites, *wāhi tapu* and *taonga*;
- (b) Cumulative effects arising from the additional *damming* in conjunction with the scale, location and number of *dams* in the catchment;
- (c) The positive effects of the additional *damming* in terms of the ability to provide for the region's *municipal water supply*;
- (d) Monitoring and reporting requirements;
- (e) Duration of the consent; and
- (f) Timing and nature of review of consent conditions.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

### Discretionary Activities

- 6.5.61** The temporary *damming* of water with, and the use, erection or placement of a *dam* on the bed of a *Permanent river or stream* for the purpose of enabling works in the bed of a river, that does not comply with Rule 6.5.54 is a Discretionary Activity.
- 6.5.62** The *damming* of water with, and the use of an existing *dam* on the bed of a *Permanent river or stream* that does not comply with Rules 6.5.52 and 6.5.56 is a Discretionary Activity.
- 6.5.63** The *damming* of water with, and the use, erection or placement of a *dam* on the bed of a *Permanent river or stream* for the purpose of controlling water levels for the measurement of river or stream flow that does not comply with Rule 6.5.53 is a Discretionary Activity.
- 6.5.64** The *damming* of water with, and the use, erection or placement of a *dam* on the bed of a *Permanent river or stream, lake* or wetland for the purpose of *lake* level or wetland restoration and/or maintenance is a Discretionary Activity.
- (For Rules 6.5.61 – 6.5.64 see also Policies 6.4.1 – 6.4.2 and 6.4.41 - 6.4.48)

- 6.5.65** The *damming* of water for the purpose of *municipal water supply* with, and the use, erection or placement of a *dam* constructed on or after 23 October 2001 on the bed of a *Permanent river or stream* that is not in a Natural Stream or Wetland Management Area in a Water Supply Management Area is a Discretionary Activity.

### Non-complying Activities

- 6.5.66** The *damming* of water with, and the use, erection or placement of a *dam* on the bed of a *Permanent river or stream, lake* or wetland that is not otherwise provided for in any other rule in this chapter is a Non-complying Activity.
- 6.5.67** The *damming* of water for the purpose of *municipal water supply* with, and the use, erection or placement of a *dam* constructed on or after 23 October 2001 on the bed of a *Permanent river or stream* in a Natural Stream or Wetland Management Area in a Water Supply Management Area is a Non-complying Activity.
- 6.5.68** The *damming* of water for the purpose of *municipal water supply* with, and the use, erection or placement of an *off-stream dam* constructed on or after 23 October 2001 in a Wetland Management Area in a Water Supply Management Area is a Non-complying Activity.

### Prohibited Activities

- 6.5.69** The *damming* of water with, and the use, erection or placement of a *dam* constructed on or after 23 October 2001 on the bed of a *Permanent river or stream, lake* or wetland in a Natural Stream or Wetland Management Area (other than for the purpose of *lake* level or wetland restoration and/or maintenance or for the purpose of *municipal water supply* in a Water Supply Management Area or a Proposed Future Water Supply Area) is a Prohibited Activity.
- 6.5.70** The *damming* of water with an *off-stream dam* constructed on or after 23 October 2001 in a Wetland Management Area (other than for the purpose of wetland restoration and/or maintenance or for the purpose of *municipal water supply* in a Water supply Management Area or a Proposed Future Water Supply Area) is a Prohibited Activity.

### Taking and Using Water Impounded by Dams

*Note: The following rules relate to water taken and used for purposes other than provided for by Section 14(3)(b) (reasonable domestic needs or reasonable needs for animal drinking) of the RMA and Rules 6.5.1 and 6.5.2 of this Plan.*

### Permitted Activities

- 6.5.71** The taking and use of water from an *off-stream dam* is a Permitted Activity, subject to the following conditions:
- (a) No lawfully established taking of *surface water* shall be adversely affected; and
  - (b) For any taking and use of water commencing on or after 23 October 2001, notice on the prescribed form shall be received by the ARC at least 15 working days before exercising this authority.

- 6.5.72** The taking and use of no more than 5 m<sup>3</sup>/day of water from an existing lawfully established *dam* on a *Permanent river or stream* is a Permitted Activity, subject to the following conditions:
- (a) The *water intake structure* shall be designed and constructed so that
    - (i) the maximum water velocity into the entry point of the intake structure is no greater than 0.3 metres per second;
    - (ii) the intake screen mesh spacings are no greater in one dimension than 1.5 millimetres; and
    - (iii) the intake screen is located no less than 0.5 metres instream from the water's edge.
  - (b) Notice on the prescribed form shall be received by the Auckland Regional Council at least 15 working days before exercising this permitted activity.

*Note: The prescribed form referred to in the Permitted Activity rules to take water can be obtained by contacting the Auckland Regional Council or by visiting the ARC's website ([www.arc.govt.nz](http://www.arc.govt.nz)).*

#### Controlled Activities

- 6.5.73** The taking and use of no more than 100m<sup>3</sup>/day water from an existing *dam* on a *Permanent river or stream* during the six month period May 1 to October 31 is a Controlled Activity, subject to the following standards and terms:
- (a) The taking is not from a *dam* in a Wetland, Natural Stream or High Use Stream Management Area;
  - (b) The *water intake structure* shall be designed and constructed so that
    - (i) the maximum water velocity into the entry point of the intake structure is no greater than 0.3 metres per second;
    - (ii) the intake screen mesh spacings are no greater in one dimension than 1.5 millimetres; and
    - (iii) the intake screen is located no less than 0.5 metres instream from the water's edge; and
  - (c) No lawfully established taking of *surface water* shall be adversely affected.
- 6.5.74** The ARC will exercise its control over the following matters in Rule 6.5.73:
- (a) The maximum rate of *take*;
  - (b) The requirement to provide for downstream flow regimes, including low flows;
  - (c) The requirement to provide for flows to maintain *fish passage*;
  - (d) The monitoring and reporting requirements;
  - (e) The duration of the consent; and

- (f) The timing and nature of reviews of consent conditions.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

- 6.5.75** The taking and use of water from any *dam* that does not comply with Rules 6.5.71, 6.5.72 or 6.5.73 or is not provided for by another rule in this chapter is a Discretionary Activity.

(For Rule 6.5.75 see also Policies 6.4.1 – 6.4.25)

#### Diverting Groundwater

##### Permitted Activities

- 6.5.76** The diversion of *groundwater* in an *unconfined aquifer* caused by changing the permeability of the *aquifer* at the location of the works by trenching, digging or tunnelling is a Permitted Activity, subject to the following conditions:

- (a) The diversion shall not change the water level regime or direction of flow of the *aquifer* after completion of the works; and
- (b) Any resulting settlement shall not cause adverse effects on buildings, structures and services.

##### Restricted Discretionary Activities

- 6.5.77** The diversion of *groundwater* not covered by Rule 6.5.76 is a Restricted Discretionary Activity.

The ARC will restrict the exercise of its discretion under Rule 6.5.77 to the following matters:

- (a) The effects on the flow regime required for the life-supporting capacity of waterbodies including:
  - (i) stream flow requirements;
  - (ii) levels and flows in wetlands; and
  - (iii) *lake* levels.
- (b) Any adverse effects on existing lawful *groundwater* users, including
  - (i) lawful *groundwater diversion*;
  - (ii) lawful *groundwater takes*.
- (c) Any adverse effects on building owners and arising from the potential for ground settlement that may result in significant damage to structures, buildings, and services;
- (d) The potential for adverse effects arising from surface flooding;
- (e) Cumulative effects that may arise from the scale, location and/or number of *groundwater diversions* in the same area;
- (f) Discharge of *groundwater* containing sediment and other contaminants;
- (g) Any adverse effects on the heritage values of sites, including archaeological significance;
- (h) Any adverse effects on ecosystem habitat, both terrestrial and freshwater;
- (i) The duration of the consent;



- (j) The monitoring and reporting requirements;
- (k) The timing and nature of reviews of consent conditions;
- (l) The requirement for and conditions of a financial contribution and/or bond; and
- (m) The requirement for a monitoring and contingency plan/contingency and remedial action plan.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

## 6.6 Other Methods

**6.6.1** The ARC will develop and implement an education strategy about matters including but not limited to:

- (a) *Fish passage* measures;
- (b) Efficient use and water conservation;
- (c) The implications of inadequate riparian management (absence of riparian vegetation and stock trampling of stream margins) and point source and non-point source discharges on *water availability*;
- (d) The adverse effects of *damming* water bodies and the need to use alternative sources of water;
- (e) The ARC's Dam Safety Guidelines ARC Technical Publication 109, June 2000;
- (f) The potential adverse effects of inadequate construction, operation, *maintenance* and *decommissioning* of *bores*; and
- (g) Tangata whenua issues.

**6.6.2** The ARC will develop Intake Structure guidelines.

**6.6.3** The ARC will develop a Water Conservation Strategy.

**6.6.4** The ARC will promote the carrying out of *water audits* for the purpose of ensuring the efficient use of water.

**6.6.5** From time to time the ARC may prepare a Catchment Management Plan and/or Water Resource Assessment Report (as provided for in the ARPS) for a catchment or sub-catchment in order to promote the objectives of this plan. The Catchment Management Plan or Water Resource Assessment Report may provide the section 32 analysis for introducing a variation to this plan.

**6.6.6** The ARC will develop and implement a strategy for identifying and addressing the adverse effects of existing *dams* in the Auckland Region, and in particular *dams* which:

- (a) have been constructed without authorisation; or
- (b) fail to comply with conditions, standards and terms of rules or resource consent conditions; or
- (c) may be inadequate due to changed environmental knowledge.

Implementation of the strategy may require a variation or change to this plan.

- 6.6.7** The ARC will initiate and support Water User Groups to assist with allocations during times of restrictions, and Catchment Care Groups.
- 6.6.8** The ARC will develop these Other Methods in conjunction with water users and other stakeholders.
- 6.6.9** The ARC will consult with Environment Waikato over opportunities for developing joint approaches to cross-boundary *surface water* and *groundwater* management.
- 6.6.10** The ARC will undertake investigations into
- (a) the intrinsic value (ecology and biodiversity),
  - (b) contribution to hydrology of *Permanent rivers or streams*, and
  - (c) contaminant retention, removal and processing of *Intermittent streams*.

## 6.7 Anticipated Environmental Results

There are two main aspects to the environmental results anticipated from implementation of the policies and methods in relation to water allocation.

The first relates to the instream values of water bodies by ensuring that there is adequate water within them to sustain their life supporting capacity. Reference also needs to be made to those results in Chapter 5 Discharges to Land or Water.

The second aspect is the ability to abstract and/or use it for a range of activities.

- 6.7.1** The life supporting capacity and instream values of wetlands, *lakes*, rivers and streams are maintained, particularly in those management areas where there are existing high values such as the Wetland, Natural Lake, Natural Stream and Urban Stream (Types 1, 2 and 3) Management Areas.
- 6.7.2** *Aquifer* water level regimes and quality are maintained sufficient to avoid any adverse effects from a reduction in spring and *base flow* to rivers and streams, the degradation of freshwater ecosystem and wetlands, the degradation of water quality through *saltwater intrusion* and contaminant transport, loss of recharge to adjacent *aquifers*, *aquifer* consolidation and the reduction in the temperature of geothermal waters. This applies to all *aquifers*, but in particular those in High Use Aquifer Management Areas.
- 6.7.3** The potential of waterbodies (surface and ground) to provide water for present and future generations is maintained.
- 6.7.4** The benefits derived from the consumptive use of the available water, including geothermal water, are maximised, by providing for the health, social, and economic needs of a growing regional population.
- 6.7.5** Improved provision for the migration of freshwater fish.
- 6.7.6** The number and risk of *dam* failures is minimised.
- 6.7.7** The adverse effects of any *groundwater diversion* and *take* in terms of land/building instability are avoided, remedied or mitigated.
- 6.7.8** The relationship of tangata whenua with water is recognised and provided for in the management of the taking, use, *damming* and diverting of water and avoiding damage to *wāhi tapu* sites from *drilling*.

## 7 Beds of Lakes and Rivers and Diversion of Surface Water

### 7.1 Introduction And Principal Reasons

#### 7.1.1 Statutory Framework

This chapter contains provisions relating to the ARC's management of the beds of **lakes**, rivers and streams in the Auckland Region in terms of Section 13 of the RMA, and the diversion of the **surface water** from these waterbodies under Section 14.

#### 13. Restriction on certain uses of beds of lakes and rivers –

- (1) No person may, in relation to the bed of any lake or river, –
  - (a) Use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or
  - (b) Excavate, drill, tunnel, or otherwise disturb the bed; or
  - (c) Introduce or plant any plant or any part of any plant (whether exotic or indigenous) in, on, or under the bed; or
  - (d) Deposit any substance in, on, or under the bed; or
  - (e) Reclaim or drain the bed –

unless expressly allowed by a rule in a regional plan and in any relevant proposed regional plan or a resource consent.

- (2) No person may –
  - (a) Enter or pass across the bed of any river or lake; or
  - (b) Disturb, remove, damage, or destroy any plant or part of any plant (whether exotic or indigenous) or the habitats of any such plants or of animals in, on, or under the bed of any lake or river –

in a manner that contravenes a rule in a regional plan or proposed regional plan unless that activity is –

- (c) Expressly allowed by a resource consent granted by the regional council responsible for the plan; or
- (d) Allowed by section 20 (certain existing lawful uses allowed).
- (3) This section does not apply to any use of land in the coastal marine area.
- (4) Nothing in this section limits section 9.

#### 14. Restrictions relating to water –

- (1) No person may take, use, dam, or divert any –
  - (a) Water (other than open coastal water); or
  - (b) Heat or energy from water (other than open coastal water); or
  - (c) Heat or energy from the material surrounding any geothermal water –

unless the taking, use, damming, or diversion is allowed by subsection (3)

- (3) A person is not prohibited by subsection (1) from taking, using, damming, or diverting any water, heat, or energy if –
  - (a) The taking, use, damming, or diversion is expressly allowed by a rule in a regional plan [and in any relevant proposed regional plan] or a resource consent; or ...

## 7.1.2 Scope of Chapter

This chapter deals with the matters relating to the beds of *lakes*, rivers and streams which are subject to Sections 13(1) and 13(2) and the diversion of *surface water* under 14(1) of the RMA, where this affects the bed of a *lake* or river. Chapter 6: Water Allocation contains the main provisions relating to the taking, use and *damming* of *surface water* and the taking, use and diversion of groundwater.

This chapter does not apply to activities within the Coastal Marine Area, as those activities are managed by the Auckland Regional Plan: Coastal. That Plan maps the boundaries between rivers and the Coastal Marine Area.

The primary activities addressed in this chapter are:

Structures and the Diversion of Surface Water;  
Disturbance;  
Introduction or Planting of Plants;  
Deposition of Substances;  
Reclamation and Drainage.

### 7.1.2.1 Definition of Bed of a Lake or River

This chapter applies to the beds of *lakes*, rivers and streams. The RMA defines rivers to mean a continually or intermittently flowing body of fresh water and includes a stream and modified *watercourse*, but does not include any *artificial watercourse* (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation and *farm drainage canal*).

This chapter refers to two categories of river and stream, each of which is a subset of the RMA definition of river. Rivers and streams in the Auckland Region are defined as being either *Permanent rivers or streams*, or *Intermittent streams*. Both of these terms are defined in Chapter 12: Definitions. The objectives, policies and rules refer as appropriate to either *Permanent rivers or streams*, or *Intermittent streams*.

*Permanent rivers or streams* include unmodified and modified *watercourses*. They do not include any *artificial watercourse*, including an irrigation canal, water supply race, canal for the supply of water for electricity power generation and *farm drainage canal* and roadside drain and water table except where the roadside drain or water table is a modified element of a natural drainage system.

*Intermittent streams* are important for the maintenance of water quality and quantity. The ARC has completed initial scientific investigations on the values of *Intermittent streams* and their contribution to the hydrology and aquatic ecosystems of the wider catchment. However a comprehensive policy response to the findings and their implications for the management of activities in the beds of *Intermittent streams* both inside and outside *Urban Areas* is yet to be developed. Any further rules controlling activities in the beds of *Intermittent streams* will be introduced by a change to the Plan.

In the meantime, the provisions of this chapter permit activities such as structures and disturbance including the disturbance of exotic and indigenous vegetation and plant and animal habitats, the introduction or planting of plants, deposition and reclamation within *Intermittent streams*, subject to controls on how the work is undertaken to address sedimentation and flooding effects.

This chapter acknowledges that responsibility for the management of *Permanent rivers and streams* and *Intermittent streams* lies jointly with the ARC and territorial authorities. Section 7.1.2.2 contains further explanation of the responsibilities of the ARC and territorial authorities in relation to the management of activities in lake, river or stream beds.

Therefore unless otherwise noted, the provisions of this chapter apply to:

- (i) **Permanent rivers or streams** including modified **watercourses** that meet the definition of **Permanent river or stream**, (refer Chapter 12: Definitions);
- (ii) **Intermittent streams** (note however that activities in **Intermittent streams** are permitted activities) – refer to Rules 7.5.1, 7.5.13, 7.5.16, 7.5.25, 7.5.29 and 7.5.35;
- (iii) Wetlands – where these are associated with the bed of a **lake** or **Permanent river or stream**.

The provisions of this chapter do not apply to any:

- (i) all wetlands that are separate from the bed of a **lake**, river or stream, such as those found in areas where the groundwater table is close to the land surface;
- (ii) **artificial watercourses** (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation and **farm drainage canal** and roadside drain and water table, except where the roadside drain or water table is a modified element of a natural drainage system).

#### 7.1.2.2 Regional and Territorial Authority Responsibilities

Responsibility for the control of activities in **lakes**, rivers or streams is a shared responsibility between the ARC and TAs. However the focus of their control is different, reflecting their different responsibilities under the RMA.

**Territorial authorities** are responsible for the control of any actual or potential effects of the use, development or **protection** of land. Land is defined to include the beds of a **lake** or river, the water column above it and the airspace above the surface of the water. The RMA also gives control of the effects of activities on the surface of water in rivers and **lakes** to **territorial authorities**. This means that **TAs** are primarily concerned about “land use” issues when considering development on the beds of **lakes**, rivers or streams.

Through this plan, the ARC controls activities if they affect the bed of a **lake** or river or stream, the water column and the airspace above the **lake**, river or stream. The main focus of this plan is the effects of activities in terms of water quality, water quantity, soil conservation and the avoidance or mitigation of natural hazards.

As many activities in **lakes**, rivers and streams affect areas of concern to both the ARC and **TAs**, they may be subject to the provisions of both this plan and **TA** district plans. Hence separate consent applications may need to be made to both the ARC and the relevant **TA**.

Chapter 5 of this Plan encourages stormwater network utility operators to develop and use Integrated Catchment Management Plans and stormwater or wastewater network resource consents for the management of stormwater discharges at a catchment or network scale. The management of landuse activities in or adjacent to **Intermittent streams** can also occur through territorial authority processes, such as structure plans and district plans. These plans can also manage the effects of land use activities on **Permanent rivers and streams** and their margins. When combined with controls through this plan, such processes will enable the integrated management of the effects of land use and development on natural and physical resources, along the continuum from the land through to the aquatic environment.

Section 33 of the RMA enables a local authority to transfer any one or more of its functions, powers and duties to another public authority where such a transfer is agreed and considered desirable for reasons including efficiency and integrated management, where the transfer represents the appropriate community of interest relating to the transfer and where the relevant **TA** has capability (institutional capacity and appropriately qualified and experienced personnel) to effectively implement a transfer of powers. This provides the opportunity for one agency to have the

administrative responsibility for dealing with both regional and district responsibilities for the beds of *lakes*, rivers and streams.

The ARC has transferred its responsibilities to Rodney District Council to process and decide on a limited range of resource consents under Sections 13(1)(a) and 13(1)(b). The transfer does not apply to applications for the construction of *culverts*, road bridges or structures for the diversion of water and any proposal involving the taking, *damming* or diversion of water. The ARC retains its consent granting function under Section 13 for these activities. Rodney District Council also has a transfer of powers from the ARC to manage certain activities in the Coastal Marine Area. This means that the District Council is able to deal with similar activities each side of the Coastal Marine Area boundary. This is particularly relevant in larger rivers such as the Kaipara, Hoteo and Mahurangi.

Activities listed as permitted activities in this plan (that is, not requiring a consent from the ARC) may nevertheless therefore require consents from the relevant *TA*. Anyone wishing to undertake activities in *lakes*, rivers and streams in the Auckland Region should therefore contact the ARC and their relevant *TA* to ascertain whether both regional and district consents are required.

### 7.1.3 Management Approach

#### 7.1.3.1 General

The relatively small nature of Auckland's *lakes*, rivers and streams means that they are vulnerable to significant individual and cumulative adverse effects from activities in, on, under or over their beds. Developments such as structures, *reclamations*, the *deposition of waste* material and *other substances*, or the disturbance from activities such as *dredging*, the extraction of gravel or the removal of unwanted vegetation or sediment can adversely affect the *natural character* of the Region's *lakes*, rivers and streams. Adverse effects include the loss of instream habitats and riparian vegetation, with subsequent reduction in the range and diversity of aquatic flora, the reduction in water quality from increased sediment transport or the discharge of other contaminants, and changes in the amount, duration and frequency of natural stream flows. This is particularly significant in rivers and streams, where changes to the bed profile or the course of a river or stream through the straightening of natural meanders or the artificial lining of the bed increases the potential for downstream erosion or flooding.

Rivers and streams are most commonly diverted from their natural channel through *culverts* and pipes, although tunnels and lined and unlined channels may also be used. This diversion may be temporary or permanent and may affect all of the stream, as through a *culvert* or pipe, or only part of the flow, as into a flood channel. Diversion of *surface water* affects the morphology (channel form) of a river or stream, the flow characteristics of the stream and its habitat values. Water users may also be affected by changes in hydrology, particularly if they are situated between the upstream and downstream ends of a diversion.

Nevertheless activities in, on, under or over the beds of *lakes*, rivers and streams are necessary to promote the social, economic and cultural wellbeing of both the urban and rural parts of the Auckland Region. Streams within *Urban Areas* form part of an existing *stormwater network* and may already be modified to cope with increased discharges from this system. Rivers and streams may also be crossed by infrastructure and utility services such as bridges, roads, pipelines and cables, or require *maintenance* of their carrying capacity by removing built up sediment or debris. Temporary diversions of *surface water* are usually required to construct something in the bed of a river or stream or to install *sediment control* or *stormwater* detention measures. The development of land for urban purposes may also require the permanent piping, channelling or diversion of streams.

The management approach in this chapter recognises that the degree of adverse environmental effect from activities in, on, over or under the beds of *lakes*, rivers and streams is related to the type of activity, its size, location, how it is undertaken and whether adverse effects are short or long term. Activities in the beds of *lakes*, rivers and streams are managed on the basis of the size of the structure or disturbance, whether it is located in a particularly valuable or sensitive area (Type 2 Urban Stream, Urban Lake, Natural Lake, Natural Streams and Wetland Management Areas), how it is undertaken and whether effects are likely to be significant, long term or uncertain. The level of consent is based on the type of environmental effect. It is recognised that in *Urban Areas* some modification of natural streams is likely to occur as a result of the development of urban land and regionally significant infrastructure. Addressing the use, development or *protection* of streams in *Urban Areas* is encouraged to take place at the catchment level, rather than being addressed on an individual stream basis, to enable adverse effects to be avoided where practicable, or measures taken to remedy or mitigate these effects. The chapter also recognises that regionally significant infrastructure may be located in both urban and rural areas and may affect a range of lakes, wetlands, rivers and streams, but that this infrastructure is necessary for the functioning of the Auckland Region.

Performance standards are imposed through permitted activity conditions, or standards and terms on those activities requiring a resource consent. These conditions focus on managing the key effects in terms of the *protection* of instream values and water quality, minimising changes to bed morphology and flow regimes and avoiding, remedying or mitigating hazards such as flooding or erosion, as well as recognising the wider requirements of Sections 6, 7 and 8 of the RMA. In some instances, such as disturbance associated with stock access in the beds of *lakes* and rivers, the ARC has not included rules in the Plan at the present time. It has however identified the effects of stock access to be a significant environmental issue in Chapter 5 (Issues 5.2.30, 5.2.31) and has included policies to address unrestricted stock access to *lakes*, rivers and streams (Policies 5.4.49 and 5.4.50).

The key management approaches associated with the various activities are summarised below.

#### 7.1.3.2 Structures

- Recognising the presence of existing structures;
- Providing for new structures based on size, whether they are located in, on, under or over the bed of a waterbody and how any work associated with them is undertaken;
- Recognising the significance of certain structures for *stormwater* and *wastewater* management, for *regionally significant infrastructure* and land development within *Urban Areas* and the modified instream environment within these *Urban Areas*;
- Recognising the location specific and operational requirements for structures for essential infrastructure in both urban and rural areas;
- Ensuring that *fish passage* is provided for on new structures in or on beds of rivers and streams and maintained where it exists on existing structures;
- Discouraging the infilling of streams of high value by pipes and *culverts* during urban land development;
- Protecting Natural Streams and Wetland Management Areas by discouraging structures in or on the beds of lakes, rivers and streams.

#### 7.1.3.3 Diversion of Surface Water

- Providing for the diversion of *surface water* as part of any provision relating to structures;



- Discouraging the permanent diversion of *surface water* by the realignment of river or stream beds, particularly outside of Urban Areas;
- Providing for the diversion of surface water in Urban Areas where this is consistent with the Urban River and Stream Management Framework;
- Protecting other uses of *surface water* when diverting any river or stream.

#### 7.1.3.4 Disturbance

- Recognising the different types of bed disturbance and the relative impacts of each in terms of the level of consents required;
- Providing for the disturbance of beds for certain “*maintenance*” activities within urban and rural areas based on limitations on size of disturbance and the methods used;
- Larger scale types of disturbance such as *dredging* or extraction or disturbance of the bed beyond a certain size are subject to a progressive consenting regime;

#### 7.1.3.5 Deposition of substances

- Recognising that the *deposition of substances* in, on or under the beds of Auckland’s *lakes*, rivers and streams may have significant adverse environmental effects, both directly from the deposition itself and indirectly from potential leaching of any contaminants from the substance. Substances deposited may range from the disposal of dredged material to the “dumping” of *waste* material.
- Encouraging alternatives to the *deposition of substances*;
- Acknowledging that there may be some circumstances where the *deposition of substances* has positive environmental benefits e.g. habitat enhancement;
- Requiring all forms of deposition to be assessed through the resource consent process, due to the uncertainty of environmental effects.
- Note that deposition of sediment arising from earthwork activities is managed by the Regional Plan: Sediment Control and deposition of silt conveyed or captured by *stormwater* systems is managed by the *stormwater* rules in Chapter 5 of this Plan. Deposition of material associated with the construction and use of structures is addressed in the structures rules.

#### 7.1.3.6 Introduction and Planting of Indigenous and Exotic Plants

- Enabling habitat *protection* and enhancement (e.g. wetlands), stabilising eroding *lake* and *Permanent river or stream* banks, or the enhancement of *natural character* or *amenity* values by providing for the planting of appropriate species of plants in appropriate locations;
- Preventing the introduction or planting of plant species which are, or which have the potential to become plant pests;
- Recognising the role of the Auckland Regional Plant Pest Management Strategy as the main management tool for dealing with plant pests;
- Recognising the importance of public education and the provision of information to facilitate the planting of appropriate species.

#### 7.1.3.7 Reclamation and Drainage

- Recognising that the *reclamation* and *drainage* of the beds of *lakes and Permanent rivers or streams* usually results in the permanent and irreversible change from a waterbody to dry land;
- Discouraging future *reclamation* and *drainage* of *lakes, Permanent rivers, streams* and wetlands;

- Requiring consideration of alternative methods or routes which avoid the need to reclaim or drain waterbodies;
- Nevertheless acknowledging that there may be significant economic and social benefits to the region from the development of land for urban purposes and regional infrastructure where *reclamation* may be an option.

## 7.2 Issues

- 7.2.1** Some structures in, on, under or over the beds of *lakes*, rivers and streams in the Auckland Region can have adverse effects on the natural characteristics of these waterbodies. The extent to which a structure affects a *lake*, river or stream bed is dependent on its size and design and whether it is located in, on, under or over the bed. Adverse effects on the natural characteristics of *lake*, river and stream beds arise from both individual structures and from the cumulative effects of a number of structures.
- 7.2.2** Many structures in, on, under or over the beds of *lakes*, rivers and streams in the Auckland Region and particularly in *Urban Areas* may be part of *regionally significant infrastructure* such as roads, telecommunication, power and water supply, *wastewater* and *stormwater* management services. This *regionally significant infrastructure* enables people and communities to provide for their economic, social and cultural wellbeing. However it can adversely affect the beds of *lakes* and *Permanent rivers or streams* by modifying their natural characteristics. In the most extreme cases, *lake*, river or stream beds may be infilled or rivers and streams piped to enable *regionally significant infrastructure* to operate. This infrastructure can also protect the environment (for example for functions such as flood protection or the containment of contaminants such as *sewage* and *stormwater* in a pipe system). The issue is how to provide for *regionally significant infrastructure* while still protecting *lakes* and valuable *Permanent rivers or streams*.
- 7.2.3** The Auckland Regional Policy Statement and the Auckland Regional Growth Strategy promote the intensification of urban development with *Urban Areas*. This may involve redevelopment and intensification of land use within existing developed *Urban Areas*, as well as the transformation of rural land into urban uses in *Greenfield Areas*. These different forms of development require structures in, on, under or over the beds of Urban Streams to facilitate the safe and efficient development of land, and to provide for *regionally significant infrastructure*. However these activities can result in significant modification or loss of existing urban streams, by *culverting* or piping or by diverting the stream from its original course. Urban development can also provide opportunities to enhance degraded urban streams.
- The management of *Permanent rivers and streams* in *Urban Areas* is outlined in more detail in the Urban River and Stream Management Framework in section 3.6 of Chapter 3: Management Areas. This establishes a framework for the management of urban streams recognising their existing modification and the use and development pressures placed on them. This framework is relevant to the application of the objectives, policies and rules relating to all activities in the beds of *Permanent rivers and streams* in *Urban Areas* including those associated with the maintenance and development of *regionally significant infrastructure* and urban land development and redevelopment.
- 7.2.4** Diverting rivers and streams can have adverse effects on freshwater fish and biota through the loss of instream habitat or *fish passage* and on those taking water downstream of the diversion through changes in flow. Diversions of *surface water* can also give rise to erosion and flooding. Diversions of Auckland's small streams at times

of fish migration need to be appropriately managed. These effects can be exacerbated because of the predominance of small streams in the Auckland Region.

**7.2.5** Disturbance of the bed impacts on the natural characteristics of the *lake*, river or stream. Disturbance includes *dredging* of bed material to increase water depths, the extraction of sand, shingle and gravel and clearance activities for various purposes including maintaining natural flow regimes, land *drainage* systems, removing plant pests and debris, or restoring degraded ecosystems. The *diversion of a river or stream* either permanently or temporarily also results in disturbance of the bed. The environmental effects of bed disturbance vary depending on the scale of the disturbance and how it is undertaken. Some bed disturbance may be short-term, while other types result in significant long term loss or reduction of habitat values, changes to bed morphology and water flow regimes.

**7.2.6** The uncontrolled introduction or planting of *exotic plants* may have significant adverse environmental effects on the ecology of and natural processes operating in the Auckland Region's *lakes*, and *Permanent rivers or streams*. Many *exotic plants* have the potential to become plant pests. The control and eradication of plant pests may require disturbance of the beds of *lakes* and *Permanent rivers and streams*.

**7.2.7** The *deposition of substances* in, on, or under the bed of a *lake*, river or stream can adversely affect the natural characteristics of these waterbodies by infilling them, resulting in changes to water depth and flow regimes and associated impacts on instream values. The type and amount of substances deposited in the waterbody and its degree of contamination are important in determining the level of environmental effect. However the small size and the sensitivity of Auckland's *lakes*, rivers and streams means there is little capacity for these water bodies to assimilate significant amounts of deposited substances in, on or under their beds.

**7.2.8** *Reclamation* and *drainage* of the beds of *lakes* and *Permanent rivers or streams* has significant and usually permanent adverse effects, transforming areas of water into land. *Reclamation* and *drainage* usually occurs progressively around the margins of *lakes* and *Permanent rivers or streams*, with direct physical effects on the immediate area as well as cumulative effects on the overall *natural character* of *lakes*, rivers and streams and their margins. Given the region's relatively small urban and rural *lakes*, and *Permanent rivers or streams*, *reclamation* and *drainage* of parts of them is particularly significant.

## 7.3 Objectives

**7.3.1** To maintain and enhance where practicable the natural characteristics of *lakes* and *Permanent rivers or streams* in the Auckland Region and to avoid, remedy or mitigate the effects of their modification by activities such as structures, disturbance, deposition, planting or *reclamation* and *drainage* and the diversion of *surface water*.

(This Objective relates to Issues 7.2.1 to 7.2.8)

**7.3.2** To recognise and provide for structures in, on, under or over the beds of *lakes* and *Permanent rivers or streams* for *regionally significant infrastructure* where this comprises the best practicable option and is important for providing for the *protection* of the environment and for enabling people and communities to provide for their health and safety and their economic, social and cultural wellbeing.

(This Objective relates to Issue 7.2.2)

**7.3.3** To recognise and provide for activities in, on, under or over the beds of Urban Streams within *Urban Areas* while avoiding, remedying or mitigating adverse effects.

(This Objective relates to Issues 7.2.3)

- 7.3.4** To recognise and provide for *municipal water supply* activities in, on, under or over the beds of *Permanent rivers and streams* in Water Supply Management Areas, consistent with the different stream types in these areas, while avoiding, remedying or (This objective relates to Issue 7.2.2)

## 7.4 Policies

*Note: reference to the “Urban River and Stream Management Framework” means the provisions of the Urban River and Stream Management Areas set out in section 3.6 of Chapter 3: Management Areas.*

*See also Section 3.5 relating to Water Supply Management Areas*

### General

- 7.4.1** To have regard to the objectives and policies of Chapter 2.1, 2.2 and 2.3, and to the Urban River and Stream Management Framework, and to the objectives and policies of Water Supply Management Areas in Chapter 3.5.3 and 3.5.4 where relevant, in assessing any resource consent for activities in, on, under or over the beds of *lakes* and *Permanent rivers or streams*.

*(This Policy relates to Objectives 7.3.1 to 7.3.3)*

- 7.4.2** An integrated approach should be taken to the management of the effects of activities in, on, under or over the beds of any *lake* or *Permanent river or stream* by:

- The assessment of options for the use, development and *protection* of *lakes* and *Permanent rivers or streams* through the preparation of *structure plans*, *ICMPs*, stormwater or wastewater network resource consents, flood management plans or having regard in *Urban Areas* to the Urban River and Streams Management Framework;
- Ensuring the use, development and *protection* of *lakes* and *Permanent rivers or streams* is not inconsistent with the provisions of district plans, in particular those relating to the management of *lakes*, rivers and streams and adjacent riparian margins.

*(This Policy relates to Objectives 7.3.3 & 7.3.3)*

- 7.4.3** Activities for which resource consent is required in, on, under or over the bed of any *lake* or *Permanent river or stream* shall be considered appropriate where:

- No reasonable or practicable alternative method or location for undertaking the activity exists outside of the *lake* or *Permanent river or stream*; or
- The use of an alternative method or location would have more significant adverse environmental effects than using the bed of the *lake* or *Permanent river or stream*; or
- The purpose for which the activity is undertaken cannot reasonably or practicably be accommodated by existing activities or development in, on, under or over the bed of the *lake* or *Permanent river or stream*;

and

- Efficient use will be made of the bed of the *lake* or *Permanent river or stream* by using the minimum area necessary for the activity; and
- Significant cumulative adverse effects of the activity on the bed of the *lake* or *Permanent river or stream* will be avoided;

or

- Significant cumulative adverse effects of the activity on the beds of *Permanent*

*rivers and streams* in Urban Areas are avoided, remedied or mitigated consistent with the Urban River and Stream Management Framework.

*(This Policy relates to Objectives 7.3.1 to 7.3.3)*

**7.4.4** In considering the matters listed in Policies 7.4.3, and 7.4.9 to 7.4.11 regard shall be had to whether they have already been addressed in, and are consistent with a **structure plan, ICMP**, flood management plan or approved stormwater or wastewater network resource consent.

**7.4.5** In considering the appropriate weight to be given to any structure plan, ICMP, or flood management plan in terms of Policy 7.4.4 above, the ARC will have regard to:

- (a) the status of the structure plan in terms of the statutory process to incorporate it into the district plan;
- (b) in the case of other non statutory plans such as ICMPs or flood management plans, the extent to which they have been subject to a consultative process involving affected parties and the results of that consultation;
- (c) the extent to which they are consistent with the Urban River and Stream Management Framework.

*(This Policy relates to Objectives 7.3.2 & 7.3.3)*

**7.4.6** Where there is no **structure plan, ICMP**, or flood management plan or approved stormwater or wastewater network resource consent for any Urban Stream catchment, activities in, on, under or over the bed of an Urban Stream shall demonstrate how they are consistent with the Urban River and Stream Management Framework.

*(This Policy relates to Objectives 7.3.2 & 7.3.3)*

**7.4.7** The cumulative adverse effects of activities, in, on, under or over the beds of **lakes** and **Permanent rivers or streams** shall be minimised by encouraging activities which are for public and multiple use over activities for private or individual use.

*(This Policy relates to Objectives 7.3.1 to 7.3.3)*

**7.4.8** Activities in, on, under or over the bed of any **lake** or **Permanent river or stream** shall be considered appropriate where they enable the restoration or enhancement of wetlands, or areas of indigenous vegetation or the habitats of indigenous fauna in any **lake**, river or stream.

*(This Policy relates to Objective 7.3.1)*

**7.4.9** Applications for resource consent to undertake activities in, on, under or over the bed of any **lake** or **Permanent river or stream** shall demonstrate to the extent commensurate with the scale and significance of the potential adverse effects, that they will avoid where practicable, remedy or mitigate:

- (a) Significant adverse changes to **lake** or **Permanent river or stream** bed morphology and flow hydraulics;
- (b) Significant changes to natural water level fluctuations in **lakes** and associated wetlands unless this is for habitat establishment, enhancement or restoration, or for a **dam** or other impoundment structures and is consistent with the policies relating to these structures;
- (c) Significant erosion or deposition within the **lake** or **Permanent river or stream bed**, or on adjacent land;
- (d) Flooding of adjacent land or the exacerbation of existing flooding problems upstream or downstream;

(Explanation: this does not preclude appropriate *stormwater* treatment or detention structures);

- (e) Impediments to water flow during flood conditions, except where the purpose of any structure is for flood mitigation;
- (f) Significant adverse effects on aquatic flora and fauna, habitat values and riparian vegetation;
- (g) Permanent loss of any habitat of a rare or endangered species;
- (h) Localised turbidity or disturbance to the surrounding bed and permanent long-term adverse effects on the surrounding environment from the deposition of sediment; and
- (i) Significant adverse effects on the recreational and *amenity* values of the area, or other existing lawful users upstream or downstream of the activity, or be a hazard to navigation or to public health and safety.

Where these effects cannot be avoided applications shall detail the remediation or mitigation measures to be undertaken.

In considering the application of clauses (a) to (i) in Urban Area, regards shall be had to the Urban River and Stream Management Framework *in Urban Areas and to the objectives and policies of the Water Supply Management Areas in Chapter 3: Management Areas where relevant.*

**Explanation:**

*The term “activities” is used to include all the matters covered by Section 13(1) namely structures, all types of disturbance, the introduction or planting of plants, the deposition of substances and reclamation and drainage and activities under Section 13(2) and the diversion of surface water under Section 14(1). With respect to damming activities, reference should also be made to Policies 6.4.41 to 6.4.48.*

*(This Policy relates to Objectives 7.3.1 to 7.3.3)*

**Structures and the Diversion of Surface Water**

- 7.4.10** The permanent diversion of an existing *Permanent river or stream* shall be considered inappropriate unless there is no practicable alternative method to the diversion, or the diversion will result in an overall net benefit to the environment, or it is consistent with the Urban River and Stream Management Framework.

See also Policy 7.4.4.

*(This Policy relates to Objective 7.3.1)*

- 7.4.11** Activities that divert an existing *Permanent river or stream* shall demonstrate that they will:
- (a) Not be likely to cause or exacerbate erosion or deposition within the diverted *Permanent river or stream* bed or on adjacent land;
  - (b) Not give rise to flooding of adjacent land or exacerbate existing flooding problems upstream or downstream;
  - (c) Not cause an impediment to water flow during flood conditions, except where the purpose of any structure is for flood mitigation;
  - (d) Avoid, remedy or mitigate adverse effects on aquatic flora and fauna, habitat values and riparian vegetation;
  - (e) Not result in the permanent loss of any habitat of a rare or endangered species;
  - (f) Enable the colonisation of the diverted river or stream by aquatic flora and fauna following the completion of the diversion activities; and

- (g) Not adversely affect existing lawful users of **surface water** upstream and downstream of the point of diversion.

In considering the application of clauses (a) to (g) above in Urban Areas regard shall be had to the Urban River and Stream Management Framework.

*(This Policy relates to Objective 7.3.1)*

- 7.4.12** Structures and the diversion of **surface water** shall not result in more than minor adverse effects on the values of Natural Lake (excluding those in Water Supply Management Areas), Urban Lake, Natural Stream and Wetland Management Areas. In considering the effects on Natural Stream and Wetland Management Areas in Water Supply Management Areas, regard shall be had to Policies 3.5.4.1 to 3.5.4.2 in Chapter 3: Management Areas.

*(This Policy relates to Objective 7.3.1)*

- 7.4.13** Within Urban Lake Management Areas structures for the purpose of maintaining or enhancing **public access** shall be considered appropriate.

*(This Policy relates to Objective 7.3.1)*

- 7.4.14** The modification and loss of significant lengths of **Permanent rivers or streams** through infilling or piping (including the use of instream **culverts**, pipes and channel linings) shall generally be avoided. In applying this policy to **Permanent rivers or streams** within **Urban Areas**, particular regard shall be had to the Urban River and Stream Management Framework.

*(This Policy relates to Objectives 7.3.1 to 7.3.3)*

- 7.4.15** Structures and the diversion of **surface water** shall not cause more than a minor impediment to the passage of flood flows, and provision shall be made to pass such flows in a manner that protects public health and safety, the functioning of the State highway network and network utility infrastructure and avoids the inundation of habitable floors, in accordance with standards specified in this Plan or the relevant District Plan.

*(This Policy relates to Objective 7.3.1)*

- 7.4.16** Structures in, on, under or over the beds of **lakes** and **Permanent rivers or streams** shall ensure that the passage of fish and other aquatic organisms both up and down stream is:

- (a) provided for and maintained when new structures are constructed, or
- (b) maintained where that passage currently exists in an existing structure.

**Explanation**

In assessing the design suitability of any pipe, **culvert** or other similar structure for **fish passage** the ARC will have regard to ARC Technical Publication 131: Fish Passage: Review and Guidelines for the Auckland Region (ARC, June 2000).

*(This Policy relates to Objective 7.3.1)*

- 7.4.17** Structures in, on or over the beds of **lakes** and **Permanent rivers or streams** shall be encouraged to minimise the amount of bed modification and to avoid, remedy or mitigate adverse effects on the **lake**, river or stream bed.

**Explanation:**

*Where there are options for the type of structure in, on or over the bed of a lake or Permanent river or stream, those structures that minimise the amount of bed modification are preferred. For example, bridges are preferred to structures which replace the bed with some form of artificial lining, or which result in significant changes*



*in stream velocity, such as box or round culverts.*

*(This Policy relates to Objective 7.3.1)*

**7.4.18** New pipelines and cables in, on, under or over the beds of *lakes* and *Permanent rivers or streams* and transmission lines in, on or under the beds of *lakes* and *Permanent rivers or streams* should, wherever practicable, be concentrated in a similar location to existing structures of this type, except where:

- (a) There are strategic or operational reasons for separating these structures and;
- (b) Such a concentration would generate significant cumulative adverse effects on the bed of the *lake* or *Permanent river or stream*.

*(This Policy relates to Objective 7.3.1)*

### **Disturbance and Deposition**

#### ***Explanation***

*The Plan's policies and rules distinguish between three different types of bed excavation or disturbance. The first involves the extraction of material such as sand, shingle and gravel, where the material is generally used for commercial purposes; dredging of the bed where the principal purpose is to maintain or increase water depths for navigation or to provide access to structures such as wharves, jetties and moorings and general excavation, drilling, tunnelling and other disturbance. The latter covers a variety of situations, the most common being the removal of debris, sediment and associated vegetation from rivers and streams to avoid flooding. Disturbance associated with the construction and operation of structures is generally addressed in the Structures rules.*

**7.4.19** The extraction of sand, shingle, gravel or naturally occurring materials, *dredging* to increase water depths, significant levels of excavation, *drilling*, tunnelling or other disturbance and the *deposition of any substance* in, on or under the bed in Natural Lake, Urban Lake, Natural Stream and Wetland Management Areas shall generally be avoided unless:

- (a) The activity is necessary for the maintenance, enhancement or restoration of the natural and physical values of the *lake*, wetland, river or stream; and
- (b) The activity will have no more than temporary or minor adverse effects.

*(This Policy relates to Objective 7.3.1)*

**7.4.20** *Dredging of lakes* and *Permanent rivers or streams* other than in Natural Lake, Natural Stream and Wetland Management Areas shall be considered appropriate where it is to maintain or restore access to wharves and jetties or vessel mooring areas, or to maintain navigation and safety in existing channels, or to maintain or restore access for these same purposes in the Coastal Marine Area.

*(This Policy relates to Objective 7.3.1)*

**7.4.21** The excavation, *drilling*, tunnelling or other disturbance (including disturbance associated with vegetation removal) of beds of *lakes* or *Permanent rivers or streams* shall generally be considered inappropriate unless it is for:

- (a) Habitat maintenance, enhancement or restoration;
- (b) Maintenance and enhancement of *public access* to, over and along any *lake* or *Permanent river or stream*;
- (c) The provision or *maintenance* of *regionally significant infrastructure*, including *stormwater* and *wastewater network* and *municipal water supply* infrastructure, which is necessary for flood protection, the safeguarding of public health and safety, or for the promotion of community wellbeing;

- (d) Improving navigation and safety;
- (e) Avoiding, remedying or mitigating adverse effects caused by flooding, erosion, scour, sediment deposition, and other similar natural processes,

*(This Policy relates to Objective 7.3.1)*

**7.4.22** In assessing the effects of excavation, **drilling**, tunnelling or other disturbance (including disturbance associated with vegetation removal and **dredging**), or the **deposition of any substance** in, on, or under the bed of a **lake** or **Permanent river or stream** regard shall be had to the following matters:

- (a) the volume of material or substance to be excavated, drilled, tunnelled, disturbed, or deposited;
- (b) the degree of contamination of the material or substance;
- (c) the physical characteristics (texture, colour, composition) of the material or substance;
- (d) the effects on ecological values and physical processes within the **lake** or **Permanent river or stream**;
- (e) the potential for the dispersal of any material or substance during the activity or the re-suspension of any material or substance once it has been deposited on the bed;
- (f) the deposition technique, including in the case of dredged material, the water content or solidity of the material at the time of disposal; and
- (g) the effects on the coastal marine area, where any activity is to be undertaken in close proximity to the coastal marine area boundary and there is the potential for the activity to cause significant adverse effects in the coastal marine area.

*(This Policy relates to Objective 7.3.1)*

#### **Introduction and Planting of Plants**

**7.4.23** The introduction or planting of any plant in, on, or under the bed of any **lake**, or **Permanent river or stream** shall be considered appropriate where:

- (a) It is for habitat establishment, restoration or enhancement, the maintenance and enhancement of **amenity** values, flood or erosion protection, storm water runoff control, or for remedying or mitigating adverse effects associated with other activities in the **lake** or **Permanent river or stream**, or on land within the catchment; and
- (b) It is not an invasive species and will not result in the displacement of desirable species and areas of significant indigenous vegetation already present.

*(This Policy relates to Objective 7.3.1)*

**7.4.24** The introduction or planting of indigenous plants from the same **ecological district** is encouraged where this is practicable, having regard to the availability and suitability of eco-sourced plants, and where better environmental outcomes will be achieved than using other indigenous or **exotic plants**.

#### **Explanation:**

*Information on appropriate plant species, including the use of indigenous plants from the same ecological district can be found in ARC Technical Publication 148: Riparian Zone Management; Strategy for the Auckland Region, June 2001. Further information on plant pests, including invasive species can be found in the ARC Pest Fact Sheets.*

*(This Policy relates to Objective 7.3.1)*

### Reclamation and Drainage

- 7.4.25** New *reclamation* and *drainage* of *lakes* or *Permanent river or stream* beds, or the extension of existing *reclamations* or drained areas shall generally be considered inappropriate unless:
- (a) They are for rehabilitation or remedial works; or
  - (b) They are for the safe and efficient operation of transport infrastructure or network utility systems.
  - (c) They are for land development within *Urban Areas* which is consistent with the regional growth provisions of the Auckland Regional Policy Statement; and
    - (i) They avoid the following rivers and streams:
      - Type 1 and 2 Urban Streams
      - Other stream reaches that adjoin Coastal Protection Areas 1, including Ann's Creek upstream of the rivermouth boundary
      - Wetland Management Areas
      - Stream reaches with cultural heritage values or which adjoin Cultural Heritage Places and Areas scheduled in the Auckland Regional Plan Coastal;
    - (ii) For other streams in Urban Areas they are consistent with the Urban River and Stream Management Framework;
    - (iii) In *Greenfield Areas* options are considered for low impact urban design to reduce the amount of permanent stream loss through reclamation and drainage.

See also Chapter 2.1: Natural Values and Policies 2.2.4.16 and 2.2.4.17 (Chapter 2.2) relating to sites, buildings, places or areas identified in the ARC's Cultural Heritage Inventory.

*(This Policy relates to Objectives 7.3.1 & 7.3.3)*

- 7.4.26** All proposals to construct, reconstruct, alter or extend any *reclamation* or *drainage* in the bed of a *lake*, or *Permanent river or stream* shall demonstrate that:
- (a) The finished appearance of the reclaimed or drained area, including its size, shape and the materials used, is as far as practicable compatible with the environment in which it is located;
  - (b) Materials used in *reclamations* shall not include contaminants which may adversely affect the *lake*, or *Permanent river or stream*;
  - (c) An alternative land based site or construction method is not practicable;
  - (d) Efficient use will be made of the *lake* or *Permanent river or stream* bed by minimising the area necessary for *reclamation* and *drainage*, having regard to the activity proposed to utilise that area, and ;
  - (e) Adverse effects can be remedied or mitigated to an acceptable level, or offset by appropriate enhancement of the *lake* or *Permanent river or stream* and their riparian margins.

In considering the application of clauses (a) to (e) above in Urban Areas regard shall be had to the Urban River and Stream Management Framework.

See also Policies 2.4.9 to 2.4.11 relating to Net Environmental Maintenance (Chapter 2:1 Natural Values).

*(This Policy relates to Objective 7.3.1)*

- 7.4.27** In assessing the effects of *reclamation* and *drainage* of the beds of *lakes*, or *Permanent rivers or streams* regard shall be had to:

- (a) Maintenance and enhancement of *public access* to, along and within *lakes* and

**Permanent rivers or streams** including the potential for TAs to set aside esplanade reserves or strips on reclaimed or drained areas for **public access** purposes;

[Refer to Policy 2.2.4.12 relating to the provision of public access]

- (b) The type and source of material for any **reclamation**, recognising that the need to dispose of any dredged material or other **waste** material shall not dictate the need for, or the size of a **reclamation**;
- (c) Adverse effects on water quality, ecosystems, water flow, hydraulic capacity, sediment transport and deposition;
- (d) Cumulative adverse effects arising from incremental **reclamation** or **drainage**;
- (e) The Urban River and Stream Management Framework.

(This Policy relates to Objective 7.3.1)

- 7.4.28** Demolition or removal of a **reclamation** shall be considered appropriate where the adverse effects arising from its removal, in whole or in part are less than leaving it there.

(This Policy relates to Objective 7.3.1)

## 7.5 Rules

### Structures and the Diversion of Surface Water

#### Explanation

The rules of this chapter relate to structures and the associated diversion of **surface water**. Rules relating to the use, erection and placement of any **dam**, and the **reconstruction**, alteration or extension of any **dam** which increases the height or storage capacity of the **dam**, including **dams** for **stormwater** detention or treatment, are included in the rules on the **damming** of **surface water** in Chapter 6: Water Allocation. However rules on the **maintenance**, repair, or alteration which does not increase the height or storage capacity of the **dam**, or the demolition or removal of **dams** are included in this chapter, under the provisions relating to the **maintenance**, repair, alteration, demolition or removal of any structure, refer Rules 7.5.1, 7.5.2 and 7.5.3.

These rules do not apply to any **artificial watercourse** such as irrigation canals, water supply races, canals for the supply of water for electricity power generation and **farm drainage canals** and roadside drain and water table except where the roadside drain or water table is a modified element of a natural drainage system.

The excavation, **drilling**, tunnelling or other disturbance (including disturbance associated with vegetation removal) of the bed of a **lake** or **Permanent river or stream**, and any associated discharge of sediment, is covered by Rules 7.5.14 to 7.5.24 of this Plan.

Note: reference to the "Urban River and Stream Management Framework" means the provisions of the Urban River and Stream Management Areas set out in section 3.6 of Chapter 3: Management Areas.

#### Permitted Activities

- 7.5.1** The use, erection, **reconstruction**, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a **Intermittent stream**, and the repair and **maintenance** of the structure, and any associated bed disturbance or deposition, and any associated diversion of water is a Permitted Activity, if it complies with the following conditions.

- (a) The structure shall not cause the flooding of neighbouring private properties;

- (b) The activity shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream.
- (c) Any discharge of sediment directly associated with the activity shall be minimised by the use of best practice erosion and sediment control measures;
- (d) The mixing of construction materials (such as concrete), or the refuelling or maintenance of equipment associated with the activity shall not occur in the wetted cross section bed of the watercourse and shall use best practice methods to avoid the discharge of contaminants into any lake or to the river or stream.

### 7.5.2 Use of Existing Structures

The use of any structure or part of any structure existing in, on, under or over the bed of a lake or *Permanent river or stream* as at 23 October 2001 and the use of any structure or part thereof authorised under Rule 7.5.3, and any associated bed disturbance or deposition, any associated diversion of water and any incidental temporary damming of water is a Permitted Activity if it complies with the following conditions:

- (a) the passage of fish shall be maintained both up and down stream where it already occurs on existing structures;

(See note at end of Rule 7.5.6)

- (b) the structure shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream;
- (c) any bare earth surfaces on that part of the bed that is above the water level or wetted cross section which have arisen from the operation of the structure shall be stabilised against erosion as far as practicable;
- (d) the structure shall be maintained in a structurally sound condition at all times;
- (e) for a structure or part of any structure located solely under the bed of a lake or *Permanent river or stream* the following conditions only apply:
  - (i) conditions (b) and (d) above;
  - (ii) the structure shall be maintained so it is not exposed or moved by river or stream flows unless this is part of the design and purpose of the structure.
- (f) for a structure or part of any structure located solely over the bed of a lake or *Permanent river or stream* the following conditions only apply:
  - (i) conditions (b) and (d) above.

*Note this rule does not apply to the use of existing on-stream dams. The use of existing on-stream dams is controlled by Rule 6.5.52 in Chapter 6: Water Allocation.*

### 7.5.3 Maintenance, Repair, Reconstruction, Placement, Alteration, or Extension of Existing Structures

The *maintenance and repair, reconstruction, placement, alteration or extension* of any existing structure or part of any structure in, on, under or over the bed of a lake or *Permanent river or stream* and any associated bed disturbance or deposition, any associated diversion of water and any incidental temporary damming of water is a Permitted Activity if it complies with the General Performance Conditions listed in Rule 7.5.6 and the following conditions:

- (a) Any *extension* of an existing structure shall not cause the length of the structure to exceed 30 metres in total when measured parallel to the direction of water flow. This length excludes any associated erosion or scour protection works permitted by condition (b) below;

- (b) If erosion or scour protection works are required to prevent erosion or scour upstream or downstream of the structure, they shall not exceed 5 metres in length each side of the structure (such works protruding into the bed shall not require a separate consent as they shall be authorised under this rule);
- (c) Other than provided for by Rule 6.5.53, the activity shall not result in any increases in the height or storage capacity of any existing dam;

*Note: The rules relating to the damming of surface water are set out in Chapter 6 Rules 6.5.51 to 6.5.70*

- (d) The activity shall not result in an increase to existing flood levels on land or structures other than that owned or controlled by the person undertaking the activity;
- (e) The activity shall not cause more than a minor bed erosion, scouring or undercutting immediately upstream or downstream of the structure;
- (f) The activity shall not compromise the structural integrity of the structure;
- (g) Debris or other material removed from upstream or downstream of a structure shall not be re-deposited elsewhere in the bed of the lake or ***Permanent river or stream***, or on any adjacent land in a manner or location where it would enter any waterbody;
- (h) Any discharge of sediment directly associated with the activity shall be minimised by the use of best practice erosion and sediment control measures;
- (i) The ***alteration*** of a dam, weir or similar structure shall not be undertaken until as much impounded sediment as is practicable has been removed from behind the structure and best endeavours shall be used to minimise the discharge of sediment impounded by the structure;
- (j) The ***reconstruction, alteration or extension*** of an existing swing or pile mooring in any area shall not involve the relocation of the mooring anchor or pile on the ***lake***, river or stream bed and/or the extension of the length of the mooring chain by more than 25 percent;
- (k) The General Performance Conditions in Rule 7.5.6.

## 7.5.4 Removal Or Demolition Of Existing Structures

The removal or demolition of any existing structure or part of any existing structure located in, on, under or over the bed of a lake or ***Permanent river or stream*** and any associated bed disturbance or deposition, any associated diversion of water and any incidental temporary damming of water is a Permitted Activity if it complies with the following conditions:

- (a) Any removal or demolition shall ensure that as far as practicable the structure is removed from the bed;
- (b) Any part of the structure remaining in the bed shall not be a hazard to public access, navigation, or health and safety;
- (c) The removal or demolition of a dam, weir or similar structure shall not be undertaken until as much impounded sediment as is practicable has been removed from behind the structure and best endeavours shall be used to minimise the discharge of sediment impounded by the structure;
- (d) The General Performance Conditions listed in Rule 7.5.6.

## 7.5.5 Use, Erection Or Placement Of New Structures

The use, erection or placement of any new structure or part of any new structure listed

in this rule in, on, under or over the bed of a lake or *Permanent river or stream* and any associated bed disturbance or deposition, any associated diversion of water and any incidental temporary damming of water is a Permitted Activity if it complies with the following:

- (a) the Specific Structure Conditions listed in Rule 7.5.5.1 below;
- (b) the General New Structure Conditions listed in Rule 7.5.5.2 below; and
- (c) the General Performance Conditions listed in Rule 7.5.6.

List of Structures:

- (i) a *culvert* or pipe subject to Specific Structure Conditions (b), (d), (e), (h), (i), (j) and (n);
- (ii) a channel subject to Specific Structure Conditions (c), (d), (e), and (g);
- (iii) a bridge subject to Specific Structure Conditions (a), (c), (d), (e), (f), (g), (j) and (r);
- (iv) a pipe bridge subject to Specific Structure Conditions (a), (c), (e), (f) and (g);
- (v) a ford subject to Specific Structure Conditions (a), (c), (d), (e), (g) and (j);
- (vi) a flow measuring apparatus or instrument including a weir for the purpose of controlling water levels for the measurement of river or stream flow subject to Specific Structure Conditions (a), (c), (d) and (g) and the provisions of Rule 6.5.53;
- (vii) a maimai that is tagged or claimed under the Wildlife Act 1953 subject to Specific Structure Conditions (a), (c), (g), (k) and (l);
- (viii) *signs, navigation aids*, ski lane markers, or buoys subject to Specific Structure Conditions (a), (c), (f) and (g);
- (ix) swing and pile moorings, subject to Specific Structure Conditions (a), (c), (f), (g) and (q);
- (x) an *erosion control* structure or retaining wall subject to Specific Structure Conditions (a), (c), (d) (e) and (g);
- (xi) a *stormwater* or *wastewater outfall* subject to Specific Structure Conditions (a), (c), (e), (f) and (g);
- (xii) a *surface water intake structure* subject to Specific Structure Conditions (a), (c), (d), (e), (f), (g) and (p);
- (xiii) a stock access barrier (including a stock floodgate) suspended below a fence subject to Specific Structure Condition (c);
- (xiv) cables, ducts, lines or pipelines on existing structures, subject to Specific Structure Condition (o);
- (xv) any structure located solely under the bed, that is not covered by clauses i to xiv, subject to Specific Structure Conditions (m) and (n);
- (xvi) any structure located solely over the bed, that is not covered by clauses i to xiv, subject to Specific Structure Conditions (a), (c), (d), (f), (g) and (r);
- (xvii) any other structure (not covered by i – xvi above) subject to Specific Structure Conditions (a), (c), (d), (e), (f), (g), (m) and (n);

#### 7.5.5.1 Specific Structure Conditions Applying to the Use, Erection or Placement of New Structures

The use, erection or placement of any new structure or part of any new structure in, on, under or over the bed of a lake or *Permanent river or stream* and any associated bed disturbance or deposition, any associated diversion of water and any incidental



temporary damming of water permitted by Rule 7.5.5 above must comply with the following conditions (as they are specified for each type of structure in Rule 7.5.5):

- (a) The structure shall not cause a more than minor impediment to the passage of flood flows up to and including the 100 year ARI flood;
- (b) The 100 year ARI flood shall be accommodated by the structure and/or by an overland flow path;
- (c) The structure shall not cause more than a temporary impediment to the passage of flood debris and it shall be maintained free of flood debris;
- (d) The structure shall not cause flood levels in events up to and including the 100 year ARI flood to rise within 0.5 m of the habitable floor levels of dwellings or increase flooding of a State highway, unless the relevant District Plan establishes an alternative freeboard requirement in which case the District Plan freeboard requirement shall prevail.
- (e) Other than provided for by clauses (s) and (t), the structure shall not be located in a Natural Lake, Natural Stream or Wetland Management Area as described in sections 3.3, 3.4 and 3.2 of Chapter 3: Management Areas;
- (f) Structures in navigable watercourses shall not prevent navigation of vessels;
- (g) The structure shall not prevent public access along the lake, river or stream;
- (h) For any culverting or piping of a river or stream in Urban Areas the nominal internal culvert diameter shall not exceed 900 mm, the actual internal diameter shall not exceed 920 mm and the cross-sectional area of any box culvert shall not exceed 0.67m<sup>2</sup> and multiple culverts shall not be erected or placed across the bed;
- (i) Other than restricted by clause (t) any culverting or piping of a river or stream outside Urban Areas, the nominal internal culvert diameter shall not exceed 1200 mm, the actual internal diameter shall not exceed 1225 mm and the cross-sectional area of any box culvert shall not exceed 1.18m<sup>2</sup> and multiple culverts shall not be erected or placed across the bed;
- (j) If erosion or scour protection works are required to prevent erosion or scour upstream or downstream of the structure, they shall not exceed 5 metres in length each side of the structure (such works protruding into the bed shall not require a separate consent as they shall be authorised under this rule). All works shall comply with Rule 7.5.6(a) in relation to fish passage. Erosion and scour protection works required under this clause shall not be included in any assessment of structure length under Rule 7.5.5.2(a);
- (k) The floor area of any structure shall not exceed 10m<sup>2</sup>;
- (l) The structure shall be founded on piles that protrude above the normal water level;
- (m) The structure shall not be exposed or moved by river or stream flows unless this is part of the design and purpose of the structure;
- (n) Structures such as pipes or cables that are to be located completely under the bed of the lake or river shall be installed using trenchless means;
- (o) Any cables, ducts, lines or pipelines on existing bridges shall be located above or equal to the soffit or attached to piles or abutments or other suitable parts of the bridge so that they do not intrude beyond the existing form of the bridge in a way that forms a hazard or further impedes the passage of 100 year ARI flood flows;
- (p) Water intake structures shall also meet the conditions of Rules 6.5.8 or 6.5.9;
- (q) A new swing or pile mooring shall not be located in a Natural Lake, Natural Stream or Wetland Management Area as described in sections 3.3, 3.4 and 3.2 of Chapter

3: Management Areas;

- (r) No piles either permanent or temporary shall be located in, on or under the bed.
- (s) In a Natural Stream Management Area in a Water Supply Management Area, the length of any new structure shall not exceed 10 metres in total when measured parallel to the direction of water flow, and no structure shall be erected or placed in individual lengths of 10 metres or less where this would progressively encase or otherwise modify the bed of the Natural Stream Management Area;

Note: this clause relates to culvers, pipes, channels and associated erosion protection works that generally sit in, on or under the bed. It is not intended to apply to pipe bridges or other linear structures that may cross the bed at an angle to the direction of water flow.

- (t) In a Natural Stream Management Area in a Water Supply Management Area the provisions of clause (h) relating to 900mm culvert and pipe diameter and the restriction on multiple culverts shall apply; in the rest of the Water Supply Management Area the provisions of clause (ii) relating to 1200mm culvert and pipe diameter and the restriction on multiple culverts shall apply.

#### 7.5.5.2 General New Structure Conditions applying to the Use, Erection or Placement of New Structures

Any new structure permitted by Rule 7.5.5 above shall comply with the following General New Structure Conditions:

- (a) The length of any new structure shall not exceed 30 metres in total when measured parallel to the direction of water flow, and no new structure shall be erected or placed in individual lengths of 30 metres or less where this would progressively encase or otherwise modify the bed of a *Permanent river or stream*;
- (b) Other than provided for by Rule 6.5.52, the activity shall not involve the use, erection or placement of any dam that increases the height or storage capacity of the dam;

*Note: The rules relating to the damming of surface water are set out in Chapter 6 Rules 6.5.51 to 6.5.70.*

- (c) The activity shall not result in an increase to existing flood levels on land or structures other than that owned or controlled by the person undertaking the activity;
- (d) The activity shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream;
- (e) The activity shall not compromise the structural integrity of the structure;
- (f) Any discharge of sediment directly associated with the activity shall be minimised by the use of best practice erosion and sediment control measures.
- (g) The General Performance Conditions in Rule 7.5.6.

### 7.5.6 General Performance Conditions Applying To Rules 7.5.3, 7.5.4 and 7.5.5

The following conditions apply to all activities in the bed of a lake or *Permanent river or stream* that are undertaken as part of the following rules:

- Permitted Activity Rule 7.5.3: Maintenance, Repair, Reconstruction, Placement, Alteration or Extension of Existing Structures:
- Permitted Activity Rule 7.5.4: Removal or Demolition of Existing Structures:

- Permitted Activity Rule 7.5.5: Erection or Placement of New Structures:

- (a) The passage of fish both up and down stream shall be maintained, where it already occurs on existing structures and provision shall be made for fish passage on new structures. Where structures are removed or demolished the bed shall be restored to a profile that enables the passage of fish where this is relevant and practicable;
- (b) Condition (a) does not prevent temporary restrictions on fish passage to enable work to be carried out in accordance with the other conditions of Rules 7.5.2 to 7.5.6. However temporary restrictions shall not be in place for a length of time that causes significant adverse effects on the ability of fish to migrate up and down the stream during the period September to February;

[See explanation note relating to the provision of fish passage at end of rule]

- (c) Provision if necessary and where practicable shall be made for the temporary diversion of the *Permanent river or stream* flow around the extent of the works while the activity is undertaken. Where temporary diversions are constructed they shall be able to cater for typical flows for the river or stream at the time of the year that the work is carried out and the adverse effects of the flow exceeding the diversion shall be minimised;
- (d) Following completion of the activity maintenance and construction material or maintenance or construction ancillary structures shall be removed from the bed as far as practicable;
- (e) There shall be no use of explosives in the bed of the lake or *Permanent river or stream* when undertaking the activity;
- (f) The activity shall not involve the placement of any *waste material*, including but not limited to vehicle bodies, tyres, demolition rubble or clean fill;
- (g) Any bed disturbance or deposition associated with the activity shall comply with the following conditions:
  - (i) The length of bed disturbance upstream or downstream of the structure shall not exceed 10 metres each side. This disturbance length excludes the structure itself;
  - (ii) Any bare earth surfaces on that part of the bed that is above the water level or wetted cross section of the lake or *Permanent river or stream* shall be stabilised against erosion as soon as practicable after completion of the activity;
  - (iii) The mixing of construction materials (such as concrete), or the refuelling or maintenance of equipment associated with the activity shall use best practice methods to avoid the discharge of contaminants into the lake, river or stream;
  - (iv) The activity shall not remove, damage or destroy any other existing structure and where any vegetation used for flood protection or erosion control purposes is removed, damaged or destroyed, it shall be replaced;
  - (v) Machinery shall not sit directly on the wetted cross section of the bed at the time of the work;
  - (vi) Conditions (g) i and iv do not apply to the necessary trimming or removal of vegetation around structures owned by operators of *regionally significant infrastructure* to ensure public health and safety and the operational integrity of the structures or network;
- (h) Debris or other material cleared or removed from upstream or downstream of a structure shall not be re deposited elsewhere in the bed of the lake or *Permanent river or stream*, or on any adjacent land in a manner or at a location, where it will

enter any waterbody;

- (i) The activity shall not disturb any *wāhi tapu* or other *archaeological site* including those identified in any regional or district plan, in the Archaeological Association's Site Recording Scheme or by the Historic Places Trust, except where the Historic Places Trust approval as been obtained;
- (j) In the event that an *archaeological site* or *wāhi tapu* is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as possible. The activity shall not be re-commenced without the approval of the ARC.

#### **Explanation**

*General activities in Intermittent streams unable to comply with one or more of the conditions in Rule 7.5.1 are assessed under Controlled Activity Rule 7.5.7.*

*General activities in Permanent rivers or streams unable to comply with one or more of the conditions of Rules 7.5.2 to 7.5.6 are assessed under Restricted Discretionary Activity Rule 7.5.9.*

*Activities required by a condition of a consent for a diversion of stormwater or discharge of stormwater or wastewater authorised under Rules 5.5.10, 5.5.11 and 5.5.12 of Chapter 5, that are unable to comply with one or more of the conditions of Rule 7.5.2 to 7.5.6 are assessed under Controlled Activity Rule 7.5.8.*

*Refer also to Rules 6.5.54 of Chapter 6: Water Allocation relating to the temporary damming of water associated with activities in the bed of a Permanent river or stream.*

*In determining whether any culvert complies with General Condition (a) above relating to fish passage, reference should be made to ARC Technical Publication 131: Fish Passage - Review and Guidelines for the Auckland Region (ARC, June 2000).*

#### **Controlled Activities**

- 7.5.7** The use, erection, reconstruction, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of an *Intermittent stream*, and the repair and maintenance of the structure, and any associated bed disturbance or deposition, and any associated diversion of water that does not comply with permitted activity conditions in Rule 7.5.1 is a Controlled Activity.

- 7.5.7.1** The ARC will exercise its control over the following matters when assessing applications under Rule 7.5.7:
- (a) the methods used to avoid, remedy or mitigate the actual and potential effects (including any cumulative effects) arising from the matters in the conditions of Rule 7.5.1 that the activity is unable to comply with, together with the following additional matters:
  - (b) the duration of the consent;
  - (c) the monitoring of the consent.

- 7.5.8** Other than as provided for by Rules 7.5.2 to 7.5.6 the use, erection, *reconstruction*, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a *lake* or *Permanent river or stream*, and the repair and *maintenance* of the structure, and any associated bed disturbance or deposition, and any associated diversion of water, is a Controlled Activity, subject to the following standards and terms:
- (a) The activity (other than for a *dam* structure on the bed of a *Permanent river or stream* as that activity is regulated by Rules 6.5.56 and 6.5.62 of Chapter 6) is required by a condition of a consent for a *diversion of stormwater* or discharge

of *stormwater* or *wastewater* authorised under Rules 5.5.10, 5.5.11 and 5.5.12 of Chapter 5 and it is unable to comply with one or more of the conditions of Rules 7.5.2 to 7.5.6;

- (b) The structure is not located in a Natural Stream or Wetland Management Area.

**7.5.8.1** The ARC will exercise its control over the following matters when assessing applications under Rule 7.5.8:

- (a) The actual and potential adverse effects (including any cumulative effects) arising from the matters in the conditions of Rules 7.5.2 to 7.5.6 that the activity is unable to comply with, together with the following additional matters:
- (b) The method of diversion and discharge (inlet works, *overland flow path*, outlet works and *erosion control* works) and the effects arising from the method chosen;
- (c) Effects on *archaeological sites*, *wāhi tapu* and the matters listed in Policy 2.3.4.4;
- (d) The duration of the consent;
- (e) The monitoring of the consent;
- (f) The timing and nature of reviews of consent conditions; and
- (g) The requirement for and conditions of a bond or financial contribution.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Restricted Discretionary Activities

**7.5.9** Other than as provided for by Rules 7.5.2 to 7.5.6 and 7.5.8, the use, erection, *reconstruction*, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a *lake* or *Permanent river or stream*, and the repair and *maintenance* of those structures, and any associated bed disturbance or deposition, and any associated diversion of water is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) The structure is not located in a Natural Stream or Wetland Management Area; and
- (b) Inside Urban Areas any culvert, pipe or channel or other linear structure is greater than 30 metres in length when measured parallel to the direction of water flow and has a diameter greater than that provided by Rule 7.5.5.1 (h); or
- (c) Outside *Urban Areas* other than in Water Supply Management Areas any culvert, pipe, channel or other linear structure outside Urban Areas is less than or equal to 30 metres in length when measured parallel to the direction of water flow, but has a diameter greater than that provided by Rule 7.5.5.1 (i);

**7.5.10** The ARC will restrict the exercise of its discretion under Rule 7.5.9 to the following matters:

- (a) The actual and potential adverse effects (including any cumulative effects) arising from any matters in the conditions of Rules 7.5.2 to 7.5.6 that the activity is unable to comply with, together with the following additional matters:
- (b) The method of diversion and discharge (inlet works, overland flow path, outlet works and erosion control works) and the effects arising from the method chosen;

- (c) The cumulative effects of culverts, pipes, channels and tunnels and other linear structures on the natural character of any *Permanent river or stream*, including effects on riparian vegetation having regard to the Urban River and Stream Management Framework where relevant;
- (d) The degree to which the activity meets the outcomes of any structure plan, *Integrated Catchment Management Plan*, flood management plan or approved stormwater or wastewater network resource consent which has assessed whether the *Permanent river or stream* should be used, developed or protected;
- (e) Inside *Urban Areas* whether the pre structure flow rate of the *Permanent river or stream* is sufficient to sustain natural aquatic habitat values;
- (f) Effects on *archaeological sites*, *wāhi tapu* and the matters listed in Policy 2.3.4.4;
- (g) The duration of the consent;
- (h) The monitoring of the consent;
- (i) The timing and nature of reviews of consent conditions; and
- (j) The requirement for and conditions of a bond or financial contribution.

**7.5.11** The erection, *reconstruction*, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a *lake* or *Permanent river or stream*, and the repair and *maintenance* of those structures, and any associated bed disturbance or deposition, and any associated diversion of water is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) In Natural Lake, Natural Stream and Wetland Management Areas the structure is for the purpose of environmental enhancement and restoration activities; or
- (b) In Natural Lake and Natural Stream Management Areas the structure is a new swing or pile mooring; or
- (c) In Water Supply Management Areas:
  - (i) the structure is for *municipal water supply* purposes and includes access roads;
  - (ii) the structure is not located in a Wetland Management Area; and
  - (iii) any culvert, pipe, channel or other linear structure is greater than 10 metres in length when measures parallel to the direction of water flow and has a diameter greater than that provided by Rule 7.5.5.1 (h) or (i); or
- (d) Other than provided for by Rule 7.5.8, the structure implements an approved resource consent.

**7.5.11.1** The ARC will restrict the exercise of its discretion under Rule 7.5.11 to the following matters (where they are relevant to the management area):

- (a) The actual and potential adverse effects (including any cumulative effects) arising from the relevant matters in the conditions of Rules 7.5.2 to 7.5.6 that the activity is unable to comply with, together with the following additional matters:
- (b) The method of diversion and discharge (inlet works, *overland flow path*, outlet works and *erosion control* works) and the effects arising from the method chosen;
- (c) The cumulative effects of *culverts*, pipes, channels and tunnels on the *natural character* of any *Permanent river or stream* having regard to the Urban River and Stream Management Framework where this is relevant for structures that implement and approved resource consent in terms of standard and term (c) above;

- (d) In Natural Stream Management Areas in a Water Supply Management Area the effects of structures for *municipal water supply on the natural character, ecological, heritage, amenity and recreational values of the river or stream, including methods to avoid, remedy or mitigate adverse effects*;
- (e) Effects on *archaeological sites, wāhi tapu* and the matters listed in Policy 2.3.4.4;
- (f) The location, method, timing and duration of the activity;
- (g) The duration of the consent;
- (h) The monitoring of the consent;
- (i) The timing and nature of reviews of consent conditions; and
- (j) The requirement for and conditions of a bond or financial contribution.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

**7.5.12** Other than as provided for by Rules 7.5.2 to 7.5.6 and 7.5.8 to 7.5.11, the use, erection, *reconstruction*, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a *lake* or *Permanent river or stream*, and the repair and *maintenance* of those structures, and any associated bed disturbance or deposition, and any associated diversion of water is a Discretionary Activity, subject to the following standard and term:

- (a) In Water Supply Management Areas, other than Hays Creek Water Supply Management Area, the structure is not located in a Wetland Management Area.
- (b) Outside Water Supply Management Areas, the structure is not located in a Natural Stream or Wetland Management Area.

(For Rule 7.5.12 see also Policies 7.4.1 to 7.4.18)

#### Non-Complying Activities

**7.5.13** Other than as provided for by Rules 7.5.2 to 7.5.6 and 7.5.8 to 7.5.12, the use, erection, *reconstruction*, placement, alteration, extension, removal or demolition of any structure or part of any structure in, on, under or over the bed of a *lake* or *Permanent river or stream*, and the repair and *maintenance* of those structures, and any associated bed disturbance or deposition and any associated diversion of water is a Non-Complying Activity.

#### Disturbance

##### Permitted Activities

##### Explanation

These rules do not apply to *artificial watercourses* such as irrigation canals, water supply races, canals for the supply of water for electricity power generation and *farm drainage canals* and roadside drain and water table except where the roadside drain or water table is a modified element of a natural drainage system.

Rules 6.5.20 to 6.5.28 regulate the *drilling* of a *bore*, and bed disturbance activities related to the *drilling* of a *bore* will also need to comply with these Chapter 6 provisions.

Note that District Plans may contain rules that apply to vegetation and tree removal and nothing in this chapter authorises any activity that is controlled by another Plan



*prepared under the RMA and pursuant to which a resource consent is required.*

- 7.5.14** Any disturbance, removal, damage or destruction of any exotic or indigenous plant, or part of any plant, or the habitats of any such plants, or of animals, or any excavation, **drilling** or tunnelling or other disturbance in, on, or under the bed of a **Intermittent stream** is a Permitted Activity, if it complies with the following conditions:
- (a) The activity shall not result in an increase to existing flood levels on land or structures other than that owned or controlled by the person undertaking the activity;
  - (b) The activity shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream of the works;
  - (c) Any discharge of sediment directly associated with the activity shall be minimised by the use of best practice erosion and sediment control measures;
  - (d) The mixing of construction materials (such as concrete), or the refuelling or maintenance of equipment associated with the activity shall not occur in the wetted cross section bed of the watercourse and shall use best practice methods to avoid the discharge of contaminants into the river or stream;

*Note: Rules 7.5.15 to 7.5.19 which manage vegetation disturbance do not apply to Intermittent streams.*

- 7.5.15** Any disturbance, removal, damage or destruction of any exotic or indigenous plant, or part of any plant, or the habitats of any such plants, or of animals, or any excavation (other than **dredging**), **drilling**, tunnelling, or other disturbance in, on or under the bed of a **lake** or **Permanent river or stream**, and any associated discharge of sediment, is a Permitted Activity, subject to the following conditions:

**General Conditions Applying to all Types of Bed Disturbance**

- (a) The activity does not divert any part of the **lake** or **Permanent river or stream** to a new course and does not result in the infilling of the existing bed;
- (b) The continuous length of any bed disturbance shall not exceed 100 metres;
- (c) A period in excess of 2 months shall elapse before an area is disturbed within 100 metres of a previously disturbed area in the same **lake** or **Permanent river or stream**;
- (d) Conditions (b) and (c) shall not apply to a Type 5 or 6 Urban River or Stream;
- (e) The activity shall not occur in a Natural Lake, Natural Stream or Wetland Management Area, unless it is a normal and reasonable incident of recreational use, or some similar activity such as walking, tramping or swimming;
- (f) Machinery shall not sit directly on the wetted cross section of the bed at the time of the work;
- (g) Any materials used shall not be toxic to aquatic organisms;
- (h) **Public access** shall not be restricted to an extent or for a period greater than necessary to complete the activity;
- (i) All reasonable steps shall be taken to minimise the release of sediment into the water during the activity;
- (j) Any bare earth surfaces on that part of the bed that is above the water level or wetted cross section of the river or stream shall be stabilised against erosion as soon as practicable after completion of the bed disturbance;
- (k) Any discharge of contaminants shall comply with the provisions of the Other Discharges of Contaminants section in Chapter 5: Discharges to Land or Water

and Land Management;

- (l) The refueling or maintenance of equipment associated with the activity shall use best practice methods to avoid the discharge of contaminants to the *lake*, river or stream;
- (m) Debris or other material cleared shall not be re-deposited elsewhere in the bed of the lake or Permanent river or stream bed, or on any adjacent land in a manner or location where it would enter any waterbody;
- (n) The *lake* or *Permanent river or stream* bed shall be restored to a profile that does not inhibit water flow or the safe passage of fish and other aquatic organisms both upstream and downstream;
- (o) The disturbance shall avoid the removal, damage or destruction of any lawful structure, or any plant used for flood protection or *erosion control* purposes and where this is not practicable, the structure or plant shall be reinstated at the completion of the activity;
- (p) There shall be no use of explosives in the bed of the *lake* or *Permanent river or stream when undertaking the activity*;
- (q) The activity shall not disturb any *wāhi tapu* or other *archaeological site* including those identified in any regional or district plan, in the NZ Archaeological Association's Site Recording Scheme, or by the Historic Places Trust, except where the Historic Places Trust approval has been obtained;
- (r) In the event that an *archaeological site* or *wāhi tapu* is discovered while undertaking the activity, the activity shall cease immediately and the ARC shall be notified as soon as possible. The activity shall not be recommenced without the approval of the ARC;
- (s) Conditions (b), (c), (e), and (o) do not apply to the necessary trimming or removal of vegetation around structures owned by operators of *regionally significant infrastructure* to maintain the operational integrity of the structure or network and to ensure public health and safety.

#### Specific Disturbance Conditions

- (i) The removal of mangroves is for the purposes of:
  - (a) gaining access to a lawful structure;
  - (b) maintaining an existing boat access or existing boat launching site;
  - (c) providing for public safety;
  - (d) maintaining drainage away from a stream mouth, stormwater outfall or other drainage structure; or
  - (e) use by iwi for traditional harvesting purposes;
 and
  - (f) the total area cleared shall not at any time exceed 200 m<sup>2</sup>.
- (ii) Any extraction of sand, shingle or gravel from the bed of any *Permanent river or stream*:
  - (a) shall not exceed 50 cubic metres per twelve month period;
  - (b) shall not take place in any Natural Stream or Wetland Management Area;
  - (c) shall only be used on the property immediately adjoining the site of the extraction; and

- (d) shall not lead to instability of the bank in the immediate vicinity.
- (iii) Where the activity is for the maintenance or restoration of a legal vehicular access along or across a river bed and the bed substrate is unconsolidated sand, general conditions (b) and (f) shall not apply;
- (iv) Where the activity is to implement an approved Pest Management Strategy prepared in accordance with the Biosecurity Act 1993:
  - (a) The eradication or removal of the plant shall comply with the provisions of the approved Pest Management Strategy, including any supporting documents relating to the means of removal;
  - (b) The ARC is advised of the commencement and completion date of any approved works;
  - (c) Where monitoring is required as part of an approved Pest Management Strategy, the ARC is provided with a copy of the information collected; and
  - (d) General Conditions (b), (c) and (d) of Rule 7.5.11 shall not apply.
- (v) The activity may be undertaken for emergency purposes to clear trees, debris, sediment or other material deposited during storm and/or flood events from the bed of a **Permanent river or stream** where this material is causing or is likely to cause an immediate hazard to people or property, subject to the following conditions:
  - (a) The activity shall not take place in a Wetland Management Area;
  - (b) For the avoidance of doubt only General Conditions (a), (g) to (j) and (l) to (r) shall apply;
  - (c) All practicable steps shall be taken to minimise the use of machinery in the bed and the area of bed disturbed shall be limited to the immediate area of the hazard.

**Explanation:**

*Other than as provided for by Rule 7.5.16, activities unable to meet one or more of General Conditions (a) to (q) and Specific Disturbance Conditions i to v of Rule 7.5.15 are considered under Rule 7.5.20.*

- 7.5.16** Any disturbance, removal, damage or destruction of any exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, in, on or under the bed of any **lake**, or **Permanent river or stream** and any associated bed disturbance and deposition and any associated discharge of sediment is a Permitted Activity, where:
- (a) the activity is undertaken by handheld methods which only give rise to minor and temporary bed disturbance; or
  - (b) the use of chemicals complies with the Application of Agrichemicals rules in Chapter 4A; or
  - (c) where the plant is in a Natural Lake, Natural Stream or Wetland Management Area, removal is only for plant pest control, or to gain access to a lawful structure, or is for the maintenance, restoration and enhancement of the natural values of the Management Area and the disturbance, removal, damage or destruction complies with conditions (a) and (b) above
  - (d) General Conditions (g) to (r) of Rule 7.5.15 shall apply in all circumstances.

**Controlled Activities**

- 7.5.17** Any disturbance, removal, damage or destruction of any exotic or indigenous plant, or part of any plant, or the habitats of any such plants, or of animals, or any excavation, **drilling** or tunneling or other disturbance in, on, or under the bed of an **Intermittent**

*stream* that does not comply with the permitted activity conditions in Rule 7.5.14 is a Controlled Activity.

**7.5.17.1** The ARC will exercise its control over the following matters when assessing applications under Rule 7.5.17:

- (a) the actual and potential effects (including any cumulative effects) arising from the matters in the conditions of Rule 7.5.14 that the activity is unable to comply with, together with the following additional matters:
- (b) the duration of the consent;
- (c) the monitoring of the consent;

**7.5.18** Other than provided for under Rules 7.5.15 and 7.5.16 any disturbance, removal, damage or destruction of any exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, or any excavation (other than *dredging*), *drilling*, tunnelling or other disturbance in, on or under the bed of a *lake* or *Permanent river or stream* and any associated discharge of sediment which is for *stormwater* or *wastewater* management purposes is a Controlled Activity subject to the following standards and terms:

- (a) The activity is required either
  - (i) by a condition of a consent for a *diversion of stormwater* or discharge of *stormwater* or *wastewater* authorised under Rules 5.5.10, 5.5.11 or 5.5.12 and it is unable to comply with one or more of the conditions of Rules 7.5.15 or 7.5.16; or
  - (ii) for the purpose of maintaining a lawful on-stream *stormwater* management pond or other impoundment structure and is unable to comply with one or more of the conditions of Rule 7.5.15;

and

- (b) The activity does not divert any part of the *Permanent river or stream* to a new course and does not result in the infilling of the existing bed.

**7.5.18.1** The ARC will exercise its control over the following matters under Rule 7.5.18:

- (a) Any actual or potential adverse effects (including cumulative effects) arising from the matters in the General Conditions of Rule 7.5.15 that the activity is unable to comply with, together with the following matters:
- (b) The content and implementation of an Erosion and Sediment Control Management Plan;
- (c) Effects on *archaeological sites*, *wāhi tapu* and the matters listed in Policy 2.3.4.4;\_
- (d) The duration of the consent;
- (e) The monitoring of the consent;
- (f) The timing and nature of reviews of consent conditions; and
- (g) The requirement for and conditions of a bond or financial contribution.

#### Non notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

### Restricted Discretionary Activities

**7.5.19** Other than provided for by Rule 7.5.18, any disturbance, removal, damage or destruction of an exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, or any excavation, *drilling*, tunneling, or other disturbance in, on or under the bed of a *lake* or *Permanent river or stream* and any associated discharge of sediment, which does not meet the conditions of Permitted Activity Rules 7.5.15 or 7.5.16 is a Restricted Discretionary Activity, subject to the following standards and terms:

- (a) The activity does not divert any part of the *Permanent river or stream* to a new course and does not result in the infilling of the existing bed; and
  - (b) The activity does not involve the *commercial extraction* of sand, gravel, shingle or other natural material, or dredging in, on or under the bed of any *lake* or *Permanent river or stream*; and
  - (c) In Natural Lake, Natural Stream or Wetland Management Areas disturbance, removal, damage or destruction of plants is limited to:
    - (i) the harvesting of exotic or introduced species that were planted for production purposes prior to 23 October 2001; or
    - (ii) the maintenance, restoration or enhancement of the natural ecological values of the *lake*, *Permanent river or stream*, or wetland;
- or
- (d) in Natural Lake, Natural Stream and Wetland Management Areas the activity is undertaken by handheld methods but the other conditions of Permitted Activity Rule 7.5.16 are unable to be complied with.
- or
- (e) In Natural Stream Management Areas in Water Supply Management Areas, the activity is to ensure the maintenance and operation of *municipal water supply* infrastructure.
- or
- (f) in the Hunua Road Wetland Management Area in the Hays Creek Water Supply Management Area, the activity is to ensure the maintenance and operation of *municipal water supply* infrastructure.

**7.5.19.1** The ARC will restrict the exercise of its discretion under Rule 7.5.19 to the following matters:

- (a) The degree to which the activity meets the outcomes of any structure plan, ICMP, flood management plan or approved stormwater or wastewater network resource consent which has assessed whether the *Permanent river or stream* should be used, developed or protected;
- (b) The extent to which the activity is consistent with the Urban River and Stream Management Framework;
- (c) In Natural Stream Management Areas in a Water Supply Management Area the effects of structures for *municipal water supply* on the natural character, ecological, heritage, amenity and recreational values of the river or stream, including methods to avoid, remedy or mitigate adverse effects;
- (d) In the Hays Creek Water Supply Management Area the effects on the Hunua Road Wetland Management Area and options to avoid, remedy or mitigate disturbance or loss of the wetland area;

- (e) The amount of any bed disturbance;
- (f) The method, timing and duration of the disturbance;
- (g) The proposed control measures to minimise the discharge of sediment from the bed disturbance activity;
- (h) The discharge of any other contaminants, except where provided for as a permitted activity in Chapter 5: Discharges to Land and Water and Land Management;
- (i) The disposal of material removed from the bed;
- (j) Any significant adverse effects on the habitat of flora and fauna, including riparian margins;
- (k) Any temporary or permanent effects from the activity on *public access* along the bed of the *lake* or *Permanent river or stream*;
- (l) Any temporary or permanent effects from the activity on other users of the *lake*, or *Permanent river or stream*, including *surface water* takes;
- (m) Measures to stabilise earthwork surfaces and to rehabilitate any riparian margins affected by the work;
- (n) Measures to ensure that the bed profile enables safe passage of fish upon completion of the disturbance;
- (o) Effects on *archaeological sites*, *wāhi tapu* and the matters listed in Policy 2.3.4.4;
- (p) The duration of the consent;
- (q) The monitoring of the consent;
- (r) The timing and nature of reviews of consent conditions; and
- (s) The requirement for and conditions of a bond or financial contribution.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

- 7.5.20** The *commercial extraction* of sand, gravel and shingle or other natural material, or *dredging* in, on or under the bed of any *Permanent river or stream*, except in any Natural Stream or Wetland Management Area is a Discretionary Activity.

(For Rule 7.5.21 see also Policies 7.4.1, 7.4.3, 7.4.9, 7.4.19, 7.4.20 and 7.4.22)

- 7.5.21** Any disturbance, removal, damage or destruction of an exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, or any excavation, *drilling*, tunneling, or other disturbance in, on or under the bed of a *Permanent river or stream* and any associated discharge of sediment, for the purpose of diverting the *Permanent river or stream* to a new course and the associated infilling of the existing bed, and the diversion of water is a Discretionary Activity, subject to the following standards and terms:

- (a) Other than the Hays Creek Water Supply Management Area, the bed disturbance and diversion of water is not in a Wetland Management area;

- (b) Outside Water supply Management Areas, the structure is not located in a Natural Stream or Wetland Management Area.

(For Rule 7.5.21 see also Policies 7.4.1 to 7.4.11, 7.4.14, 7.4.15, 7.4.21 and 7.4.22)

#### Non Complying Activities

- 7.5.22** The *commercial extraction* of sand, gravel and shingle or other natural material, or *dredging* in, on or under the bed of any Natural Lake, Urban Lake, Natural Stream or Wetland Management Area is a Non-Complying Activity.
- 7.5.23** Any disturbance, removal, damage or destruction of an exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, or any excavation, *drilling* or tunneling or other disturbance in, on, or under the bed of a *Permanent river or stream* and any associated discharge of sediment, for the purpose of diverting a *Permanent river or stream* to a new course, and the associated infilling of the existing bed and the diversion of water in a Natural Stream or Wetland Management Area is a Non-Complying Activity.
- 7.5.24** Other than provided for by Rule 7.5.15 General Conditions (e) and (s), Rule 7.5.16 (c), Rule 7.5.18, and Rule 7.5.19 (c) and (d), any disturbance, removal, damage or destruction of an exotic or indigenous plant or part of any plant, or the habitats of any such plants, or of animals, or any excavation, *drilling*, tunneling, or other disturbance in, on or under the bed of any Natural Lake, Natural Stream or Wetland Management Area and any associated discharge of sediment is a Non-Complying Activity.

#### Introduction or Planting of Plants

##### *Explanation*

Rule 7.5.25 allows the introduction or planting of any indigenous or *exotic plant* in, on or under the bed of any *Intermittent stream* as a permitted activity, without reference to any other rules in this chapter.

The introduction or planting of indigenous or *exotic plant* in, on or under the bed of any *lake* or *Permanent river or stream* to remedy or mitigate effects of any, activity which requires a resource consent under other rules in this chapter (for example remedial or restoration works associated with the erection of structures, various forms of bed disturbance or *reclamation*) is considered as part of the resource consent application for that activity. In assessing proposals for remedial or restoration planting for activities controlled under other rules in the Plan, the ARC will have regard to the objectives and policies of this section.

Rules relating to the removal of vegetation, including plant pest species from the bed of a *lake* or *Permanent river or stream* are in the provisions relating to Disturbance.

#### Permitted Activities

- 7.5.25** The introduction or planting of any indigenous or *exotic plant* in, on, or under the bed of any *Intermittent stream*, provided that the plant is a species which is non-invasive in aquatic conditions is a Permitted Activity.
- 7.5.26** The introduction or planting of any indigenous or *exotic plant* in, on or under the bed of any *lake* or *Permanent river or stream* for the purpose of riparian zone management, or the introduction or planting of any indigenous plant for wetland establishment or restoration in, on or under the bed of any *lake* or *Permanent river or stream* provided that the plant is a species which is non-invasive in aquatic conditions is a Permitted Activity.

##### *Explanation*

When undertaking any planting under this rule reference should be made to relevant publications and guidelines, including the ARC Technical Report No 148; Riparian Zone



*Management: Strategy for the Auckland Region, June 2001 which contains information on suitable plant species, appropriate locations and planting patterns, invasive plant species and flood hazard mitigation.*

*Other information is also held by the ARC on appropriate species for soil conservation and wetland establishment and restoration.*

#### Discretionary Activities

- 7.5.27** The introduction or planting of any indigenous or **exotic plant** in, on or under the bed of any **lake** or **Permanent river or stream** that does not meet the conditions of Permitted Activity Rule 7.5.21 is a Discretionary Activity.

*(For Rule 7.5.27 see also Policies 7.4.1, 7.4.3, 7.4.8, 7.4.9, 7.4.23 and 7.4.24)*

#### Prohibited Activities

- 7.5.28** The introduction or planting of any plant named as a pest in a pest management strategy prepared under the Biosecurity Act 1993 in, on or under the bed of any **lake**, river or stream, or any plant declared as an unwanted organism by a Chief Technical Officer constituted under the same Act is a Prohibited Activity.

#### Deposition of Substances

*These rules do not relate to the discharge of sediment arising from earthwork activities on land which is controlled by the Regional Plan: Sediment Control, or to the deposition of silt conveyed or captured by stormwater systems which is managed by the stormwater rules in Chapter 5. The deposition of sediment or other material associated with the construction and use of structures is addressed in the structures rules and the deposition of sediment associated with bed disturbance activities is controlled by the disturbance rules in this chapter.*

#### Permitted Activities

- 7.5.29** The **deposition of** soil, rock or other **cleanfill** material in, on or under the bed of an **Intermittent stream** is a Permitted Activity if it complies with the following conditions:
- (a) the activity shall not result in an increase to existing flood levels on land or structures other than that owned or controlled by the person undertaking the activity;
  - (b) the activity shall not cause more than minor bed erosion, scouring or undercutting immediately upstream or downstream of the works;
  - (c) Any discharge of sediment directly associated with the activity shall be minimised by the use of best practice erosion and sediment control measures.

#### Controlled Activities

- 7.5.30** The **deposition of** soil, rock or other **cleanfill** material in, on, or under the bed of an **Intermittent stream** that does not comply with the permitted activity conditions in Rule 7.5.29 is a Controlled Activity.

- 7.5.30.1** The ARC will exercise its control over the following matter when assessing applications under Rule 7.5.30:

- (a) the actual and potential effects (including any cumulative effects) arising from the matters in the conditions of Rule 7.5.29 that the activity is unable to comply with, together with the following additional matters:
- (b) the duration of the consent;
- (c) the monitoring of the consent;

#### Non-Notification

Applications for controlled activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

- 7.5.31** The *deposition of any substance* in, on, or under the bed of any *lake* or *Permanent river or stream* for the purposes of habitat enhancement or scientific research is a Discretionary Activity.

(For Rule 7.5.31 see also Policies 7.4.1, 7.4.3, 7.4.8, 7.4.9, 7.4.19 and 7.4.22)

- 7.5.32** The deposition of dredged material in, on, or under the bed of any *Permanent river or stream* is a Discretionary Activity;
- (a) Except in a Natural Stream Management Area or Wetland Management Area; and
  - (b) The material to be deposited comes from the same *Permanent river* or catchment where it was dredged.

(For Rule 7.5.32 see also Policies 7.4.1, 7.4.3, 7.4.7, 7.4.9 and 7.4.22)

#### Non-Complying Activities

- 7.5.33** The *deposition of any other substance* in, on, or under the bed of any *lake* or *Permanent river or stream* not covered by another rule in this Plan is a Non-Complying Activity.

#### Prohibited Activities

- 7.5.34** The deposition of litter, refuse and other *waste* material in, on, or under the bed of any *lake* or *Permanent river or stream* is a Prohibited Activity.

#### Reclamation and Drainage

##### Permitted Activities

- 7.5.35** The construction and use of any new *reclamation* or *drainage* of the bed of an *Intermittent stream* or the *reconstruction*, alteration, removal or demolition of an existing *reclamation* or drained area affecting any *Intermittent stream* is a Permitted Activity.

##### Restricted Discretionary Activities

- 7.5.36** The construction and use of any new *reclamation* or *drainage*, or the *reconstruction*, extension, alteration, removal or demolition of an existing *reclamation* or drained area of the bed of any *lake* or *Permanent river or stream*, and any directly associated activities and structures for *reclamation* or *drainage* in, on, under or over the bed, and any associated diversion of water, where the activity implements an approved resource consent is a Restricted Discretionary Activity.

- 7.5.36.1** The ARC will restrict the exercise of its discretion under Rule 7.5.35 to the following matters:

- (a) Any actual or potential adverse effects (including cumulative effects) on the bed of the *lake* or *Permanent river or stream* arising from the *reclamation* or *drainage* activity;
- (b) The method of construction, *reconstruction*, extension, alteration, removal or demolition of the *reclamation* or *drainage* activity;
- (c) The duration of the consent;
- (d) The monitoring of the consent;

- (e) The timing and nature of reviews of consent conditions; and
- (f) The requirement for and conditions of a bond or financial contribution.

#### Non notification

Applications for restricted discretionary activities shall be considered without public notification or the need to serve notice of the application on affected persons in accordance with Sections 95A(3) and 95B(2) of the RMA, unless in the opinion of the ARC there are special circumstances justifying public notification in accordance with Section 95A(4) of the RMA.

#### Discretionary Activities

- 7.5.37** Any *reconstruction*, alteration, removal or demolition of an existing *reclamation* or drained area of the bed of any *lake* or *Permanent river or stream* and any directly associated activities and structures for *reclamation* or *drainage* in, on, under or over the bed and any associated diversion of water is a Discretionary Activity.

(For Rule 7.5.37 see also Policies 7.4.1, 7.4.3, 7.4.7, 7.4.9 and 7.4.25 to 7.4.28)

#### Non-Complying Activities

- 7.5.38** The construction and use of any new *reclamation* or *drainage*, or the extension of any existing *reclamation* or drained area of the bed of any *lake* or *Permanent river or stream*, any directly associated activities and structures for *reclamation* and *drainage* in, on, under or over the bed of any *lake*, river or stream and any associated diversion of water is a Non-Complying Activity.

## 7.6 Other Methods

- 7.6.1** The ARC will produce and distribute, in conjunction with other agencies and groups with similar management responsibilities or interests, educational material and information on protecting the natural values of the Auckland Region's *lake*, rivers and streams. This includes the production of posters, explanatory guidelines, fact sheets and general and technical reports.
- Brochures and information sheets relevant to the management of lakes, rivers and streams include technical guidelines on riparian planting, brochures and information sheets on wetland protection, the management of indigenous forests, plant and animal pests (Pestfacts) and in stream dams. These publications are regularly updated, and further information on current publications can be obtained from the Auckland Regional Council.
- 7.6.2** The ARC will work in conjunction with landowners and all other relevant groups to encourage riparian planting of the margins of *lakes*, wetland, rivers and streams and to undertake animal and plant pest control. This partnership takes place through a range of mechanisms including providing technical advice to individuals and communities on issues of concern to them, working with Landcare Groups to implement their identified priorities for local action and providing funding through the Environmental Initiatives Fund. The Waicare programme involves community groups and schools in a community based water quality monitoring, education and action programme.
- 7.6.3** The ARC will work in conjunction with TAs to promote an integrated and consistent management regime for the beds of *lakes*, rivers and streams. Options for this include use of transfer of powers and statutory advocacy to district plans and other *TA* management documents.
- 7.6.4** The ARC will implement a consistent approach to the management of plant pests, as determined by the Auckland Regional Plant Pest Management Strategy (RPPMS) and

the management of environmental effects on the beds of *lakes*, rivers and streams, associated with their control.

**7.6.5** The ARC will work with the Ministry of Agriculture and Forestry on control programmes for the management of aquatic plants declared to be unwanted organisms (presently salvinia (*Salvinia molesta*), water hyacinth (*Eichornia crassipes*) and water lettuce (*Pistia stratiotes*)).

**7.6.6** The ARC will continue its research to determine the contribution made by *Intermittent streams* to the maintenance of water quality and water quantity in a catchment and the significance of these streams to the habitat values of *Permanent rivers or streams*. The findings of this research will be incorporated into this Plan.

See also Sections 5.6 and 6.6 which identify Other Methods relating to the management of water quality and water quantity in lakes, rivers and streams in the Auckland Region.

## 7.7 Anticipated Environmental Results

**7.7.1** That *lakes*, rivers, streams and wetlands with high ecological values are retained as far as practicable in their natural state.

**7.7.2** That the modification of other rivers and streams by activities in their beds is minimised to the greatest extent practicable.

**7.7.3** That beds of lakes and rivers within Urban Areas area used in a sustainable manner that enables land development and the operation of *regionally significant infrastructure* while adverse effects are minimized as far as practicable.

**7.7.4** That *reclamation* and *drainage* of *lakes*, rivers and streams is generally avoided.

**7.7.5** That fish and other migratory aquatic fauna are able to pass up and down *lakes*, rivers and streams and have access to and from the coastal marine area.



## 8 Financial Contributions

This chapter has been withdrawn.





## 9 Cross Boundary Processes

### 9.1 Introduction

*Section 67(2)(f) of the RMA states:*

*A regional plan may state the processes for dealing with issues –*

- (i) That cross local authority boundaries; or*
- (ii) That arise between territorial authorities; or*
- (iii) That arise between regions.*

There are seven territorial authorities within the Auckland Region managing the Region's air, land and water resources: Auckland City, North Shore City, Waitakere City, Manukau City, Rodney District, Franklin District, and Papakura District. There are two regional councils adjoining the Auckland Region: Waikato Regional Council (Environment Waikato) and Northland Regional Council. Significant 'cross-boundary' issues can arise in the management of these resources due to the responsibilities of the ARC and the other local authorities.

Under the RMA, the Mean High Water Springs boundary separates the primary management responsibilities for the land and water in the coastal environment between regional councils and territorial authorities. Seaward of Mean High Water Springs, the coastal marine area of the Auckland Region, is controlled and managed by the ARC in the Regional Plan: Coastal in conjunction with the Minister of Conservation.

### 9.2 Integrated Management

The RMA includes various provisions to address cross boundary issues and encourage the integrated management of the natural and physical resources of the Auckland region. The Auckland Regional Policy Statement states policies for the management of the region's air, land and water resources. District or regional plans are required to be not inconsistent with this document. There is provision within the RMA for the integration of administrative functions through joint and combined hearings with territorial authorities or adjacent regional councils when consent applications or the possible effects cross administrative boundaries.

Various other agencies, including the Ministry for the Environment, Ministry of Agriculture and Forestry, Department of Conservation and the New Zealand Historic Places Trust also have statutory responsibilities under other legislation for the management of natural and physical resources in the Auckland Region. Liaison between all agencies involved in the management of the region's air, land and freshwater resources is an important component of integrated management.

### 9.3 Significant Issues Which Cross Boundaries With The Auckland Region

The effects of some activities undertaken within a region can 'migrate' into other regions. Examples of such activities and the effects they can have in the Auckland Region include: competition for water from the allocation of surface and ground waterbodies, e.g. the Mangatangi, Mangatawhiri and Tuatenui Streams, and the Pukekohe Volcanic and Franklin Kaawa Aquifers which cross the boundary between the Auckland and Waikato Regions; the discharge of contaminants from the application of fertilisers; the discharge of contaminants into air from the application of agrichemicals;

and the discharge of sediment from soil cultivation. Accordingly, the sustainable management of the environment needs to consider an inter-regional perspective.

## 9.4 Significant Issues Which Cross Local Authority Boundaries Within The Auckland Region

Many activities that take place on land can have an effect on the Region's air, land and water resources. Section 30 (1)(c) of the RMA gives regional councils responsibility for controlling the use of land for a number of purposes, including soil conservation, the maintenance and enhancement of water quality, the maintenance of water quantity, and the avoidance or mitigation of natural hazards. Section 31(b) of the RMA gives territorial authorities responsibility for controlling the effects of the use of land. Therefore, both TAs and regional councils have responsibilities for land use relating to soil and water.

The effects of an activity undertaken within the coastal marine area, e.g. discharge of contaminants, or erection of structures, are also unconstrained by jurisdictional boundaries and have the potential to cause adverse effects on natural character and features, landscape, ecosystems, and public access outside the coastal marine area. Conversely, activities undertaken outside the coastal marine area but within the coastal environment e.g., subdivision and development, can have a significant effect on the coastal marine area by increasing sediment run-off or increasing hazard risk.

An intra-regional perspective is considered necessary to achieve the sustainable management of the environment.

## 9.5 Process Policies To Address Cross Boundary Issues

To promote the integrated management and use of the air, land and freshwater resources of the Auckland Region across administrative and jurisdictional boundaries, the following processes will be used:

- 9.5.1** When considering consent applications, regard shall be had to the effects of the activity on the provisions of any relevant district plan, regional plan, or other council-adopted planning document. A copy of any consent application which may have more than minor adverse effects across a regional boundary shall be referred to that regional council.
- 9.5.2** Liaison shall occur with adjoining regional councils and territorial authorities to promote integrated management and ensure as far as practicable that a consistent approach is maintained between resource management issues which cross territorial authority and regional council responsibilities.
- 9.5.3** Joint regional plans may be prepared by the relevant regional councils where this approach is the most efficient and effective means of ensuring a consistent management approach for resource management issues which cross regional council boundaries.
- 9.5.4** Liaison shall occur with other statutory bodies on legislative issues that affect the management of air, land and water resources in the Auckland Region.

## 10 Applications For A Resource Consent

### 10.1 Categories of Activities

The rules within this plan determine the category of any particular activity and whether a land use consent or water or discharge permit (resource consent) is required before the activity may be undertaken. No consent or permit is required for an activity that is specified as a permitted activity.

A consent or permit is required for any activity specified in this plan as controlled, restricted discretionary or discretionary, or for any activity that does not comply with the provisions of this plan (i.e. a non-complying activity). The plan also specifies prohibited activities for which no application can be made.

#### Permitted Activities

No resource consent is required, however any conditions or criteria that are specified must be complied with. Subject to such compliance, the activity can be carried out as of right.

#### Controlled Activities

A resource consent is required. In relation to Controlled Activities this plan states the standards and terms with which the activity must comply, and the matters over which the ARC will exercise control.

The ARC cannot refuse consent for a controlled activity that meets the standards and terms set out in the Plan. However conditions may be imposed in respect of the matters over which the ARC exercises control. If it does not meet the standards and terms the activity becomes either discretionary or non-complying, as specified in the plan.

#### Discretionary (including Restricted Discretionary) Activities

A resource consent is required, and the ARC may grant or refuse consent. In some instances the ARC has specified standards and terms and restricted its discretion to particular matters. These are called Restricted Discretionary Activities.

Other Discretionary Activities are those listed as such, in respect of which the ARC has retained full discretion.

#### Non-complying Activities

A resource consent is required and the ARC may grant or refuse consent. An activity is non-complying if it is not a permitted, controlled, or discretionary (including restricted discretionary) activity, and it is not listed as a prohibited activity.

Section 104 of the RMA sets out the matters to be considered by the ARC. The decision is made pursuant to sections 104B and 104D(1) of the RMA. The ARC cannot grant a resource consent for a non-complying activity unless it is satisfied that;

- (a) the adverse effects on the environment will be minor; or
- (b) granting the consent will not be contrary to the objectives and policies of the plan or proposed plan.

#### Prohibited Activities

No application may be made to undertake an activity that is listed as a prohibited activity.

## 10.2 Making an Application

It is recommended that prior to making an application for a resource consent you contact the ARC to discuss your proposed activity and find out what resource consents will be required. It is possible that you may also require a resource consent from the district or city council, therefore it is important to identify all the consents that are required at the outset to avoid unnecessary delays.

Consultation with people and parties, for example tangata whenua, who may be affected or interested in your proposal also forms an important part of the application process. The ARC will also be able to assist in identifying those parties you should consult in regard to your proposal.

The ARC has specific application forms available for each type of resource consent, which outline in detail the additional information you will need to provide about the effects of your activity on the environment. When discussing your proposal, staff will be able to assist you in identifying what aspects of your proposal will require an assessment of the effects and the level of detail you will be expected to provide.

All applications for a resource consent must be accompanied by the appropriate deposit fee. A deposit is payable when an application is lodged and further additional charges to cover the actual costs of processing the application will be charged if the deposit is exceeded.

In addition, all consent holders pay an annual charge to the ARC which is a contribution to the total costs of the council carrying out its functions under the RMA.

## 10.3 Information Requirements

Section 88(2) of the RMA requires that applications for resource consent must:

- (a) be made in the prescribed form and manner; and
- (b) include an assessment of the actual or potential effects that the activity may have on the environment and the ways in which any adverse effects may be mitigated; and

The assessment of effects submitted with an application needs to be sufficiently detailed to correspond to the scale and significance of the actual and potential effects that the activity may have on the environment.

This assessment needs to be prepared in accordance with the Fourth Schedule of the RMA. However any assessment of effects accompanying a controlled or limited discretionary activity application need only address those matters which the ARC is exercising its control or discretion over. It is recommended that applicants discuss this aspect of their application with an appropriate ARC staff member.

A description of any methods proposed to avoid, remedy or mitigate any adverse effects of the proposal should be included in the application.

## 10.4 Processing an application

Following receipt of an application, all applications are checked to make sure the correct application forms have been completed, the appropriate deposit fee has been paid and that there is enough information for the ARC to accept the application for processing.

Once it is accepted, the application will be passed to a consents officer for processing. That person(s) will assess the application, determine if any additional information is required, and whether the application needs to be publicly notified (including 'limited notification') or processed on a non-notified basis.

A request for additional information will result in the application being placed on hold until such time as the information requested is provided, leading to delays. It is therefore very important that applicants discuss their proposal with the ARC prior to lodging their application to reduce any potential delays and additional costs.

## 10.5 Notification of an application

Sections 95 to 95F of the RMA provide discretion as to whether an application needs to be publicly notified.

No resource consent is required for permitted activities, accordingly no notification or approval from other persons is necessary.

Applications for controlled or restricted discretionary activities will not generally be publicly notified, and approval from any affected persons will not generally be sought. However, there may be special circumstances relating to an application, which, in the opinion of the ARC justifies public notification or obtaining the written approval of affected parties. In some cases the Plan specifies that affected parties' approval will be required.

Applications for discretionary activities may be notified, unless the ARC is satisfied that the adverse effects of the activity will be minor. If the effects are considered minor but affected party approvals have not been obtained, the ARC may serve notice on the affected parties who then have the right to lodge a submission and follow a hearing process.

Applications for non-complying activities will usually be publicly notified. In order to grant consent for a non-complying activity, the ARC must be satisfied that the effects of the activity are minor, and that it will not be contrary to the objectives and policies of any relevant regional plan and/or proposed regional plan and there are no affected parties.

When a resource consent application is publicly notified, any person may make a submission to the application, either in support or opposition. All submissions must be lodged within 20 working days of the application being notified, unless otherwise stated.

If submissions cannot be resolved through discussion or negotiation, then the application will proceed to a resource consent hearing. Sections 104, 105 and 107 of the RMA are some of the relevant sections that set out the matters to be considered by the ARC. Under section 113 of the RMA, a written decision must be given to the applicant and any submitters within 15 working days following the conclusion of a hearing or, if no hearing is required, within 20 working days after receipt of the application or any further information is received pursuant to section 92, or the date on which the approval of all affected persons (if any) has been obtained under section 95E, whichever is the latest. All parties, i.e. the applicant and the submitters, are able to then appeal this decision to the Environment Court if they are unsatisfied with the outcome.



## 11 Review and Monitoring

### 11.1 Statutory Requirements

Section 35(2) of the Resource Management Act (RMA) requires local authorities to monitor the efficiency and effectiveness of policies, rules, or other methods in their policy statement and plans. Local authorities are also required to monitor the state of the environment of their region to enable them to effectively carry out their functions under the RMA.

Section 35(2A) requires local authorities to make available to the public a review of the results of that monitoring, at intervals of no more than 5 years.

#### 11.1.1 State of the Environment Monitoring

The ARC's State of the Environment (SoE) monitoring programme incorporates a range of monitoring and research initiatives which are designed to evaluate the state (i.e. condition) and trends in the environment (including social, economic and environmental issues).

Aspects of the SoE monitoring programme include:

- Ambient air quality;
- Surface freshwater quality and quantity;
- Freshwater ecology;
- Groundwater quality and quantity;
- Geothermal water quality and quantity;
- Saline water quality;
- Saline ecology;
- Terrestrial ecosystems;
- Geological features;
- Natural hazards;
- Land use patterns;
- Analysis of social and economic trends (population, GDP, etc.);
- Whether tangata whenua issues and concerns are being recognised and provided for.

This SoE monitoring will assist the ARC to appraise the efficiency and effectiveness of the Regional Plan: Air, Land and Water.

#### 11.1.2 Statutory Policy Effectiveness Monitoring Programme

The ARC has developed a Statutory Policy Effectiveness Monitoring Programme (SPEMP) in order to evaluate the effectiveness of operative statutory RMA policy documents. The programme will be extended to this Plan when it becomes operative.

The SPEMP involves a 5 step process, broadly as follows:

- Setting monitoring objectives;
- Identifying what to monitor;
- Developing indicators;
- Collecting, analysing and presenting data; followed by
- Subsequent review of the statutory document.

The programme is based on data gathered through the SoE monitoring programme outlined above, but involves targeting indicators and processing information to separate the effect of the objectives, policies and methods in achieving environmental outcomes.

The programme will be used to evaluate the effectiveness of the policies and methods contained in this plan in achieving the anticipated environmental results. It is expected to show whether there is measurable movement towards or away from achievement of those results, and whether that movement can be attributed to the policies and methods in this plan.

## 11.2 Procedures To Review The Matters Set Out In Section 67 Of The RMA

As required by section 79(1)(b) of the RMA, within 10 years maximum of this Plan becoming operative the ARC must commence a review. The contents of a regional plan, as set out in section 67 of the RMA, will be reviewed as follows:

The results of the ARC's SoE monitoring process and the SPEMP will be analysed to determine if the issues, objectives, policies, and methods are proving to be efficient and effective in terms of achieving the environmental results anticipated;

From time to time the ARC reviews aspects of the resource consent process, including the information to be submitted with a consent application. Reviews include updating application forms and supporting information for consent applicants as well as reconsidering the circumstances in which the powers under section 92 may be used.

The results of these reviews will be taken into account.

Waikato Regional Council and Northland Regional Council and the TAs of the region will be consulted as to how well the processes to deal with cross-boundary issues are working.



## 12 Definitions and Abbreviations

Where terms are defined in the RMA, they shall have the same meaning in this Regional Plan. The following additional terms are defined for the purposes of this Regional Plan.

### Definitions

#### Abrasive Blasting

The cleaning or preparing of a surface by forcibly propelling a stream of *abrasive material* against the surface.

#### Abrasive Material

Any material used in *abrasive blasting* operations including, but not limited to, sand, slag, shot, or garnet.

#### Active life of landfill

For the purposes of Chapter 4 – Air Quality, active life of *landfill* is the period that the *landfill* is accepting *refuse* and/or *waste*. It does not include any aftercare or restoration of *landfill* once *refuse* placement has totally ceased at the *landfill site*.

#### Activity Area

Means the area of land where a particular *Industrial or Trade Activity* is being undertaken, which may result in the discharge of *environmentally hazardous substances* associated with that activity onto or into land or water.

The calculation of the Activity Area shall be based upon the following:

- (a) Exclusion of all areas that discharge lawfully into an authorised *trade waste* system;
- (b) Exclusion of areas that are not used for or affected by the *Industrial or Trade Activity*;
- (c) Exclusion of all indoor or roofed areas which do not discharge onto or into land or water;
- (d) Exclusion of areas used for the storage of inert materials, provided that if suspended solids are generated by the materials and entrained in *stormwater*, the *stormwater* from such storage areas is treated in accordance with the BPO or is otherwise lawfully authorised;
- (e) Inclusion of all roof areas onto which *environmentally hazardous substances* generated by the activity are deposited;
- (f) Inclusion of all outdoor storage, handling or processing areas of materials and/or products that may contribute to the quality or quantity of environmentally hazardous substance discharges (including occasional or temporary use of areas);
- (g) Inclusion of the area at risk from failure of the largest unbunded container used for the activity that may contribute to the quality or quantity of environmentally hazardous substance discharges; and
- (h) Inclusion of all areas (including roofs) that contribute runoff to the Activity Area.

#### Adjoining Properties

All properties immediately adjacent or across the road, river, or stream from the *premises* the activity is occurring on.

#### Agrichemical

Any substance, whether inorganic or organic, man-made or naturally occurring, modified or in its original state, that is used to eradicate, modify or control flora and fauna and includes animal remedies but excludes *fertilisers*, chemicals when used in the treatment of *potable water* and biocides when used in cooling towers.

### **Agrichemical Spray Drift**

The airborne movement of vapour, aerosol, droplets or solid particles containing *agr chemicals* onto off target areas (properties or residences) or species (humans, flora or fauna) beyond the *boundary* of the *premises*.

### **Alteration**

In relation to structures means to change the layout or appearance of the structure without changing its function, maximum physical dimensions or location.

### **Alternative Water Source**

Alternative water sources include rainwater tanks and re-used water (for non-potable supply), and includes *surface water* for *groundwater* users and vice versa.

### **Ambient Air**

The air outside reflecting the cumulative effect of all activities both anthropogenic and natural. It does not refer to indoor air, air in the workplace, or to contaminated air as it is discharged from a source.

### **Ambient Air Quality Guidelines**

The guidelines developed by the Ministry for the Environment and given in "Ambient Air Quality Guidelines, May 2002".

### **Amenity**

The same as amenity values in the RMA.

### **Amenity Areas and Public Places**

Those areas which are not used for agriculture, horticulture or plantation forestry but which are freely open to *public access* and which are frequented, or likely to be frequented, by the public. These include public roads (including the state highway network).

### **Applicator**

Any person or organisation engaged in the application of any *agr chemical*. Where application is delegated to employees or contractors, it also includes the person(s) directly responsible for those employees or contractors.

### **Aquifer**

A permeable water-bearing rock, sand, gravel or other geological formation which is capable of receiving or storing water, and/or transmitting and yielding water at a sufficient rate to be a practical water supply.

### **Archaeological site**

As defined in the Historic Places Act 1993.

### **Artificial Watercourse**

Includes any irrigation canal, water supply race, canal for the supply of water for electricity power generation and *farm drainage canal*.

### **Authorised Facility**

A *process* or *site* authorised by a regional plan or resource consent to accept the treatment, storage or disposal of soil or water which contains contaminants above *background* levels.

### **Average Annual Basis**

With respect to Policy 5.4.4 and Rule 5.5.10, the expected reduction in *TSS* loadings during an average 1-year period from storms less than a 2-year, 24-hour storm. *TSS* loadings from storms greater than that event shall not be included in any calculations.

**Average Dry Weather Flow**

With respect to *wastewater* activities, the total flow averaged for *groundwater infiltration*, *dry weather flow* and *exfiltration* over a dry weather period over a year so that it includes summer and winter weather conditions and seasonal *wastewater* variations.

**Average Recurrence Interval ("ARI")**

The average time period between rainfall or flow events which equal or exceed a given magnitude.

**Background Levels**

Concentrations of chemical constituents which occur in soil and groundwater at a specific locality (including *aquifer*) due to natural lithological and hydrogeochemical *processes*.

**Backyard Incinerator**

An appliance (including a 44-gallon drum) used for *domestic purposes* primarily for the destruction of *waste* which reduces material to ash through combustion.

**Barbeque**

Any fixed or portable gas or solid fuel burning equipment or device designed or intended for the cooking of food in the open air.

**Base flow**

That part of river flow derived from groundwater seeping into the river.

Explanation: Water flowing in a river can come from overland flow or from groundwater seepage. Baseflow can be observed during extended dry weather periods.

**Biosolids**

A *sewage* or *sewage sludge* derived from a *sewage treatment* plant that has been treated and/or stabilised to the extent that it is able to be safely and beneficially applied to land and does not include products derived from industrial *wastewater* treatment plants.

**Bore**

Any *hole* that has been constructed to provide access to groundwater (for example, for monitoring of ground or groundwater conditions, taking of groundwater or the discharge of *stormwater*). This definition includes piezometers but excludes piezometers that are constructed into manmade structures such as *dams* and the *refuse* in *landfills*.

**Boundary**

In respect of Chapters 4 and 4A the farthest limit of the *premises* or generally recognised *boundary* around activity(ies).

**Buffer Zone**

In relation to the use of *agrichemicals*, the distance between the downwind edge of an area where the activity is undertaken and sensitive land uses.

**Bund**

In respect of *Industrial or Trade Activities* the term bund means an impermeable barrier surrounding a storage area capable of containing any spills or leaks of *environmentally hazardous substances* from the storage vessels within.

**Carcinogen**

Any substance capable of causing cancer. Carcinogenic has a corresponding meaning.

### Carrying Agent

An agent added to an active ingredient to make an *agrichemical* formulation. It can also be the material, usually water or oil, used to dilute the formulated product for application.

### Catchpit/Cesspit

An inlet to a *stormwater* system incorporating a grate and a small chamber used to separate *gross solids* from *stormwater* prior to connection to a pipe.

### Chicken/s

The common domestic fowl (*Gallus domesticus*) or its young including any related birds.

### Cleanfill

A cleanfill is any *landfill* that only accepts cleanfill material.

Cleanfill material means material that when buried will have no adverse effect on people or the environment; and includes virgin materials such as clay, soil and rock, and other inert materials such as concrete or brick that are free of:

- Combustible, putrescible, degradable or leachable components;
- *Hazardous substances*;
- Products or materials derived from *hazardous waste* treatment, *hazardous waste* stabilisation or *hazardous waste* disposal practices;
- Materials that may present a risk to human health; and
- Liquid waste.

### Combined Sewer Network

A *wastewater network* where *stormwater* and *wastewater* connections are intentionally made to the same network by a *stormwater or wastewater network utility operator* and in which *wastewater* and *stormwater* are intentionally carried in the same network.

### Commercial Extraction (of Natural Material)

The excavation and removal of naturally occurring materials, including, but not limited to sand, shingle and gravel from the bed of *lake*, river or stream, where the rate of extraction exceeds 50 cubic metres per year.

### Composting

In respect of Chapter 4 composting is the biological treatment or decomposition of organic material under controlled conditions.

### Composting Operation

Every part of the *composting process* from receipt of raw material, shredding, and *composting*, through to the dispatch, or use in another *process*, or disposal. This includes any intervening storage of the raw material, partly *processed* matter, or product.

### Consented Waste Disposal System

Any authorised or otherwise approved method for the disposal of trade or domestic *waste* including but not limited to: sanitary sewer, *trade waste* contractor, *landfill*, on *site* disposal.

### Contact (Recreation)

A recreational activity which has a reasonable probability of the participant(s) being immersed in water. It includes, but is not limited to, swimming, diving, water skiing, jet skiing, surfing and sailing on sailboards or small centreboard yachts.

### Contaminated Land

The same definition as in Section 2 of the RMA which in April 2012 read (for information only – Plan users should refer to the current version of the RMA):

“contaminated land” means land that has a hazardous substance in or on it that:

- (a) has significant adverse effects on the environment; or
- (b) is reasonably likely to have significant adverse effects on the environment.

### Contaminated Land Requiring Management

*Contaminated land*, where the discharge of contaminants is avoided or mitigated by ongoing land management practices and/or monitoring.

### Contributing Catchment Equivalent Population

With respect to *wastewater* activities, a *wastewater* design parameter used to denote the number of people residing in a residential area that would be required to generate an equivalent volume of flow as would occur from a specific non-residential *wastewater* source. Also commonly referred to as “EP”.

### Countryside Living

Has the same meaning as defined in the Auckland Regional Policy Statement which states:

means low density residential development on rural land. It includes the concepts of rural-residential development, scattered rural-residential lots, farmlets, residential bush lots, retirement lots, large-lot residential development and the like. It is similar to low density residential development where it occurs within *urban areas*.

### Cultivation

The disturbance of soil in preparation for the planting of seeds or plants.

(It includes ploughing, discing, hoeing, mouldboarding, ripping, turning and lifting. It excludes production forestry activities, harrowing, direct *drilling* of seed and no-tillage practice.)

### Culvert

A pipe with an inlet from a *watercourse* and outlet to a *watercourse*, designed to convey water under a specific structure (such as a road).

### Dam

Any structure which, either:

- (a) Permanently impounds *surface water*; or
- (b) Temporarily impounds *surface water* as its primary function,

and includes weirs but excludes *culverts*.

### Damming

The activity of impounding *surface water* (and any substances dissolved in, suspended in or otherwise combined with the water) with any structure. This excludes water held in tanks and *reclamation* or *drainage* which results in the creation of dry land.

### Decommission (a Bore or Hole)

To permanently abandon a *hole* or *bore* or take a *bore* out of service.

### Deep Bore Disposal

Deep bores are a form of deep *infiltration* system, typically around 6 metres deep that have been used on *sites* where low permeability surface soils, such as poorly draining clays, are underlain by subsoil layers at depth.

### Demand Management Programme (water)

A plan to influence patterns of water use practices and/or behaviour in all sectors of use (and distribution) with the objective of maximising *water use efficiency* and reducing discretionary water use, as far as practical.

### Deposition of Substances

The placement of substances in, on, or under the bed of a *lake*, river, stream or wetland including dredged material and solid matter such as rock, soil, concrete, steel, timber, vessels and *refuse*, but excluding liquids such as *sewage effluent*, *stormwater* and *trade wastes*.

### Design Peak Flow

With respect to *wastewater* activities, the highest flow rate (including wet weather allowances) expected to occur during a 24-hour period. It is commonly denoted as a fixed multiple of the *average dry weather flow*.

### Direct Supervision

Means providing guidance in all aspects of the safe, responsible and effective use of *agrichemicals*, including storage, mixing, handling, application and disposal. It also means being present at the *premises* where *agrichemical* spraying activities are occurring, or being contactable (by electronic means or in person) and able to be present at the application area within a reasonable period of time.

### Discharge System

In respect of Chapter 5 means a system used to discharge liquid contaminants and includes any facilities and devices used to collect, store or treat the liquid contaminants prior to their discharge.

### Diversion of a River or Stream

Removing water from its natural course, usually through a channel, pipe, tunnel or *culvert* and discharging the water back into the same waterbody.

### Diversion of Stormwater

The turning aside of *stormwater* from its natural course of flow; causing it to flow by a different route.

### Domestic Fires

A combustion appliance used for heating space, or water, or for cooking which has a chimney and is designed primarily for use in a residential dwelling and includes wood stoves, coal ranges, *open fires*, solid fuel burning appliances and dual burning appliances.

### Domestic Heating

Heating Devices for use in residential dwellings and includes heating by *domestic fires*, electricity, gas, solar energy and oil.

### Domestic Purposes

For the purposes of rules 5.5.14 to 5.5.19 domestic purposes means the quantity of an *environmentally hazardous substance* that is used in normal household activities.

### Domestic Wastewater

Wastewater originating from toilets, urinals, kitchens, bathrooms, showers, baths, basins and laundries from dwellings, commercial, industrial or other premises such as cafes, restaurants and schools but excludes trade waste, wastewater from Industrial or Trade Activities, and washwater.

**Drainage**

The removal of water from any part of a waterbody or land, resulting in the creation of a dry area, lower groundwater levels or minimising the build-up of *surface water* ponding.

**Dredging**

The disturbance of the bed of any *lake* or river by the excavation and removal of material in order to provide increased water depths for the safe and convenient navigation of vessels in navigation channels and at berthing and mooring facilities.

**Drilling**

A method of boring into the ground predominantly by rotating, percussive, or washing action. It excludes excavation of pits by digging, blasting or other forms of excavation.

**Drought Management Plan**

A plan formulated to prepare for and minimise the effects on all aspects of water supply and consumption that may occur during periods of drought conditions.

**Drought Security Standard**

The ability of a water supply system to continue to supply sufficient water to meet a specified demand, under drought conditions, of a particular intensity. The drought intensity is measured in terms of the probability of drought occurring within a specified period of time.

**Dry Abrasive Blasting**

Any *abrasive blasting* without the use of water, or other liquid dust suppression additives.

**Dry and Well Seasoned**

Containing a maximum of twenty-five percent dry weight moisture content.

**Dry Weather Flow**

With respect to *wastewater* activities, the flow during a normal working day including *wastewater* flow and groundwater *infiltration* during a dry *weather period* (see also the definition of 'Overflow – Dry weather overflow').

**Earthworks**

The disturbance of land surfaces by blading, contouring, ripping, moving, removing, placing or replacing soil or earth, or by excavation, or by cutting or filling operations.

**Ecological District**

Is a local part of New Zealand where topographical, geological, climatic, soil and biological features, including the broad cultural pattern, produce a characteristic landscape and range of biological communities.

**Ecosystem**

In respect of Chapter 4 an ecosystem is an ecological community together with its environment, functioning as a unit; an interacting system of living parts and non-living parts such as sunlight, air, water, minerals and nutrients.

**Effluent**

Any *waste* or *wastewater* to be treated and/or disposed of. It does not include *solid waste* or *stormwater* as defined in this plan.

**Emergency Service Training and Investigation**

Activities or operations undertaken by an emergency service provider, including the New Zealand Fire Service and the Auckland Airport Fire Service, for the purpose of training and/or investigation and includes the lighting of any material and its extinguishment.

### Emergent Plant

A plant, which has appeared above the surface of the water.

### Entrainment of Fish

The forced transport of fish from a surface waterbody into a water intake resulting from inadequate screening of the intake and the *taking* of water at a velocity which exceeds that against which the fish can successfully swim. Fish entrainment can be avoided by the installation of appropriately screened intakes which abstract water at a low velocity.

### Environmentally Hazardous Substance(s)

Any material, chemical or other substance in sufficient quantity or concentration that may result in more than minor adverse effects when released into the receiving *environment*, including:

- (a) toxicity (both acute and chronic);
- (b) ecotoxicity, with or without bioaccumulation; and
- (c) adverse effects on human health.

### Erosion Control

Preventing or minimising the erosion of soil. This is the most effective way to minimise the adverse effects that land disturbing activities may have on a *receiving environment*.

### Ethnic Cooking Fire

Any hangi, umu or similar fire in the open air and used for the preparation of food using ethnic cooking methods.

### Exfiltration

The leakage of *wastewater* from a *wastewater network* via pipes, pipe joints, manholes and other network structures; but not including planned or unforeseen discharges from pump stations or *overflow* points.

For the purposes of "exfiltration," *wastewater* includes any *stormwater* inflow or *infiltration* connected to and mixed with the *wastewater* flow.

### Exotic Plant

Any plant that is not native to New Zealand, i.e. not indigenous.

### Extension

In relation to structures means any addition to the structure that increases its physical dimensions.

### External Documents

Any standard, requirement, recommended practice or guidelines or an international or national organisation or of a country, or other written material that deals with technical matters that is too large or impractical to include in or print in the Plan and includes, but is not limited to ARC technical publications, New Zealand Standards, codes of practice and guidelines for managing environmental effects.

### Farm Drainage Canal

A *drainage* canal or drain on a farm that has been formed by excavating land and does not include a *drainage* canal or drain that has been formed in the bed of a river, stream or wetland.

### Feedlot

A building or an area of ground set aside for the intensive farming of livestock where the predominant form of feed is not the grazing of pasture grasses to ready the livestock for slaughter.



### Fertiliser

Any substance which is described as or held out to be for or suitable for sustaining or increasing the growth, productivity or quality of plants or animals through the application of essential nutrients to plants or soils whether in solid or fluid form, provided the substance is free from human faecal matter, **sewage solids** and pathogens or any other agent which could effect disease and pest transmission.

**Fertiliser** includes but is not limited to nitrogen, phosphorus, potassium, sulphur, magnesium, calcium, chlorine, sodium, as major nutrients or manganese, iron, zinc, copper, boron, cobalt, molybdenum, selenium, as minor nutrients or additives, or any other product which is considered to meet identified soil or plant nutrient deficiencies, and is applied with this as the principle objective. Products discharged or applied as part of a **waste** treatment **process** are excluded from this definition.

### Fish Passage

The natural movement of fish between the sea and any river, including upstream or downstream in that river.

*Note: The provision of constructed **fish passage** is an acceptable means of complying with the **fish passage** requirements of this Plan.*

### Flow Variability

The range, frequency, duration and timing of flows in a river or stream.

### Food production

Production of crops likely to be consumed directly (either cooked or uncooked) by humans or used as fodder for dairy animals. Industrial crops, fodder and cereal crops for other animals, pasture and trees are not included within this definition.

### Fossil Fuels

All fuels made from the breakdown of carbonaceous materials, e.g. coal, **petrol**, natural gas, diesel.

### Gaseous Products

Gaseous products exclude **landfill** gas and include, but are not limited to, biogas and **waste** gaseous petrochemical products.

### Green Waste(s)

Vegetative garden **waste material** including grass clippings, branches, weeds and leaves.

### Greenfields Catchments

A catchment within which the constructed urban landuse area is less than 50% of the total catchment area.

*Note : This term relates to a whole catchment or sub-catchment, and not a **site** within a catchment. A catchment is taken from the nominated point of discharge to the **receiving water** and includes all of the land draining to that point.*

### Greenhouse Gases

Those gases which trap some of the sun's radiant energy and in so doing maintain global air temperatures at an average of 15 degrees Celsius. Greenhouse gases include carbon dioxide, methane, chlorofluorocarbons, ozone, nitrous oxide and water.

### Greenhouse nutrient solution

The liquid that provides plants in a soilless growing system with water and nutrients.

**Gross Solids**

With respect to *stormwater* and *wastewater* activities, organic and inorganic solid material visible to the naked eye including but not limited to items such as faeces, condoms, tampons, toilet paper, nappies, litter, plastic bottles, and packaging material.

**Groundwater**

Natural water contained within rock formations below the surface of the ground.

For the sole purpose of the *contaminated land* provisions of this Plan; water beneath the land surface in the water saturated zone, excluding *perched groundwater*.

**Groundwater diversion**

Significantly changing the permeability of the *aquifer* and/or rerouting the ambient ground-water flow regime (by draining, piping or physically impeding the flow of *groundwater*).

**Habitable Building**

Means a building whose primary function is a dwelling, or work or meeting place, including houses, commercial and industrial buildings, community and recreational buildings, but excluding garages, haybarns and other out-buildings.

**Habitable Floor**

Means the floor of a building which is used primarily for residential or community activities but excludes sheds, outhouses, garages or basements.

**Hapū**

A sub-tribe, usually a number of whanau with a common ancestor.

**Hazardous Air Pollutants**

Any substance known or suspected to cause a significant adverse effect on human health or the environment due to its toxicity, persistence in the environment, tendency to bio-accumulate or any combination of these things. Hazardous air pollutants include those substances listed in Schedule 7.

**Hazardous Substance**

Any substance:

- (a) with one or more of the following intrinsic properties:
  - (i) explosiveness
  - (ii) flammability
  - (iii) a capacity to oxidise
  - (iv) corrosiveness
  - (v) toxicity (both acute and chronic)
  - (vi) ecotoxicity, with or without bioaccumulation;
  - (vii)radioactivity; or
- (b) which on contact with air or water (other than air or water where the temperature or pressure has been artificially increased or decreased) generates a substance with any one or more of the properties specified in paragraph (a) of this definition.

**Hazardous Waste**

Materials with properties of *hazardous substances* which are no longer needed or wanted.

**Heavily Trafficked Road**

Means any road carrying greater than 12,000 vehicles per day.

**Highway network operator**

Means the operator of a state highway.

**Hole**

With respect to Chapter 6: Water Allocation and Chapter 7: Beds of Lakes and Rivers of this Plan, any excavation that is created by *drilling*.

**Hydrocarbons**

Chemical compounds that contain carbon and hydrogen.

**Impervious Area**

An area with a surface which either prevents or significantly retards the *infiltration* of water into the ground, thereby causing water to run off the ground surface in greater quantities or at an increased rate of flow than would occur under natural conditions.

When calculating impervious areas for the thresholds in the Rules 5.5.1 to 5.5.5 in this Plan for subdivisions or development, include the expected extent of new impervious areas following subdivision or development, for the extent of the parent lot prior to subdivision.

When calculating impervious areas for the thresholds in the Rules 5.5.1 to 5.5.5 in this Plan for existing impervious areas, include the expected extent of impervious areas that are not already authorised by existing use authorities and other discharge permits. When calculating impervious area for the purpose of applying for *stormwater* controls in Rules 5.5.1 to 5.5.5 and 5.5.9 the *Activity Area* of *Industrial or Trade Activity* shall be excluded.

*Note: Common impervious areas include, but are not limited to, roofs, patios, asphalt or concrete driveways or paving, sealed car parking areas, tennis or netball courts, sealed roads, compacted metal roads and parking areas, but excludes gravel shoulders adjacent to sealed roads.*

**Impervious Layer**

A layer of material, including but not limited to buildings, concrete, asphalt and compacted earth, which is designed to minimise the downward *infiltration* of water and to prevent human contact with the underlying soil.

**Impingement of Fish**

The forced holding of fish against a water intake screen resulting from the *take* of water at a velocity which exceeds that against which the fish can successfully swim.

**Industrial or Trade Activity**

Means carrying out an “industrial or trade process” as defined in the RMA but does not include a production land activity.

**Infiltration**

*Groundwater* entering the *stormwater* or *wastewater network* via pipe joints, cracks and *holes*.

**Influent**

Liquids with or without solids in suspension entering a *stormwater* or *wastewater network*.

**Innovative (Methods)**

With regard to *stormwater* activities, innovative methods are *stormwater* quality treatment methods that have not been evaluated using accepted protocols, but for which preliminary data indicates an acceptable level of *stormwater* contaminant control. Innovative methods are not acceptable for general usage until their performance has been verified to the satisfaction of the ARC (as set out in ARC Technical Publication 10: Stormwater Management Devices: Design Guideline Manual).

**Integrated Catchment Management Plan (ICMP)**

A plan for management of the *stormwater* and *wastewater* discharges, diversions and associated activities within the catchment or District which is prepared in accordance with this Plan and identifies :

- (a) the *stormwater* or *wastewater* issues facing the catchment and the range of effects from those discharges, diversions and associated activities;
- (b) strategic objectives for the management of *stormwater* and *wastewater* discharges, diversions and associated activities within the catchment or District;
- (c) a range of management options and the preferred management approach for avoiding, remedying or mitigating environmental effects and risks;
- (d) roles and responsibilities for implementation of the management approach;
- (e) tools to support implementation of the management approach; and
- (f) a *process* for review.

*Note: Schedule 9 sets out minimum information requirements for an ICMP.*

**Integrated Pest Management**

An ecologically based pest control strategy which may include the judicious use of *agrichemicals* and other control measures.

**Intensive Livestock Farming**

Agricultural production carried out primarily indoors or in closely fenced outdoor runs where the stocking density precludes the maintenance of pasture or ground cover and, the primary purpose of the activity being the commercial production of livestock or eggs for sale or slaughter. Intensive livestock farming includes, but is not limited to, *poultry* farming of more than 5000 birds, piggeries with more than 25 *pig equivalents* and cattle *feedlots*. For avoidance of doubt, intensive livestock farming does not include free range operations in which livestock are generally outside during daylight hours and have free access to a sufficient area per animal or *poultry* to enable them to exhibit natural behaviours.

**Intermittent Stream**

Any stream or part of a stream that is not a Permanent stream.

Note:

This definition does not include any *artificial watercourse* (including an irrigation canal, water supply race, canal for the supply for electricity power generation, *farm drainage canal*) and roadside drain and water-table except where the roadside drain or water-table is a modified element of a natural *drainage* system).

**Inversion Layer**

A trapped layer of dense, cool air beneath a layer of less dense warm air usually in a basin or valley. The 'lid' of warm air prevents upward flowing air currents from developing and dispersing contaminants.

**Iwi**

A Maori tribe, usually containing a number of *hapu* with a common ancestor.

**Kaitiaki**

The Tangata Whenua guardian who exercises the ancestral responsibilities of Kaitiakitanga.

**Kohanga reo**

Language nest.

**Kura**

School.

**Laboratory Scale (Operations)**

A laboratory scale operation as described in AS2243.10:1993 Safety in Laboratories – Storage of Chemicals.

**Lake**

Has the same meaning as set out in the RMA.

At the time of printing this was: “a body of fresh water which is entirely or nearly surrounded by land”

**Land containing elevated levels of contaminants**

Means land that contains contaminants which occur at levels exceeding those permitted by Rule 5.5.41.

**Land drainage for cultivation or pasture management**

Land *drainage* that is intended to remove excess soil moisture for cultivation and pastoral farming purposes.

**Land Use Intensification**

Also commonly referred to as “intensification”. Has the same meaning as “intensification” as defined in the Auckland Regional Policy Statement which states: in rural and *urban areas*, means increased densities of population and/or buildings.

- (a) In an *urban area* intensification includes redevelopment, infill, conversion, retro-fitting and recycling. It also includes additional urban development at any density on vacant land within the defined urban limits.
- (b) In rural areas, intensification includes changes in the intensity of subdivision and development, from (for example) extensive pastoral farming regimes to rural residential (*countryside living*), horticultural, or *Intensive Livestock Farming activities*.

**Landfill**

A landfill includes any landfill that accepts domestic, hazardous or industrial *wastes* such as municipal *waste* landfills and monofills but excludes *cleanfills* and construction and demolitions landfills. A landfill also includes any landfill gas extraction or treatment system such as flaring or the combustion of landfill gas for the purpose of electricity generation.

**Leachate**

Liquid that has percolated through or emerged from *solid waste* and that contains dissolved and/or suspended liquids and/or solids and/or gases.

**Littoral Drift**

The transverse movement of sand and sediments along a coast as a result of wave or current action.

**Local Authority Infrastructure Design Standards means**

For Rodney District Council, Standards for Engineering Design and Construction;  
For North Shore City Council, Infrastructure Design Manual;  
For Auckland City Council, Auckland City / Metrowater Development and Connection Standards;  
For Waitakere City Council, Code of Practice for City Infrastructure and Land Development;  
For Manukau City Council, Engineering Quality Standards;  
For Papakura District Council, Papakura District Council, Development Code; and  
For Franklin District Council, Franklin District Council Code of Practice for Subdivision & Development - Edition Four-December 1999.

**Local Newspaper**

Any local newspaper distributed to households in the vicinity of the property to be sprayed.

**Long Term Average Basis**

With respect to *stormwater* activities, the average value when data are considered over a long-term basis. It is a measure of the average tendency for a given parameter.

**Low Impact Design**

With respect to *stormwater* activities, a design approach for site development that protects and incorporates natural components of the landscape into erosion and *sediment control* and *stormwater* management plans and in particular, seeks to minimise changes to pre-development hydrological regimes and watercourses so as to minimise adverse hydrological effects of development such as erosion and sedimentation of *Permanent rivers and streams*.

**Maintenance or Maintenance and Repair**

For the purpose of structures, in, on, under or over the bed of a *lake*, river or stream, maintenance and repair means work carried out in order to maintain a structure in a good and safe working condition and includes painting and necessary preparation works.

**Management Flow**

A specified flow in a river or stream that is set in order to determine *water availability*. The management flow is higher than the *minimum flow*.

**Manākitanga**

Hospitality.

**Mauri**

Life force, life essence.

**Metropolitan Urban Limits**

The *boundary* between the rural area and the *urban area*. The *urban area* includes both the existing built-up area and those areas committed for future urban expansion in conformity with the objectives and policies expressed in the Regional Development chapter of the ARPS. The metropolitan urban limits are delineated on the Map Series 1, Sheets 1-24.

### Minimum Flow

A specified low flow in a river or stream which enables the management objective(s) for the waterbody to be met. The minimum flow may be set at a rate which will maintain or enhance freshwater habitat, provide for the passage of fish, or may reflect Maori or *amenity* values, including landscape and *recreation*.

A minimum flow may be set as a threshold in relation to which *takes* are regulated, such that when stream flow falls below the minimum flow the taking of water may be prohibited or restricted.

In other circumstances, a minimum flow may be set as a requirement to be maintained downstream of a *dam* by the release of a residual or compensation flow.

### Mobile Sources

A mobile source that discharges contaminants into air such as motor vehicles (cars), aircraft, trains, vessels (boats), and lawn mowers.

### Motor Fuel/s

All *hydrocarbon* fuels and/or various combinations that are used to power engines and includes *petrol*, diesel, jet fuel, kerosene, aviation gasoline, ethanol, methanol, bio fuels, liquefied petroleum gas (LPG), and compressed natural gas (CNG).

### Motorised Handheld Application

Any handheld application, including from a portable spray unit where a handheld spraying device is used, that is powered by a motorised pump but which is not applied from a moving vehicle.

### Municipal Sewage

In respect of Chapter 4 municipal *sewage* is liquid and *solid waste* from domestic, industrial and commercial *premises* that is collected in the *wastewater* collection network and conveyed to municipal wastewater treatment plant.

### Municipal Water Supply

Water taken for supply to a town or city.

### Mutagen/Mutagenic

Any substance capable of causing genetic mutation that may result in inheritable genetic effects. Mutagenic has a corresponding meaning.

### National Environmental Standards for Ambient Air Quality

The table in Schedule 1 and Regulations 13 and 14 in the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins and Other Toxics for Air Quality) Regulations 2004 (AQNES).

### Natural Character

Those qualities and values of wetlands, *lakes* and rivers and their margins which derive from the presence of natural features and natural *processes*. These qualities include the presence of indigenous vegetation and habitats, landforms, landscapes, the historic, aesthetic, cultural and spiritual values of natural features, the functioning of natural *processes* and the maintenance of high water quality. Although not excluding structures and human activities, areas of natural character derive their predominant influence, character or identity from the presence of natural values and *processes*.

**Natural Stream Management Area**

Any *Permanent river or stream* outside of the *urban areas* with *predominantly indigenous vegetation* cover along a length (reach) of not less than 600 metres; and

- (a) an average total width of vegetation cover of 80 metres (i.e. an average width of 40 metres on either side); and
- (b) a minimum total width of vegetation cover of 10 metres from the stream edge, for a length not exceeding 10 percent of the total reach.

Where there are cleared areas for tracks and stream crossings, these are included in the measurements of vegetation length and width.

**Navigation Aids**

Any buoy, beacon, light or marker, sign, fog signal apparatus or radio device erected, moored, or placed in, on, under or over the bed of any *lake* or river in aid of the navigation of people and vessels. For the purposes of this Plan, navigation aids do not include light houses.

**Network Utility Infrastructure**

Means infrastructure operated by a Network Utility Operator as defined by Section 166 of the RMA.

**Network Efficiency Procedures**

All reasonably practicable measures to maintain and enhance the efficiency of a water supply system and to minimise water losses from the system. This shall include, but not be limited to the development and implementation of:

- (a) strategic programmes(s) of action to enhance and maintain the water efficiency of a water supply system; and
- (b) routine procedures to assure the minimisation of water losses and other unaccounted for water.

**Nitrogenous Fertiliser**

Any substance registered under the Agricultural Compounds and Veterinary Medicines Act 1997 for use in sustaining or increasing the growth, productivity, or quality of plants by its application to those plants or the soil in which they grow or will grow, where the nitrogen percentage by weight is greater than or equal to 20 percent of the total *fertiliser*.

**Non-greenfields Catchment**

With respect to *stormwater* and *wastewater* activities, catchments that do not meet the definition of a *greenfields catchment*.

**Non-point Source Discharge**

A discharge not from a defined point such as a pipe or channel.

**Non-structural Methods**

With respect to *stormwater* and *wastewater* activities, physical methods of treating *stormwater* and *wastewater* that utilise natural components of the landscape; or operational, service delivery activities, and general preventative measures undertaken by or on behalf of a *stormwater* or *wastewater network utility operator* that aim to reduce the contamination of the *stormwater* or *wastewater*.

*Note: Examples include, but are not limited to, road sweeping, use of grass swales, public education, spill contingency planning and riparian vegetation maintenance or enhancement.*



**Offal**

Dead animal matter.

**Offal Hole**

A *hole* excavated for the purpose of disposing of *offal*.

**Off-site**

A place where soil cannot be reasonably recovered or retrieved once it has moved from a place of soil disturbance.

**Off-stream Dam**

Any structure which impounds *surface water* but which is not located on the bed of a *lake* or any *Permanent river or stream* as defined below.

**On-site Vehicle Refuelling Facility**

Any on-site facility where the refueling of vehicles is undertaken, including all associated equipment (e.g. fuel pumps, remote tank fill points, bulk fuel storage tanks etc) where the total combined volume of all bulk fuel storage tanks exceeds 5m<sup>3</sup>.

**Open Fires**

All indoor heating devices which are capable of burning fuel such as fireplaces, open hearths and visors. Excludes enclosed heating devices such as wood burners, pot belly stoves and the like.

**Open-Cast Extraction**

Open-cast extraction is the *process* of removal of minerals, ores and/or aggregates from land. For the purposes of its use in Section 4 Air Quality – Dust Generating Rules, it includes the mixing and use of explosives for the purposes of blasting during extraction.

**Outdoor Burning**

The burning of materials in the open, excluding *barbecues*, umu, hangi, smoke houses or other domestic or *ethnic cooking fires*.

**Outfall**

The endpoint of any pipe, conduit, or drain from which a discharge occurs to a *receiving environment*.

**Overburden (Removal)**

With reference to quarrying, the removal of unusable soil/rock stripped from above suitable production material.

**Overflow**

A discharge from a combined *stormwater/wastewater network* or separate *wastewater network*.

**Sub-categories:**

**Dry weather overflow:**

An overflow that occurs during *dry weather flow* (see also the definition of *Dry Weather Flow*).

**Wet weather overflow:**

*An overflow that occurs at a time other than when dry weather flow is occurring within the network* (see also the definition of *Wet Weather Flow*).

**Formal overflow:**

an overflow from a constructed relief pipe or identified relief point through which a discharge is planned when the conveyance capacity of the *wastewater network* at that point is exceeded.

**Overland Flow Path**

The natural flow path of *stormwater* over the ground.

**Ozone Depleting Substance**

Any substance that depletes the overall thickness of the stratospheric *ozone layer*, such as chlorofluorocarbons (CFCs), halons, nitrous oxides and methyl bromide.

**Ozone Layer**

A layer of gaseous ozone (O3) 17–26 kilometres above sea level in the stratosphere. The ozone layer protects life on earth by filtering out harmful, ultraviolet radiation from the sun.

**Papakāinga**

Residential occupancy on any ancestral land owned by Maori.

**Perched Groundwater**

*Groundwater* contained in an isolated saturated zone within the unsaturated zone.

**Permanent River or Stream**

Downstream of the uppermost reach of a river or stream which meets either of the following criteria:

- (a) has continual flow; or
- (b) has natural pools having a depth at their deepest point of not less than 150 millimetres and a total pool surface area that is 10m<sup>2</sup> or more per 100 metres of river or stream bed length.

The *boundary* between Permanent and Intermittent river or stream reaches is the uppermost qualifying pool in the uppermost qualifying reach.

**Notes:**

- (1) *This definition does not include any **artificial watercourse** (including an irrigation canal, water supply race, canal for the supply for electricity power generation, **farm drainage canal**) and roadside drain and water-table except where the roadside drain or water-table is a modified element of a natural **drainage** system.*
- (2) *Where there is uncertainty over the status of any stream the ARC will provide assistance and advice concerning the steps involved in making that determination.*
- (3) *Assessment for determining Permanent rivers or streams and **Intermittent streams** may be undertaken at any time of the year. Once a reach of a river or stream has been assessed as satisfying the criteria for categorising the stream as an Intermittent stream, upstream of the point of assessment will continue to be considered an **Intermittent stream**. Details of the assessment should be retained for the purposes of demonstrating the stream’s status as an **Intermittent stream**.*

**Petrol**

A petroleum product with a research octane number (RON) of less than 99.

**Pig Equivalent**

A pig equivalent equates to a 50kg pig.

**Point Source Discharge**

A discharge from a defined point such as a pipe or channel.

**Potable Water**

Water of a suitable quality for human consumption.

**Potentially contaminated land**

Land that by virtue of its historical use and the types of activities previously undertaken upon it may be *contaminated land*.

**Poultry**

A domestic gallinaceous bird (heavy-bodied largely ground feeding bird). A general term for any domestic birds (as opposed to wild game birds) kept for meat and/or eggs including, but not limited to, chicken, duck, goose, guinea fowl, pigeon and turkey.

**Predominantly Indigenous Vegetation**

For the purpose of the *Natural Streams Management Areas*, predominantly indigenous vegetation means areas of vegetation where the canopy is intact and is dominated by indigenous species, and contains a regenerating understory. It includes stands of predominant kanuka and manuka, and areas of wetland vegetation. It can include areas with exotic species in the canopy or emergent above the canopy, as long as they do not comprise more than 25 percent of the canopy composition.

**Premises**

Includes land, buildings, *mobile sources* and any other location where an activity that discharges contaminants into air takes place.

**Process (es) (ing)**

Every part of a process from the receipt of a raw material to the dispatch or use in another process or disposal of any product or *waste material*, and any intervening storage of the raw material, partly processed matter, or product.

**Protection**

In relation to a resource, its maintenance, so far as is practicable in its current state, but may include:

- (a) restoration to some former state;
- (b) augmentation or enhancement.

**Public Access**

Unobstructed admission to space which is available for public use.

**Rahui**

A form of tapu restricting the use of land, sea, rivers, forests, gardens and other food resources. It can include prohibitions on people gathering food in an area, for a specified period after a drowning, or the conservation of species through prohibitions on the harvest of kaimoana.

**Receiving Environment**

With respect to *stormwater* and *wastewater* activities, any land or water body to which a discharge occurs.

**Receiving Water**

A continually flowing body of fresh water. Includes a stream and modified *watercourse* but does not include any *artificial watercourse* (including an irrigation canal, water supply race, canal for the supply of water for electricity power generation and *farm drainage canal*).

**Reconstruction**

In relation to structures means to rebuild or erect to the same or similar specifications, materials, scale, location and design to that which existed immediately prior to the demolition, removal or loss of part or all of a structure.

**Reclamation**

Any permanent filling of an area previously inundated by water, for the purpose of creating dry land. Reclamation excludes any area of *surface water* impounded by a *dam*.

**Recreation**

Any activity carried out in a person’s free time which enhances life experiences and enjoyment. This concept is broad and includes all activities: passive, physical, artistic and cultural, as well as community service.

**Recycling Station**

A depot that receives materials for recycling, such as paper, plastics, and glass but does not include greenwaste and *refuse*.

**Refuse**

Refuse is *waste* that is disposed of, or will be disposed of, at a *landfill*.

**Refuse Transfer Station**

The receipt, storage, collection and transfer of *waste materials* not generated on *site*.

**Regionally Significant Infrastructure**

Means the following infrastructural services and facilities:

- The state highway network;
- The rail network;
- Seaports;
- Airports;
- Bulk water supply and *drainage* reticulation and associated works;
- Solid Waste Disposal;
- Energy Transmission (electricity, gas and oil)
- Telecommunications and radio communications networks;
- Defence establishments.

**Remediation**

The *process* of reducing contaminant levels, toxicity, and/or mobility to avoid, remedy or mitigate potential significant adverse effects on human health or the environment.

**Reverse Sensitivity**

The effects of activities sensitive to other lawfully established activities.

**Road Controlling Authorities**

The authorities responsible for managing the road network, currently *Territorial Local Authorities* and NZ Transport Agency.

**Road Pricing**

Charging road users directly for their use of a particular piece of road. Charges for use of the road may vary according to what road is used and when. Road pricing can have two main functions – to change motorist's behaviour and thus improve traffic conditions, and to raise funds. Road pricing can be implemented in a variety of forms ranging from network wide electronic pricing using satellite communications, to tolls collected at a limited number of points by conventional means.

**Road-side Drain**

Any man-made open channel at the edge of any public road, constructed for the principal purpose of conveying *stormwater*. This does not include within-paddock contour drains or edge-of-paddock cut-off drains.

**Rural Character**

Has the same meaning as defined in the Auckland Regional Policy Statement which states: means distinctive combination of qualities which make an area "rural" rather than "urban". These include the dominance in the landscape of natural vegetation and primary production regimes and the absence or subservience of man-made structures other than those related to primary production or to other activities for which provision is made in the District Plan applying to that area.

**Rural Classification**

Land that is predominantly rural in character and where rural activities are permitted activities under the relevant District Plan. Also commonly referred to as "rural zoning". Note "*rural character*" is defined in the Auckland Regional Policy Statement as follows: means the distinctive combinations of qualities which make an area "rural" rather than "urban". These include the dominance in the landscape of natural vegetation and primary production regimes and the absence or subservience of man-made structures other than those related to primary production or to other activities for which provision is made in the District Plan applying to that area.

**Saltwater Intrusion**

The movement of saline water into an *aquifer* where it mixes with or displaces freshwater.

**Sediment Control**

Capturing sediment that has been eroded and entrained in overland flow before it enters the *receiving environment*.

**Separate Phase Hydrocarbons**

*Hydrocarbons* at concentrations that exceed the capacity of the soil to absorb and retain them such that they are able to be mobilised by natural forces.

**Separate Phase Liquid Contaminants**

Contaminants at concentrations that exceed the capacity of the soil to absorb and retain them such that they are able to be mobilised by natural forces.

**Sewage**

Liquid and *solid waste* from domestic, industrial and commercial *premises* discharged to the *wastewater network*.

**Sewage Sludge**

Unstabilised organic solid material generated by the treatment of *sewage* and *wastewater*.

**Sewage Solid**

*Solid waste* material generated by the *process* of human *sewage*, both treated and untreated, and includes *gross solids*, *biosolids*, *sewage sludge*, and any material generated by mixing any other material with sewage solids.

**Sewage Treatment**

The treatment of *sewage* in facilities for that purpose but excludes any treatment naturally occurring within the *sewage* network.

**Signs**

A visual device displaying a message or notice to the public, either by images or words for the purpose of:

- (a) identifying a product, business or service;
- (b) giving direction, or public information;
- (c) aiding navigation or providing information for public health or safety;

together with any frame, supporting device and any associated equipment.

**Single Chamber Incinerator**

An appliance used primarily for the destruction of *waste* that reduces material to ash through combustion where the appliance has only one chamber where combustion occurs. This includes single chamber onion skin burners.

**Site**

With respect to *stormwater* activities: a single property, lot or parcel of land.

**Slope**

The steepness of the land surface or part of a land surface. Slope is measured in degrees and to an accuracy no less than that achieved using a hand-held clinometer or abney level.

**Slope Angle**

The average *slope* of the land surface as viewed from the base of the area of actual or intended soil disturbance to the top of the *slope length* or paddock crest, whichever is visible and nearest.

**Slope Length**

The maximum continuous length of *cultivation* or land disturbance as measured along a *slope angle* at ground level.

**Soil Conservation**

Means avoiding, remedying or mitigating soil erosion and maintaining the physical, chemical and biological qualities of the soil.

**Solid Fuelled Domestic Fire**

Any *domestic fire* fuelled by solid materials including coal, wood, paper, or carbonettes.

**Solid Waste**

See *Waste*, but this refers only to solid or semi-solid materials (e.g.sludges).

**Source Control**

With respect to *stormwater* activities, measures designed to prevent the introduction of contaminants into *stormwater* runoff.

*Note: Examples include, but are not limited to, bunding around hazardous materials storage sites, a roof over an industrial or trade process area, the removal of lead from petrol, and avoiding of the use of copper spouting.*

**Spray Plan**

Comprises details of an annual or seasonal programme of intended spraying consistent with Schedule 5 of this Plan.

**Stormwater**

Notwithstanding the definition of “stormwater” in the Auckland Regional Policy Statement, for the purposes of this Plan “stormwater” means *surface water* runoff (and any contaminants contained therein), from land or the external surface of any structure which is diverted or discharged to a water body or land as a result of rainfall.

*Note: For Industrial or Trade Activities the discharge of contaminants, including environmentally hazardous substances and any contaminants in stormwater, arising from the Activity Area of any Industrial or Trade Activity is regulated by rules 5.5.14 to 5.5.19.*

**Stormwater or Wastewater Network**

With respect to *stormwater* and *wastewater* activities, a system of pipes, open channels and associated ancillary structures for the purpose of conveying, diverting, storing, treating or discharging *stormwater* or *wastewater*, owned by a *stormwater or wastewater network utility operator* or *highway network operator*.

**Stormwater or Wastewater Network Utility Operator**

Those bodies or companies providing *stormwater* or *wastewater* collection and management services within the Auckland Region, being:

- (a) Auckland Council;
- (b) Watercare Services Ltd;
- (c) United Water Ltd;
- (d) NZ Transport Agency; and
- (e) such other body providing similar services as may from time to time apply to, and be approved by, the Manager, Regional and Local Planning of the Auckland Council.

*Stormwater and Wastewater Network Utility Operator* has the same meaning as above.

**Structure Plan**

A document prepared by or on behalf of a *territorial local authority* that sets out the manner in which land is to be urbanised or used. It defines the future pattern of significant land uses, the density of development and including arterial roads, commercial centres, schools, parks, land required for *recreation* and environmental *protection* purposes. Structure Plans are typically non-statutory documents initially and then following consultation, given statutory status by being incorporated into District Plans. (See also Appendix A of the Auckland Regional Policy Statement).

**Submerged Plants**

A plant which grows beneath the surface of the water.

**Surface Water**

Any freshwater waterbody located above the ground surface, including rivers, streams, springs, *lakes*, wetlands and water impounded by *dams*.

**Sweep Blasting**

A minor amount of *dry abrasive blasting* performed to achieve surface uniformity, or to remove flash rust.

**Take (water)**

The activity of removing water from a waterbody (including rivers, streams, *lakes*, wetlands, water impounded by *dams* and *aquifers*), by pumping and/or gravity, typically for consumptive use, but also including *groundwater* de-watering and *groundwater* removal as part of land drainage. Take does not include the removal of water from a waterbody where that removal is by a discharge (for example, where water is discharged over a *dam* spillway).

**Taonga**

Something which is highly prized or treasured, tangible or intangible, that contributes to Maori well-being. The term equates roughly to the concept of a resource, but incorporates a range of social, economic and cultural associations. Included, for example, are te reo (the Maori language) *waahi tapu*, waterways, fishing grounds, mountains and place names.

**Teratogen/Teratogenic**

Any substance capable of causing malformation during development of a foetus. Teratogenic has a corresponding meaning.

**Territorial Authority/Authorities(TA)**

A local government organisation. In the Auckland Region, these are comprised of:

- Rodney District Council;
- North Shore City Council;
- Waitakere City Council;
- Auckland City Council;
- Manukau City Council;
- Papakura District Council; and
- Franklin District Council.

**Total Generating Capacity**

The total rated energy (including steam, electricity, and heat) generation capacity of all combustion appliances on-site.

**Total Suspended Solids**

The total amount of particulate matter that is suspended in the water column that can be captured using the standard method defined in the American Public Health Association, Standard Methods for the Examination of Water and Wastewater, 19th Edition, Topic 2540 Solids, APHA, Washington DC, 1995 or equivalent. Also commonly referred to as “TSS”.

**Toxic (compounds, substances or concentrations of chemicals)**

Compounds, substances or concentrations of chemicals capable of causing ill-health or injury to human beings.



**Trade Waste**

Any liquid, with or without matter in suspension or solution therein, which are being or may be discharged in the course of any industrial or trade *process* but not including separated *domestic wastewater* from the *premises*.

**Trained Installers**

Tradesperson trained and certified in accordance with an industry recognised training programme.

**Travel Demand Management (TDM)**

Initiatives aimed at modifying travel behaviour in order to maximise efficiency in the use of transport systems. Examples of TDM measures include tele-working, ridesharing, more flexible work and educational hours, *road pricing*, parking constraints, cycling, walking and land use policies more supportive of intensive mixed-use development. Such measures can avoid more costly expansion of the transport system by relieving the need to construct roads or provide more passenger transport services.

**Unconfined Aquifer**

An *aquifer* where the water table is exposed to the atmosphere through openings in the overlying materials.

**Urban Areas**

The area included within the *metropolitan urban limits* as shown on Map Series 1, and the areas included within the urban zones of rural or coastal settlements.

**Urban Rivers and Streams**

All *Permanent rivers and streams* located within *urban areas*.

**Vacuum Blasting**

Any *abrasive blasting* in which spent abrasive and surface material is immediately collected at the surface by a vacuum device.

**Vegetated**

A surface cover of live vegetation which provides 95% cover of bare earth at a vertical height of 2 centimetres from the surface.

**Vegetative Material**

Any vegetable material (*processed* or otherwise) and includes: grass clippings; wood; vegetable/fruit *waste* produce such as onions, kiwifruit; grape marc; cattle paunchings untreated sawdust/shavings; the insitu incorporation of cover crops and crop residue; and production forestry slash and landing *site* log and branch stockpiles provided that material is not mulched or similarly *processed*. The vegetable material may be spread, stockpiled or *composted*.

**Wāhi Tapu**

A place sacred to Maori in the traditional, spiritual, religious, ritual or mythological sense.

**Washwater**

Water that has been used to wash or clean vehicles, structures, plant machinery or equipment and any cleaning chemicals used and/or any contaminants that have been mobilised by the process.

**Waste**

Any matter, whether liquid, gas or solid, which is discharged, unwanted or discarded by the current generator or owner as having little or no economic value, and which may include materials that can be reused, recycled or recovered.

### Waste Management Process(es)

A *process* involving the management of *waste* including *landfills*, *sewage treatment* plants, *refuse transfer stations*, *composting* and other *waste* treatment facilities.

### Waste Material

For the purposes of Chapter 7 *waste* material means any solid matter that is unwanted or discarded by the owner or producer and includes, but is not limited to organic *refuse*, plastics, synthetic materials, glass, iron, steel, concrete, rubble, roading material, vehicle bodies, tyres, timber and soil, but does not include material that is part of a structure or activity authorised by a rule in Chapter 7 or material that is normally used for *cleanfill*.

### Wastewater

Liquid (and liquids containing solids) *waste* from domestic, industrial, commercial *premises* including (but not limited to) toilet wastes, sullage, *trade wastes* and *gross solids*.

With respect to Rules 5.5.10 – 5.5.13 the discharge of wastewater includes the diversion, storage, treatment, conveyance or discharge of:

- (a) *wastewater* from or within a *wastewater network*; or
- (b) wastewater and *stormwater* from or within a *combined sewer network*; or
- (c) wastewater from a *stormwater network* (where a connection is intentionally made to the *stormwater network* by a *stormwater* or *wastewater network utility operator*).

### Wastewater Network

The construction, operation and maintenance, renewal and upgrading of sewers, pumping stations and all associated plant and machinery including manholes and ancillary structures for the conveyance of *wastewater* within a defined geographical area and managed by a *wastewater network* operator, and includes combined *stormwater* and *wastewater networks*, but excludes wastewater treatment plants, private connections sewers and small networks, and any unauthorised areal extension of an existing network. A small network is a *wastewater* collection network that receives combined inputs (via any connection) to give a total flow with an equivalent population (EP) of less than 1000.

### Water Audit

A review of a particular user's water use in terms of maximising efficient use and minimising *waste*.

### Water Availability (surface water)

The water available for abstractive use (the quantity or flow that can be allocated to users), being the surplus over and above the quantity that needs to be left in the waterbody to maintain or enhance instream (or *lake*) values. The availability at any location in a river or stream will generally vary both seasonally and/or with location.

### Water Availability (groundwater)

The water available for abstractive use (the quantity that can be allocated to users) and is the surplus over and above the quantity that needs to be left in the *aquifer*. In most cases this will equal the *aquifer* recharge minus the outflow required for spring and stream flow, outflow at the coast to prevent *saltwater intrusion* into the *aquifer*, and recharge to other *aquifers*. The availability may change in some *aquifers* at different times of the year because of *aquifer* flow and/or storage characteristics and/or changing outflow requirements at different times of the year.

### Watercourse

A river or *lake* (with these terms having the same definition as set out in Section 2 of the Resource Management Act 1991).

**Water Intake Structure**

A structure located in or adjacent to a *surface water* waterbody for the purpose of taking water. Water intake structures are typically located on or above the bed of a river or *lake* and comprise an open pipe, a screen, and anchoring which may either secure the intake in a fixed position or allow it to move in response to changing water levels. Alternative designs, such as *infiltration* galleries, provide for water to be diverted to and taken from a location adjacent to the waterbody. A water intake structure does not include a *culvert* or pipe or other similar structure whose principle purpose is to allow the passage of water along a stream bed.

**Water Use Efficiency**

The extent to which water is used in a way that ensures that the maximum benefit is derived from the use while minimising any *waste* of water, as far as practical.

**Wet Abrasive Blasting**

Any *abrasive blasting* with the concurrent addition of water or other liquid in sufficient quantity to minimize the generation of dust.

**Wet (or Hydro) Blasting**

The cleaning or preparing of a surface by forcibly propelling a stream of water (or liquid) against the surface without the use of solid *abrasive material*.

**Wet Weather Flow**

With respect to *wastewater* activities, flow within a *wastewater network* that is not *dry weather flow* (see also the definition of '*Overflow – Wet Weather Overflow*').

*Note: Wet weather flow generally exceeds dry weather flow due to groundwater infiltration and stormwater inflows.*

**Whakapapa**

Maori genealogy, genealogical table, cultural identity.

**Whakatapu**

The act of making an area consecrated or sacred.

Abbreviations

AQNES	Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004
ARC	Auckland Regional Council
ARI	Average Recurrence Interval
ARPS	Auckland Regional Policy Statement
BOD	Biological Oxygen Demand
ICMP	Integrated Catchment Management Plan
KgN	Kilograms of Nitrogen
MUL	Metropolitan Urban Limits
RMA	Resource Management Act 1991
TA	Territorial Authority
/	Per

## Schedule 1

### Wetland Management Areas

#### 1.1 Introduction

Wetlands have been identified as nationally threatened ecosystems that have been reduced significantly from their former extent. Wetlands are characterised as being permanently or intermittently wet areas of shallow water, with land/water margins that support a natural ecosystem of predominantly indigenous plants and animals that are adapted to wet conditions.

The wetlands listed in this schedule are identified in the Plan as Wetland Management Areas.

This schedule has been compiled from existing information on significant freshwater wetlands in the Auckland Region identified in publicly available documents and existing databases. These information sources include:

- Auckland Department of Conservation Management Strategy;
- Department of Conservation Sites of Special Wildlife Interest Database (sites of outstanding, high, moderate-high or moderate ranking);
- WERI (Wetlands of Ecological and Representative Importance) database
- Regional and District Plans, including Appendix B of the Auckland Regional Policy Statement;
- Protected Natural Area Programme survey reports;
- Local reports such as Waiheke Island Sites of Significance.

These reports contain maps of wetlands which should be used to determine the exact boundaries of those wetlands identified in Plan Map Series 1.

The schedule reflects the range of wetland types in the Auckland Region, including raupo, cabbage tree, flax, and rush and sedge swamps, kahikatea swamp forest, wetlands associated with lakes, streams and volcanic systems, and wetlands associated with freshwater-estuarine ecological sequences. The schedule contains a number of wetlands that are associated with natural lakes. The wetlands associated with these lakes have been identified separately for their ecological and wildlife values. The schedule also contains freshwater wetlands that are associated with significant estuarine ecosystems such as the Kaipara, Waitemata and Manukau Harbours.

#### Schedule of Wetland Management Areas

Number	Wetland Name	Ecological Values
<i>Kaipara Ecological Region</i>		
222	Okahukura Peninsula Wetland	Swamp vegetation, cabbage tree, manuka, rushes and sedges. Ecological sequence from marine to freshwater. Threatened species.
809	Tapora Coast	Rich variety of habitats including freshwater wetlands. Of national and international significance.
208	Tapora Golf Course Wetland	Freshwater wetland formed by sand dunes. Raupo, <i>Baumea</i> , threatened birds.
221	Gum Store Creek Freshwater Wetland	Mangroves, mudflats, sand banks, freshwater wetland, rich assemblage of habitats.

Number	Wetland Name	Ecological Values
211	Hiki Creek Scenic Reserve	Raupo and cabbage tree swamp on flood plain on lower slopes of area of broadleaved podocarp forest.
201	Hiki Stream Wetland	Raupo swamp with bordering manuka scrub. Threatened species.
241	Papakanui Wetlands	Wetlands in the area have rich botanical associations and are of national significance. Rich diversity of bird life and vegetation.
242	Waionui Inlet	An important estuarine habitat with succession of plant communities between tidal flats, freshwater wetlands and dune areas. Threatened wetland birds.
254	Lagoon Rd Wetland and Lake	Baumea, raupo, cabbage tree, manuka with buffer of kanuka. Habitat for threatened birds.
261	South Head Swamp	Raupo- <i>Schoenoplectus</i> reedland.
830	Kaukapakapa River	Scattered hill forest grading into alluvial areas of kaihikatea, cabbage tree, flax and native sedges and rushes, which grades into salt marsh and mangroves. Four main areas of wetland occur along river edges and associated tributaries.

#### Kaipara Dune Lakes

Extensive system of lakes that provide habitat for a number of threatened wildlife species. These lakes are dynamic and continually changing in size and extent. The schedule includes the following lakes.

318	Lake Kuwakatai	Lake with flax, raupo, <i>Schoenoplectus</i> sedgeland
470	Lake Okaihau	Lake with swamp areas dominated by raupo, with flax, <i>Juncus</i> spp. and <i>Cyperus ustulatus</i> . Swamp is contiguous with coastal forest. A valuable area for wildlife.
372	Lake Kereta	Lake with raupo reedland.
387	Lake Karaka South (1a)	Lake with swamp vegetation.
391	Lake Karaka South (2)	Lake with <i>Juncus-Cyperus ustulatus</i> rush-sedgeland.
802	Lake Karaka South (3)	Lake with <i>Juncus-Cyperus ustulatus</i> rush-sedgeland.
803	Lake Karaka Wetlands	Lake with <i>Juncus-Cyperus ustulatus</i> rush-sedgeland.
824	Lake Karaka south -unnamed lake 4b	Lake with <i>Juncus-Cyperus ustulatus</i> rush-sedgeland.
416	Lake Otakanini Topu South	Lake with swamp vegetation.
302	Lake Ototoa	Lake with <i>Schoenoplectus</i> reedland.
804	Hedley's Lake 1	Lake with swamp vegetation.
808	Lake Piripoua (South)	Lake with <i>Juncus</i> rushland.

Number	Wetland Name	Ecological Values
825	Lake Te Kanae	Lake with swamp reedland.
826	Lake Kowhai	Lake with reedland.
827	Lake Poutoa	Lake with <i>Cyperus ustulatus-Carex virgata-Juncus</i> sedgeland.
392	Loop Rd Closed Game Area	Threatened wetland birds.
404	Otakanini Topu Wetland	Diversity of wetland birds.
418	Fordyce Rd Swamp	Raupo- <i>Baumea-Schoenoplectus</i> reedland. Threatened species. High bird diversity.
373	Kaikore Creek Wetland	Raupo- <i>Schoenoplectus</i> reedland. Habitat for wetland.
427	Bradley Rd Swamp	Large swamp with diverse vegetation communities. Manuka, cabbage tree, flax, hangehange, Coprosma, Hebe, raupo, Carex, Juncus.
348	Waioneke Head Swamp	Vegetation sequence from swamp to scrub, threatened bird species.
359	Webber's Swamp (1)	Threatened bird species.
353	Webber's Swamp Remnants (2)	Three small remnants. Threatened species.
369	Wilson's Road Swamp	Threatened species habitat.
464	Okiritoto Wetland	Large swamp. Diverse habitats. Nesting area.
480	Taiapa Rd Bush and Wetland	Habitat for threatened bird species.
<b>Rodney Ecological District</b>		
41	Tomarata Lake and Wetland	Raupo, <i>Baumea</i> swamp, <i>Empodisma</i> peat swamp. Threatened birds.
34 & 28	Spectacle Lake & Slipper Lake	Dune impounded lakes with freshwater wetland margin. Part of series of dune lakes in Pakiri.
24	Little Shag Lake	Lake with sedgeland border. Regenerating forest on margins.
25	Te Arai Point Little Lake	Dune lake surrounded by shrubland. Wetland birds.
220	Christian Bay Wetland	Flax, raupo, rushes and sedges, threatened bird species.
177	Omaha Kahikatea Forest	Rare intact sequence from salt marsh to forest. Only example of coastal kahikatea forest on sand in region. Threatened birds.
96	Pakiri Valley Swamp Forest	Remnant kahikatea wetland. Intact ecotone.
159 & 164	Wayby Wetland	Raupo, kahikatea swamp. Threatened birds .
342	Strakas Dam	Artificial dam with wetland vegetation, threatened birds.

Number	Wetland Name	Ecological Values
389	Te Haruhi Bay Swamp	Raupo swamp in gully surrounded by regenerating forest. Threatened birds.
810	Araparera Freshwater Wetland	Raupo-rush-flax swamp. Threatened birds.
811	Ingelton Road wetland	Swamp bordered by bush.
409	Peak Road Swamp	Raupo, flax, manuka. Threatened birds.
<b>Waitakere Ecological District</b>		
492	Constable Road Swamp	Long strip of raupo. Threatened birds.
478	Goldies Bush Swamp	Small raupo swamp with kanuka margins. Threatened bird habitat.
563	Pararaha Swamp and Stream	Relatively large area of raupo, flax, rushes and sedges. Threatened species.
529	Piha Stream Swamp	Raupo swamp. Threatened bird habitat.
573	Taranaki Bay Swamp	Part of dune lake system at foot of coastal hills. Threatened bird species.
504 & 509	Te Henga Dunes and Lakes	Large area of sand dunes with several dune impounded lakes. Sequences from raupo reedland to cabbage tree to young kauri forest. Incl. Lakes Kawaupaka and Wainamu.
509	Lake Kawaupaka	One of few dune lakes in region surrounded by native forest. Threatened birds.  Wetland is located on margins of lake, which is also identified as a Natural Lake Management Area.
504	Lake Wainamu	Deep dune lake in vegetated catchment. Threatened birds. Freshwater fish.
571	Ohaka Head lake	Dune lake. Threatened birds.
828	Te Henga Wetland	Largest freshwater swamp in mainland of region. High diversity of vegetation and wildlife species. Threatened species.
576	Whatipu Sands	Extensive area of vegetated sand flats, containing freshwater and saline wetlands, impounding a stretch of cliffs.
<b>Tamaki Ecological District</b>		
450	Lake Pupuke	Small areas of raupo and rushes. Wetland birds Wetland is located on margins of Lake, which is also identified as an Urban Lake Management Area.  [E509/04/106 Watercare Services Ltd]
812	Soldiers Bay	Ecological sequence from mangroves- sand flats-shell bank-salt marsh-freshwater swamp.
813	Chelsea reservoir	Wetland vegetation on margins of reservoirs including <i>Eleocharis sphacelata</i> .



Number	Wetland Name	Ecological Values
814	Western Springs	Wetland vegetation associated with lake, including <i>Carex secta</i> swamp.
815	Tahuna-Torea	Complex of marine, intertidal, freshwater and terrestrial habitats.
816	Onehunga Springs	Groundwater springs with wetland features. Below One tree Hill lava flows.
817	Crater Hill Lake and wetland	Volcanic explosion crater with freshwater lake and wetland vegetation.
819	Puhinui Reserve	Coastal manuka, flax, cabbage tree, swamp coprosma in association with extensive shoreline saltmarsh.
<b><i>Waiheke Island - Inner Gulf Islands</i></b>		
481	Awaawaroa Bay	Vegetation sequence from mangrove-saltmarsh-freshwater wetland. Large number of wading birds.
452	Awaawaroa Stream Wetlands	One of best raupo wetlands in island. Threatened birds.
469	Putiki Bay	Ecological sequence from saline to freshwater wetlands. Threatened birds.
487	Rocky Bay Wetland	One of best saline and freshwater wetlands on island. Vegetation sequence. Threatened birds.
482	Te Matuku Bay	The most important wader habitat on island. Best vegetation sequence from saline-freshwater-terrestrial on island. Threatened birds.
820	Ponui Island	Freshwater wetlands in gully systems. Threatened birds.
<b><i>Great Barrier Island</i></b>		
108	Blackwells Creek	Tidal stream and wetlands. Threatened birds.
101	Claris South Swamp	Manuka, raupo, tall sedge. Threatened birds.
97	Grandstand Swamp	Freshwater swamp enclosed with manuka. Threatened birds.
74	Kaitoke Swamp	Most significant and largest freshwater wetland in region. Vegetation sequences. Threatened species. Internationally significant.
111	Sugarloaf Creek (Medlands Beach North Creek)	Freshwater and tidal stream and wetlands. Threatened birds.
120	Orouwharo Stream	Stream margins, rushes, sedges, manuka, threatened birds.
22	Mabeys Road Swamp	Raupo surrounded by manuka. Once more extensive. Threatened birds.
7	Mabey's Farm Stream	Tidal stream with wetland vegetation. Threatened birds.

Number	Wetland Name	Ecological Values
3	Motairehe Bay and Swamp	Tidal stream linking with freshwater swamp. Threatened birds.
10	Whangapoua Estuary	One of least modified estuaries in NZ. Sequence from saline-freshwater wetland-manuka scrub. High bird species richness. Internationally significant.
54	Awana Stream	Stream margins, kanuka, manuka, threatened birds
37	Harataonga Stream	Threatened birds.
150	Tryphena Stream	Tidal stream. Threatened birds.
<b><i>Awhitu Ecological District</i></b>		
591	Boiler Gully Swamp	Raupo, swamp maire, manuka. Intact forest-wetland sequences. Threatened bird habitat.
691	Lake Whatihua	Raupo, rushes and sedges. Threatened birds.
635 & 640 & 642	Pehiakura Lakes	Two lakes with raupo, <i>Baumea</i> . Wetland birds
612	Awhitu Regional Park Wetlands	Saline-freshwater wetland sequences. Threatened birds.
581	Big Bay Estuary & wetland	Manuka swamp in association with estuarine ecosystem. Threatened birds
650	Lake Pokorua	Largest dune lake on peninsula. Significant wetland vegetation. Threatened birds
<b><i>Manukau Ecological District</i></b>		
653	Patumahoe Road Swamp	Diverse habitat. Raupo, <i>Carex</i> .
616	Don Urquarts Swamp	Raupo swamp. Threatened bird habitat.
627	Whangapouri Pond	Raupo swamp. Wetland bird habitat.
821	Kidd Road Wetland	Raupo swamp. Threatened bird habitat.
829	Hunter Rd Wetland	Raupo, flax, <i>Carex secta</i> , kahikatea wetland. Threatened bird species.
<b><i>Hunua Ecological District</i></b>		
823	Hattaway Raupo	Dense raupo backing onto mangrove saltmarsh. Wildlife habitat.
597	Hunua Road Dam (Hay's Creek Reservoir)	Wetland bird habitat.
562	Harrison's Flax Swamp	Flax swamp. Wetland plant diversity. Threatened birds.
559	Sharpe's Raupo	Long thin raupo swamp. Wetland bird, habitat.
588	Oram's Road Wetland	Best lowland raupo, kiokio wetland in district. Threatened birds.
822	Whakatiwai Wetlands	Coastal cabbage tree-raupo-sedge wetland vegetation associated with gravel ridges.

## Schedule 2

### Aquifer Water Availabilities & Levels

#### Aquifer Water Availabilities

(See Map Series 2)

Aquifer	Water availability (m <sup>3</sup> /year)
Orewa Waitemata	858,000
Whangaparaoa Waitemata	528,000
Tomarata Waitemata	638,000
Omaha Waitemata	105,000
Kumeu Waitemata	1,559,000
Western Springs Volcanic	9,600,000
Onehunga Volcanic	8,468,000
Mt Wellington Volcanic	6,570,000
Mt Richmond Volcanic	880,000
Manukau City Waitemata	660,000
<b>Franklin Kaawa</b>	
Pukekohe Kaawa	1,860,000
Karaka Kaawa	617,000
Pukekohe West Kaawa	1,780,000
Waiau Pa Kaawa	1,560,000
Waiuku Kaawa	2,450,000
Bombay - Drury Kaawa	718,000
Clevedon East Waitemata	379,400
Clevedon West Waitemata	964,400
<b>Franklin Volcanic</b>	
Pukekohe Central Volcanic	856,000
Pukekohe South Volcanic	650,000
Pukekohe West Volcanic	420,000
Pukekohe North Volcanic	420,000

#### Aquifer Groundwater Levels

Aquifer	Level (metres above mean sea level)	Location
Omaha Waitemata	3.25 (for any 11 months of the year)	Bore 25, Point Wells Rd
Waiwera Geothermal	0.5 averaged over any consecutive 12 months.	ARC beachfront Deep Bore No. 74
Parakai Geothermal	2.5 averaged over any consecutive 12 months.	ARC Deep Bore No. 86



## Schedule 3

### Industrial or Trade Activities

- Schedule 3: Industrial or Trade Activities initially determines the risk of an Industrial or Trade Activity based on the size of the Activity Area. Activity Area is defined in Chapter 12 of the Plan. The level of risk (e.g. Low, Moderate or High) determines what type of authorisation is required for the activity. Thereafter compliance or otherwise with the provisions of the Industrial or Trade Activity rules, or changes to the size of the Activity Area, dictate the site's status and therefore the site's risk status can change over time.*
- Electrical substations that contain 1,000 litres or less of oil, are not considered an Industrial or Trade Activity for the purposes of the Plan.*
- Some activities are categorised as Moderate Risk even if they have no Activity Area. As they may pose an environmental risk, an Environmental Management Plan is required for such activities.*
- The owners or operators of High Risk Industrial or Trade Activities whose Schedule 3 Rule 5.5.16 permitted activity status expiry dates are approaching are strongly urged to commence the preparation of an Environmental Management Plan for the activity in accordance with Rule 5.5.14(i).*

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Agricultural support industries	Inorganic fertiliser manufacture, storage or handling	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30
Animal feedstuffs	Stock food manufacture storage or handling	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Pet food manufacture	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30
Chemical and associated product manufacturing	Batteries	Activity is never Low Risk	No Activity Area	Any Activity Area	24
	Cosmetics, toiletry, soap and other detergents	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	48
	Explosives and pyrotechnics	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	42
	Fungicides, herbicides, pesticides, timber preservatives and related products	Activity is never Low Risk	No Activity Area	Any Activity Area	24

## Schedule 3: Industrial or Trade Activities

## Part 4

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Commercial livestock processing industries	Industrial gas	Activity is never Low Risk	Less than 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Medicinal, pharmaceutical or veterinary products	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Paint, pigment, inks and dyes	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30
	Polishes, adhesives or sealants	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Solvents	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	36
	Synthetic Resins	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	36
	Acids, alkalis or heavy metals	Activity is never Low Risk	No Activity Area	Any Activity Area	30
	Other Chemical Products (e.g. plastic manufacturing)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Slaughter	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Manufacture, store or handle products derived from animal slaughter (e.g. gelatin, fertiliser or meat products)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Scouring or carbonising greasy wool or fleeces	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	42
	Tanneries or Fellmongeries	Activity is never Low Risk	No Activity Area	Any Activity Area	24
	Rendering or fat extraction	Activity is never Low Risk	No Activity Area	Any Activity Area	42

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Electronics  Food or beverage manufacturing or handling	Circuit board manufacturing (excluding assembly only)	Activity is never Low Risk	No Activity Area	Any Activity Area	42
	Bakery product manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Bakery product handling	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	Activity is never High Risk	n/a
	Beverages or malt product manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	48
	Beverages or malt product handling	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Flour mill or cereal foods	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	48
	Meat and meat product manufacture (including fish)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Meat product handling (including fish)	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	Activity is never High Risk	n/a
	Oil or fat product manufacturing or handling	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Processed dairy foods manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Processed dairy foods handling	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Vineyards or wine manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Other foodstuffs manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42

## Schedule 3: Industrial or Trade Activities

## Part 4

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Research or defence	Other foodstuffs handling	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Research establishments	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Naval and airforce defence activities	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	0 (i.e. date rule becomes operative)
Machinery or equipment manufacturing	Industrial machinery or equipment	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Motor vehicles or parts	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Other machinery or equipment	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
Metal product manufacturing	Sheet and structural metal products	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
Motor Vehicle services facilities	Existing or new service stations that comply with the "Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand, Ministry for the Environment, December 1998".	Activity is never Low Risk	Activity is always Moderate Risk	Activity is never High Risk	n/a
	All other service stations	Activity is never Low Risk	Activity is never Moderate Risk	Activity is always High Risk	36
	Mechanical servicing of motor vehicles	Activity is never Low Risk	Activity is always Moderate Risk	Activity is never High Risk	n/a



Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Non-metallic mineral product manufacturing	Cement, lime, plaster and concrete products	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	24
	Concrete batching plants (ready mixed concrete)	Activity is never Low Risk	No Activity Area	Any Activity Area	24
	Glass	Activity is never Low Risk	Less than 5000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
Metal processing, metallurgical works or metal finishing	Metal plating, anodising or polishing	Activity is never Low Risk	No Activity Area	Any Activity Area	0 (i.e. date rule becomes operative)
	Metal blasting or coating (excluding spray painting)	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	24
	Refinement of ores	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	24
	Processing of metals (e.g. smelting, casting)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	12

## Schedule 3: Industrial or Trade Activities

## Part 4

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Petroleum or coal product manufacturing	Bitumen/asphalt premix or hot mix	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1000m <sup>2</sup>	42
	Coal products	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Petroleum refining	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Petroleum hydrocarbon, oil or grease manufacturing	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	42
Power	Electrical substations <sup>2</sup>	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Electricity generation	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30
Product storage or handling centres	Bulk chemicals	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	24
	Bulk hydrocarbons (non-service station)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Recycling, recovery, reuse or disposal	Automotive dismantling	Activity is never Low Risk	No Activity Area	Any Activity Area	12
	Batteries	Activity is never Low Risk	No Activity Area	Any Activity Area	36
	Chemicals	Activity is never Low Risk	No Activity Area	Any Activity Area	36
	Crushing, grinding or separation works (other than sand, gravel, rock or mineral) (e.g. slag, road base, demolition material)	Activity is never Low Risk	Less than 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	36
	Hazardous materials storage or treatment	Activity is never Low Risk	No Activity Area	Any Activity Area	24
	Landfills	Activity is never Low Risk	No Activity Area	Any Activity Area	36
	Metals (crushing, grinding, sorting or storage)	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	0 (i.e. date rule becomes operative)
	Non-metal recycling (e.g. composting, glass, paper or paper board)	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Oil, petroleum hydrocarbon wastes	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	30
	Chemical containers cleaning, reconditioning, or recycling	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	24

## Schedule 3: Industrial or Trade Activities

## Part 4

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
	Sewage solids treatment or storage facilities	Activity is never Low Risk	No Activity Area	Any Activity Area	30
	Tyres	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	24
	Waste transfer stations	Activity is never Low Risk	No Activity Area	Any Activity Area	24
Rubber industries	Tyre manufacturing or retreading	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30
	Synthetic rubber manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	24
Transport and related activities	Boat or ship construction, repair or maintenance	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	0 (i.e. date rule becomes operative)
	Bus Depots	Activity is never Low Risk	Less than 5000m <sup>2</sup>	More than 5,000m <sup>2</sup>	48
	Commercial airports other than Auckland International Airport Limited	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	48
	Auckland International Airport Limited activities contained within the Secure Area as declared from time to time by the Director of Civil Aviation under section 84 of the Civil Aviation Act 1990 provided that the stormwater runoff from that secure Area complies with "Stormwater Management Devices: Design Guidelines Manual", second edition, May 2003, Technical Publication 10.	Activity is never Low Risk	Activity is always Moderate Risk	Activity is never High Risk	n/a

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
	Heliports other than Auckland International Airport Limited	Activity is never Low Risk	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	48
	Road freight transport depot (non-chemical) with mechanical servicing	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Road freight transport depot (bulk chemical)	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	30
	Railway workshops or refueling depots	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	24
	Shipping container reconditioning (not located at port areas)	Less than 1000m <sup>2</sup>	More than 1,000m <sup>2</sup>	Activity is never High Risk	n/a
	Commercial ports (including the Ports of Auckland Limited), shipping container reconditioning, and shipping loading/unloading	Activity is never Low Risk	Less than 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	EEExisting or new truck refuelling facilities (non service stations) that comply with the "Environmental Guidelines for Water Discharges from Petroleum Industry Sites in New Zealand, Ministry for the Environment, December 1998":	Activity is never Low Risk	Less than 1,000m <sup>2</sup>	More than 1,000m <sup>2</sup>	36

## Schedule 3: Industrial or Trade Activities

## Part 4

Process	Description of Industrial or Trade Activity	Low Risk (Based on size of Activity Area)	Moderate Risk (Based on size of Activity Area)	High Risk (Based on size of Activity Area)	Months after Rule 5.5.16 becomes operative
Wood or paper product storage, manufacturing or fabrication	Log storage yards (outside of forested areas)	Activity is never Low Risk	Less than 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	36
	Plywood or veneer manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Particle board or other wood panel manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Pulp, paper or paper board manufacturing	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	42
	Timber treatment	Activity is never Low Risk	Activity is never Moderate Risk	Any Activity Area	0 (i.e. date rule becomes operative)
Sewage treatment and handling (excluding any part of a sewage conveyance network as that does not form an Industrial or Trade Activity for the purposes of Rules 5.5.14 to 5.5.19)	Treated timber storage	Activity is never Low Risk	Less than 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	12
	Environmentally hazardous substances storage or use (excluding sewage)	Activity is never Low Risk	No Activity Area	Any Activity Area	30
	Sewage solids storage.	Less than 1000m <sup>2</sup>	1,000m <sup>2</sup> to 5,000m <sup>2</sup>	More than 5,000m <sup>2</sup>	30

## Schedule 4

### Natural Lake Management Areas

Map Series 1 Identification (Wetland Number)	Lake Name	Map Series 1 Location	Ecological Values and Water Quality
34	Lake Spectacle	1	Has the worst water quality of the seven lakes monitored by the ARC, consistent with its location entirely within a pastoral catchment. Suffers regular blooms of algae, particularly during summer. A narrow fringe of vegetation exists around the margin comprising raupō, tall spike sedge, mingimingi and swamp kiokio. Provides a refuge and feeding habitat for resident and itinerant waterfowl.
28	Slipper Lake	1	Connected to Lake Spectacle by a drainage canal, with similar water quality. Prevalent algal blooms occur during summer. Some wetland vegetation occurs around the margin, which provides habitat for wetland birds
41	Lake Tomarata	1	A small dune lake with extensive wetland areas along its north, west and southern shores. Water quality is moderate compared to other lakes the ARC monitors, though may be deteriorating. Raupo dominates the marginal vegetation with sedges, rushes and the umbrella fern found within the wetland. Provides a refuge and feeding habitat for resident and itinerant waterfowl
302	Lake Ototoa	9	Has the best water quality of the seven lakes monitored by the ARC. The lakes supports dense beds of native submerged aquatic plants dominated by Chara sp. Marginal emergent vegetation is diverse with three Baumea species dominating. Large populations of dwarf inanga and bullies are present in the lake.
318	Lake Kuwakatai	9 & 14	Has very poor water quality typical of a shallow waterbody located within a pastoral catchment. The weed hornwort dominates the aquatic plant communities and many exotic fish are present, including koi carp. Provides a refuge and feeding habitat for resident and itinerant waterfowl.

Map Series 1 Identification (Wetland Number)	Lake Name	Map Series 1 Location	Ecological Values and Water Quality
825	Lake Te Kanae	14	No information available
372	Lake Kereta	14	A small turbid dune lake with poor water quality. High faecal bacteria counts indicate stock access to the water and large populations of resident waterfowl, including swans. The weed hornwort dominates the aquatic plant communities and many exotic fish are present.
No wetland	Lake Paekawau	22	A small lake located near Muriwai Beach. Little information exists.
470	Lake Okaihau	22 & 28	Also located near Muriwai Beach. Some historic information available.
828	Lake Te Henga	28	Located within the Te Henga Wetland, likely existing due to an impoundment of the river system.
504	Lake Wainamu	28	Water quality has undergone recent deterioration following the loss of submerged aquatic plants in the mid 1990's. A large amount of its catchment is native forest. Exotic fish are present including goldfish, perch, tench, rudd and catfish. A colony of black shag are also present.
509	Lake Kawaupaka	28	A small lake located entirely within a forested catchment. Water quality has declined recently following the introduction of exotic plants and fish during the past thirty years. A large colony of black shag are present.
635	Pehiakura Lake	43 & 47	No information available.
650	Lake Pokorua	43 & 47	A small dune lake located on the Awhitu Peninsula. Three threatened bird species are found at the lake, the Australasian bittern, New Zealand dabchick and the North Island fernbird. Waterfowl present include NZ scaup, paradise shelduck, black swan and shoveller duck. Other wetland, forest and coastal bird species present include: mallard duck, little shag, white fronted tern, black backed gulls, black shag, white faced heron, pukeko, harrier hawk and grey warbler.
691	Lake Whatihua	47	No information available



The above listed lakes are identified as Natural Lake Management Areas. The management area includes the area of water within the lake itself and a 50 metre buffer surrounding the lake edge. This buffer distance is measured landward from the Mean Annual Water Level.

Many of these lakes also contain wetlands around their margins which are identified in Schedule 1: Wetland Management Areas. The relevant Wetland Management Area number is listed in Column 1.

The Plan Maps (Map Series 1) also identify other lakes and waterbodies in the Auckland Region for information purposes and to provide geographic markers. They are not Natural Lake Management Areas and are shown as a different colour on the Plan Maps.



## Schedule 5

### Minimum Information Requirements for Agrichemical Spray Plan

Name: (landowner/occupier)	* Intended/approximate date/s or period of spray application:
* Spray area location (indicate on map):	* Name of Agrichemical Applicator Contact details (Ph.) GROWSAFE® Certification status: Certification current Yes No
* Agrichemical to be used: (a) Chemical (b) Trade name (c) Specific hazard (e.g. bee toxicity)	Crop/Target of use: (e.g. pest, disease, weed, parasite)
Application rate/dosage: (a) Chemical: (b) Total volume (kg or litres per hectare):	* Application method:
Additives used:	Weather conditions required for application: (wind speed, direction, relative humidity)
* Sensitive areas: (location map of application area, nature and location of sensitive area (including roads used by school children)):	* Names and contact details (when identified) of those to be advised of spraying:
Strategies to avoid contamination of sensitive areas (e.g. specific application techniques, buffer zones, observing/attending boundaries)	Details of notification method to be used to advise affected parties of spraying occurring
Weather conditions that increase potential drift hazard to identified sensitive areas:	Contingency plans for timetabling changes/ any adverse events







## Schedule 7

### Hazardous Air Pollutants

Hazardous air pollutants include those substances listed in Section 112 (b) (1) of the United States Clean Air Act (1990)\* and the following:

- Radioactive, carcinogenic, teratogenic, or mutagenic substances;
- Antimony, arsenic, beryllium, cadmium, lead, mercury, thallium, selenium, uranium, and their compounds;
- Boron, chromium, cobalt, copper, magnesium, manganese, nickel, potassium, sodium, tellurium, tin, vanadium, zinc, and their compounds;
- Dust containing asbestos, quartz, or other of the pneumoconioses inducing or asthmagenic substances;
- Dusts, and fumes, containing metallic elements;
- Dusts, and fumes, containing organic and inorganic materials including fertilisers, cement, coke, coal, soot, carbon, tars, wood, fibres, and pathogenic substances;
- Sulphur, sulphur oxides, sulphur oxy acids, carbon di-sulphide, hydrogen sulphide, di-sulphides, poly-sulphides, mercaptans, and other acidic, toxic, or odorous sulphur compounds;
- Nitrogen oxides, nitric acid, ammonia, and hydrazine, and their compounds, volatile amines, cyanides, cyanates, di-isocyanates or other toxic or odorous compounds of nitrogen;
- Fluorine, chlorine, bromine, iodine, and their compounds;
- Phosphorus, and its oxides, acids, and organic compounds;
- Alkyl, carbonyl, and other toxic organo-metal compounds;
- Hydrocarbons, and their partially oxidised or halogenated derivatives, particularly acrolein, esters of acrylic acid, formaldehyde, and volatile carboxylic acids, and anhydrides, and industrial solvents; and
- Ozone and carbon monoxide.

\* Hazardous air pollutants listed in Section 112 (b) (1) of the US Clean Air Act (1990) include:

Chemical Abstracts Service Number	Pollutant
75-07-0	Acetaldehyde
60-35-5	Acetamide
75-05-8	Acetonitrile
98-86-2	Acetophenone
53-96-3	2-Acetylaminofluorene
107-02-8	Acrolein
79-06-1	Acrylamide
79-10-7	Acrylic acid
107-13-1	Acrylonitrile
107-05-1	Allyl chloride

Chemical Abstracts Service Number	Pollutant
92-67-1	4-Aminobiphenyl
62-53-3	Aniline
90-04-0	o-Anisidine
71-43-2	Benzene
92-87-5	Benzidine
98-07-7	Benzotrichloride
100-44-7	Benzyl chloride
92-54-4	Biphenyl
117-81-7	Bis(2-ethylhexyl)phthalate (DEHP)
542-88-1	Bis(chloromethyl) ether
75-25-2	Bromoform
109-99-0	1,3-Butadiene
156-62-7	Calcium cyanamide
105-60-2	Caprolactam
133-06-2	Captan
63-25-2	Carbaryl
75-15-0	Carbon disulfide
56-23-5	Carbon tetrachloride
463-58-1	Carbonyl sulfide
120-80-9	Catechol
133-90-4	Chloramben
57-74-9	Chlordane
7782-50-5	Chlorine
79-11-8	Chloroacetic acid
532-27-4	2-Chloroacetophenone
108-90-7	Chlorobenzene
510-15-6	Chlorobenzilate
67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether
126-99-8	Chloroprene
1319-77-3	Cresol/cresylic acid (mixed isomers)
95-48-7	o-Cresol
108-39-4	m-Cresol



Chemical Abstracts Service Number	Pollutant
106-44-5	p-Cresol
98-82-8	Cumene
	2,4-D (2,4-Dichlorophenoxyacetic acid) (including salts and esters)
72-55-9	DDE (1,1-dichloro-2,2-bis(p-chlorophenyl) ethylene)
334-88-3	Diazomethane
132-64-9	Dibenzofuran
96-12-8	1,2-Dibromo-3-chloropropane
84-74-2	Dibutyl phthalate
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3'-Dichlorobenzidine
111-44-4	Dichlororethyl ether (bis[2-chloroethyl]ether)
542-75-6	1,3-Dichloropropene
62-73-7	Dichlorvos
111-42-2	Diethanolamine
64-67-5	Diethyl sulfate
119-90-4	3,3'-Dimethoxybenzidine
60-11-7	4-Dimethylaminoazobenzene
121-69-7	N,N-Dimethylaniline
119-93-7	3,3'-Dimethylbenzidine
79-44-7	Dimethylcarbamoyl chloride
68-12-2	N,N-Dimethylformamide
57-14-7	1,1-Dimethylhydrazine
131-11-3	Dimethyl phthalate
77-78-1	Dimethyl sulphate 4,6-Dinitro-o-cresol (including salts)
51-28-5	2,4-Dinitrophenol
121-14-2	2,4-Dinitrotoluene
123-91-1	1,4-Dioxane (1,4-Diethyleneoxide)
122-66-7	1,2-Diphenylhydrazine
106-89-8	Epichlorohydrin (1-Chloro-2,3-epoxypropane)
106-88-7	1,2-Epoxybutane
140-88-5	Ethyl acrylate
100-41-4	Ethylbenzene
51-79-6	Ethyl carbamate (Urethane)

Chemical Abstracts Service Number	Pollutant
75-00-3	Ethyl chloride (Chloroethane)
106-93-4	Ethylene dibromide (Dibromoethane)
107-06-2	Ethylene dichloride (1,2-Dichloroethane)
107-21-1	Ethylene glycol
151-56-4	Ethyleneimine (Aziridine)
75-21-8	Ethylene oxide
96-45-7	Ethylene thiourea
75-34-3	Ethylidene dichloride (1,1-Dichloroethane)
50-00-0	Formaldehyde
76-44-8	Heptachlor
118-74-1	Hexachlorobenzene
87-68-3	Hexachlorobutadiene
	1,2,3,4,5,6-Hexachlorocyclohexane (all stereo isomers, including lindane)
77-47-4	Hexachlorocyclopentadiene
67-72-1	Hexachloroethane
822-06-0	Hexamethylene diisocyanate
680-31-8	Hexamethylphosphoramide
110-54-3	Hexane
302-01-2	Hydrazine
7647-01-0	Hydrochloric acid (Hydrogen chloride [gas only])
7664-39-3	Hydrogen fluoride (Hydrofluoric acid)
123-31-9	Hydroquinone
75-59-1	Isophorone
108-31-6	Maleic anhydride
67-56-1	Methanol
72-43-5	Methoxychlor
74-83-9	Methyl bromide (Bromomethane)
74-87-3	Methyl chloride (Chloromethane)
71-55-6	Methyl chloroform (1,1,1-Trichloroethane)
78-93-3	Methyl ethyl ketone (2-Butanone)
60-34-4	Methylhydrazine
74-88-4	Methyl iodide (Iodomethane)
108-10-1	Methyl isobutyl ketone (Hexone)

Chemical Abstracts Service Number	Pollutant
624-83-9	Methyl isocyanate
80-62-6	Methyl methacrylate
1364-01-4	Methyl tert-butyl ether
101-14-4	4,4'-Methylenebis(2-chloroaniline)
75-09-2	Methylene chloride (Dichloromethane)
101-68-8	4,4'-Methylenediphenyl diisocyanate (MDI)
101-77-9	4,4'-Methylenedianiline
91-20-3	Napthalene
98-95-3	Nitrobenzene
92-93-3	4-Nitrobiphenyl
100-02-7	4-Nitrophenol
79-46-9	2-Nitropropane
684-93-5	N-Nitroso-N-methylurea
62-75-9	N-Nitrosomorpholine
56-38-2	Parathion
82-68-8	Pentachloronitrobenzene (Quintobenzene)
87-86-5	Pentachlorophenol
108-95-2	Phenol
106-50-3	p-Phenylenediamine
75-44-5	Phosgene
7803-51-2	Phosphine
7723-14-0	Phosphorus
85-44-9	Phthalic anhydride
1336-36-3	Polychlorinated biphenyls (Aroclors)
1120-71-4	1,3-Propane sultone
57-57-8	Beta-Propiolactone
123-38-6	Propionaldehyde
114-26-1	Propoxur (Baygon)
78-87-5	Propylene dichloride (1,2-Dichloropropane)
75-56-9	Propylene oxide
75-55-8	1,2-Propylenimine (2-Methylaziridine)
91-22-5	Qunoline
106-51-4	Quinone (p-Bezonquinone)

Chemical Abstracts Service Number	Pollutant
100-42-5	Styrene
96-09-3	Styrene oxide
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79-34-5	1,1,2,2-Tetrachloroethane
127-18-4	Tetrachloroethylene (Perchloroethylene)
7550-45-0	Titanium tetrachloride
108-88-3	Toluene
95-80-7	Toluene-2,4-diamine
584-84-9	2,4-Toluene diisocyanate
95-53-4	0-Toluidine
8001-35-2	Toxaphene (chlorinated camphene)
120-82-1	1,2,4-Trichlorobenzene
79-00-5	1,1,2-Trichloroethane
79-01-6	Trichloroethylene
95-95-4	2,4,5-Trichlorophenol
88-06-2	2,4,6-Trichlorophenol
121-44-8	Triethylamine
1582-09-8	Trifluralin
540-84-1	2,2,4-Trimethylpentane
108-05-4	Vinyl acetate
593-60-2	Vinyl bromide
75-01-4	Vinyl chloride
75-35-4	Vinylidene chloride (1,1-Dichloroethylene)
1330-20-7	Xylene (mixed isomers)
95-47-6	o-Xylene
108-38-3	m-Xylene
106-42-3	p-Xylene

Antimony Compounds  
 Arsenic Compounds (inorganic including arsine)  
 Beryllium Compounds  
 Cadmium Compounds  
 Chromium Compounds  
 Cobalt Compounds  
 Coke Oven Emissions

Cyanide Compounds<sup>1</sup>  
 Glycol ethers<sup>2</sup>  
 Lead Compounds  
 Manganese Compounds  
 Mercury Compounds  
 Fine Mineral fibres<sup>3</sup>  
 Nickel Compounds  
 Polycyclic Organic Matter<sup>4</sup>  
 Radionuclides (including Radon)<sup>5</sup>  
 Selenium Compounds

NOTE: For all listings above which contain the word "Compounds" and for glycol ethers, the following applies: Unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical (i.e. antimony, arsenic, etc.) as part of that chemical's infrastructure.

<sup>1</sup> X'CN where X=H' or any other group where a formal dissociation may occur. For example, KCN or Ca(CN)<sub>2</sub>.

<sup>2</sup> R-(OCH<sub>2</sub>CH<sub>2</sub>)<sub>n</sub>-OR'

where

n=1,2 or 3

R = alkyl C7 or less

or R= phenyl or alkyl substituted phenyl

R'=H, or alkyl C7 or less or ester, sulphate, phosphate, nitrate, sulphonate

<sup>3</sup> Includes mineral fibre emissions from facilities manufacturing or processing glass, rock, or slag fibres (or other mineral derived fibres) of average diameter 1 micrometre or less.

<sup>4</sup> Includes substituted and/or unsubstituted polycyclic aromatic hydrocarbons and aromatic heterocyclic compounds, with two or more fused rings, at least one of which is benzenoid (i.e., containing six carbon atoms and is aromatic) in structure. Polycyclic Organic Matter is a mixture of organic compounds containing one or more of these polycyclic aromatic chemicals. Polycyclic Organic Matter is generally formed or emitted during thermal processes including:

- incomplete combustion,
- pyrolysis,
- the volatilization, distillation or processing of fossil fuels or bitumens or
- the distillation or thermal processing of non-fossil fuels.

<sup>5</sup> A type of atom which spontaneously undergoes radioactive decay.



## Schedule 8

### Sites and Areas of Special Value to Tangata Whenua

This Schedule is yet to be prepared in accordance with Method 2.3.5.2.





## Schedule 9

### Contents of Integrated Catchment Management Plans & Applications for Network Discharge Consents

Integrated Catchment Management Plans (ICMPs) and applications for consent under Rules 5.5.10 to 5.5.13, in combination, should include the items in the Table below. In the columns relating to consents under Rules 5.5.10 to 5.5.13, “part” means the item is required in relation to the network activities and to the extent of its effects on the receiving environment.

Table A

Item	Item	Required for ICMP	Required for consent under Rules 5.5.10 to 5.5.13 by a stormwater or wastewater network utility operator	Required for consent under Rules 5.5.10 to 5.5.13 by a highway network operator
A	The issues arising from stormwater and wastewater discharges, diversions and associated activities facing the catchment or district, including:			
a (i)	A description of the drainage <i>networks</i> and their current and predicted future performance.	Yes	Yes	Yes
a (ii)	A general description of non-network drainage within the catchment or network and its likely contribution to adverse environmental effects;	Yes	No	No
a (iii)	An assessment of the <i>receiving environment</i> and the actual and potential effects (including cumulative effects) of <i>stormwater</i> or <i>wastewater</i> diversions and discharges, and associated river and <i>lake</i> bed activities on:	Yes	Yes	Yes
	<ul style="list-style-type: none"> <li>Public health;</li> </ul>	Yes	Part	No
	<ul style="list-style-type: none"> <li>Flooding hazards, including legally authorised floor levels of <i>habitable buildings</i> and the State highway with respect to flood events up to and including 100 year <i>ARI</i> flood events;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li><i>Watercourse</i> hydrology, long-term <i>aquifer</i> levels and authorised surface and groundwater uses;</li> </ul>	Yes	Part	Part

Item	Item	Required for ICMP	Required for consent under Rules 5.5.10 to 5.5.13 by a stormwater or wastewater network utility operator	Required for consent under Rules 5.5.10 to 5.5.13 by a highway network operator
	<ul style="list-style-type: none"> <li>• <i>Receiving environment</i> sediment quality and water quality, including Environmental Indicator monitoring results;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• Aquatic habitat, ecology and ecosystem health;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• The natural and <i>amenity</i> values of <i>lakes</i>, rivers, wetlands and <i>aquifers</i>;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• Riparian vegetation;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• The extent and quality of open stream channels;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• <i>Fish passage</i> for native fish;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• The erosion and sedimentation of <i>lakes</i>, wetlands, and perennial rivers;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• The discharge and accumulation of litter;</li> </ul>	Yes	Part	Part
	<ul style="list-style-type: none"> <li>• For discharges to the coastal marine area; erosion, accretion; natural character and public access</li> </ul>	Yes	Part	Part
	<p>The above assessment should identify the contaminants of concern within the catchment or network, which may include finer sediments (&lt;100um), zinc, and petroleum <i>hydrocarbons</i>. The AEE should assess land-uses with high contaminant generation potential and the effects of <i>stormwater</i> contaminants discharged to estuaries and harbours.</p>			
a (iv)	<p>The identification of potential urban growth, <i>land use intensification</i>, redevelopment and <i>regionally significant infrastructure</i> development within the catchment, taking into account the growth projections developed under the Regional Growth Strategy and related Sector Agreements produced by the Auckland Regional Growth Forum, and District Plans;</p>	Yes	Yes	Part

Item	Item	Required for ICMP	Required for consent under Rules 5.5.10 to 5.5.13 by a stormwater or wastewater network utility operator	Required for consent under Rules 5.5.10 to 5.5.13 by a highway network operator
a (v)	A classification of the <i>urban rivers and streams</i> within the catchment in accordance with Section 3.5 of this Plan;	Yes	Part	No
a (vi)	Governance structures and management responsibilities for <i>stormwater</i> and <i>wastewater</i> networks;	Yes	Part	Part
a (vii)	Significant non-network diversion and discharge activities that may have a material effect on environmental outcomes.	Yes	No	No
B	A description of the strategic objectives sought for the stormwater and wastewater discharges, diversions and associated activities and receiving environments, including:			
b (i)	The social, ecological, economic, amenity and cultural objectives;	Yes	Yes	Yes
b (ii)	The community and iwi consultation undertaken in determining the strategic objectives;	Yes	Yes	Part
b (iii)	Identified milestones required to achieve those objectives.	Yes	Yes	Yes
C	A description and consideration of the range of management options available to achieve, or progress towards, the objectives identified in (b), including:			
c (i)	Methods by which network discharges, structures and activities from <i>urban areas</i> (development, redevelopment and greenfields development) will be managed;	Yes	Yes	Yes
c (ii)	Methods for the management of non-network activities, such as discharges from private properties;	Yes	No	No

Item	Item	Required for ICMP	Required for consent under Rules 5.5.10 to 5.5.13 by a stormwater or wastewater network utility operator	Required for consent under Rules 5.5.10 to 5.5.13 by a highway network operator
c (iii)	District and other Plans, or other regulatory and non-regulatory means, including an assessment of the effectiveness of current Plan provisions and consideration of Plan changes or variations;	Yes	Part	Part
c (iv)	Education initiatives to support the management regime;	Yes	Yes	Yes
c (v)	Methods to avoid adverse effects occurring, such as; source control, low impact design and any innovative methods;	Yes	Yes	Yes
c (vi)	Methods for managing high contaminant load sources;	Yes	Yes	Part
c (vii)	Design standards and levels of service for the <i>network</i>	Yes	Yes	Yes
D	<b>The proposed catchment or network management method(s), including:</b>			
d(i)	The identification of the Best Practicable Option (BPO) to prevent or minimise, the adverse effects of <i>stormwater</i> or <i>wastewater</i> diversions, discharges and associated activities, including any methods to mitigate significant unavoidable adverse effects;	Yes	Yes	Yes
d(ii)	The methods by which; <i>network</i> interconnections, non- <i>network</i> discharges, <i>urban rivers and streams</i> [E513/04/01] and associated river and lake bed activities are proposed to be managed and integrated management will be achieved;	Yes	Part	Part
d(iii)	Any regulatory methods;	Yes	No	No
d(iv)	Any non- regulatory methods.	Yes	No	No
E	<b>A description of the processes and tools to support the implementation of the ICMP or compliance with the conditions of a network consent including:</b>			
e(i)	Methods of monitoring and reporting progress;	Yes	Yes	Part

Item	Item	Required for ICMP	Required for consent under Rules 5.5.10 to 5.5.13 by a stormwater or wastewater network utility operator	Required for consent under Rules 5.5.10 to 5.5.13 by a highway network operator
e(ii)	A prioritised programme(s) for implementing the BPO;	Yes	Yes	Yes
e(iii)	Operation and <i>maintenance</i> programmes to ensure the effective functioning of the management method(s);	Yes	Yes	Yes
e(iv)	Identification of the organisations with statutory responsibility or ability for implementing the proposed catchment management methods, and in particular those organisations: <ul style="list-style-type: none"> <li>• with sole or primary responsibility for implementation;</li> <li>• with partial or secondary responsibility for implementation;</li> <li>• with no responsibility for implementation.</li> </ul>	Yes	Yes	Part
e(v)	A process for reviewing the catchment or network management approach based on an increased understanding of environmental responses, public health issues, community needs and network priorities.	Yes	Yes	Part
e(vi)	A description of the process for reviewing the <i>ICMP</i> , to reflect changes in knowledge, community aspirations, technology and other factors.	Yes	No	No



## Schedule 10

### Permitted Activity Criteria

The contaminant levels specified in the table below apply to historical land uses only. They are not to be construed as levels to which land can be polluted up to as a result of ongoing discharges or as levels to which land must be remediated.

Contaminant	Permitted Activity Soil Criteria (mg/kg)	
	Discharge	Human Health <sup>3</sup>
Arsenic	100.0	30.0
Benzo (a) Pyrene (equivalent)	2.15	0.27
Cadmium	7.5	1.0
Chromium (total)	400.0	
Copper	325.0	
Total DDT <sup>1</sup>	12 or 0.7 <sup>2</sup>	8.4 <sup>4</sup>
Lead	250.0	
Mercury	0.75	
Nickel	105.0	
Zinc	400.0	

- <sup>1</sup> Total DDT includes the sum of DDT, DDD and DDE. The table above sets out the relevant criteria for the identified contaminants and further reference to other guidelines for individual intermediate breakdown products are not required.
- <sup>2</sup> The criteria 12 mg/kg applies to land that is not being redeveloped. The criteria 0.7 mg/kg applies to land that is being redeveloped (redevelopment does not include cultivation and the formation and maintenance of tracks) during the redevelopment phase only. Once redevelopment has been completed, the higher criteria applies.
- <sup>3</sup> Criteria for the protection of human health have been included only where they are more stringent (lower) than the relevant discharge value. Permitted activity Rule 5.5.41 defines the circumstances where the ARC will apply the human health criteria.
- <sup>4</sup> The human health value for Total DDT is derived from the soil quality guidelines in "Identifying, Investigating and Managing Risks Associated with Former Sheep-dip Sites: A guide for local authorities", MfE 2006





## Schedule 11

### Compilation Of Acceptance Guidelines

#### Table of Contents

1. Table 3 and Appendix 1 & 2 are from ARC Technical Publication "Background concentrations of inorganic elements in soils from the Auckland region", TP 153, October 2001.	396
2. CSQG Summary table is from "Canadian Environmental Quality Guidelines", Canadian Council of Ministers of the Environment, CCME 1991 (update 2002).	404
3. Module 4 Tables are from "Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand", Ministry for the Environment, 1999.	405
4. Table A.5 Sheep Dip Guidelines is from "Identifying, Investigating and Managing Risks Associated with former Sheep-dip Sites: A guide for Local Authorities", Ministry for the Environment, 2006.	422
5. Tables 3.4.1 and 3.5.1 are from "Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines", October 2000.	423

Table 3 and Appendix 1 & 2 are from ARC Technical Publication “Background concentrations of inorganic elements in soils from the Auckland region”, TP 153, October 2001.

**Background Concentrations of Inorganic Elements in Soils in the Auckland Region**  
*(all values in mg/kg unless otherwise specified)*

Element (Total Recoverable)	Non-Volcanic Range	Volcanic Range
Arsenic (As)	0.4 - 12	
Barium (Ba)	8 - 350	
Boron (B)	2 - 45	< 2 - 260
Cadmium (Cd)	< 0.1 - 0.65	
Chromium (Cr)	2 - 55	3 - 125*
Cobalt (Co)	0.2 - 35	10 - 170
Copper (Cu)	1 - 45	20 - 90
Lead (Pb)	< 1.5 - 65*	
Magnesium (Mg)	470 - 10,300	190 - 76,600
Manganese (Mn)	10 - 2,500*	
Mercury (Hg)	<0.03 - 0.45	
Nickel (Ni)	0.9 - 35	4 - 320
Nitrogen (total, N)	300 - 8,500	
Phosphorus (P)	75 - 1,220	245 - 3,730
Potassium (K)	220 - 3,660	
Sulphur (S)	85 - 2,300	
Tin (Sn)	< 0.7 - 4*	
Vanadium (V)	8 - 160*	15 - 370
Zinc (Zn)	9 - 180	54 - 1,160
Total Organic Carbon (TOC)	0.6 - 14%	

- Notes:
- 1. Background ranges for major elements (N, P, S, TOC) include statistical outlier and extreme values outside the non-outlier volcanic soil range. All other elements do not include values obtained that were statistical outliers or extremes outside the non-outlier volcanic range.
  - 2. \*Work suggests special cases have been found to apply for Ti Point Basalts (Cr), Mt Smart Volcanics (Pb, Sn), Franklin Basalts (Sn), and Awhitu-type Mineral Sands (Mn,V) and as such these lithologies need to be considered individually.

### Sampling Site Locations of Auckland Soils

(TCLP) indicates that sample was additionally submitted for TCLP testing

Soil Parent Rock	Sample ID	Site Name	Map Reference
Volcanics	101	Ti Point	R09:715410
	TP01-TP04	Ti Point	R09:711409
	102	Smales Quarry	R11:675895
	LP01-LP04	Lake Pupuke (Killarney St Reserve)	R11:681891
	103	Mt Victoria	R11:708846
	104	North Head	R11:721844
	105	Riteakawarau	Q10:496113
	106	Mt Roskill	R11:652752
	107	Mt Albert	R11:637776
	108	Mt Eden (& TCLP)	R11:675790
	ME01-ME02	Mt Eden	R11:677790
	ME03-ME04	Mt Eden	R11:677795
	109	Mt Hobson	R11:697788
	110	Mt Smart (& TCLP)	R11:719743
	111	Mt Wellington (& TCLP)	R11:749771
	112	Mt Mangere	R11:691709
	113	Mt Richmond	R11:743727
	114	One Tree Hill (& TCLP)	R11:693765
	OT01-OT04	One Tree Hill	R11:689760
	115	Greenmount	R11:797716
	GM01-GM02	Greenmount	R11:801717
	116	Ihumatao	R11:660660
	IH01-IH04	Ihumatao	R11:665656
	117	Puhinui Crater	R11:731672
	118	McLaughlins Mt	R11:757648
	119	Three Kings	R11:667762
	120	Pigeon Mountain	R11:800774
	121	Orakei Basin	R11:716803
	122	Panmure Basin	R11:750760
	124	Puketutu Is	R11:663693
	125	Mt St John	R11:690784
	126	Auckland Domain	R11:684805
	AD01-AD04	Auckland Domain	R11:687813
	127	Glenbrook School	R12:658427
	128	Puni School	R12:749395
	129	Patumahoe Reserve	R12:738443
Soil Parent Rock	Sample ID	Site Name	Map Reference
Volcanics	130	Kiwi Rd	R12:691391
	131	Pukekohe Hill	R12:783397
	132	Adams Rd	R12:769428
	133	Rutherford Rd	R12:843444
	RR01-RR04	Rutherford Rd	R12:875445
	134	Paparata Rd	R12:880444
	PR01-PR04	Paparata Rd	R12:839442
	310	Pt England Reserve	R11:773785
	PE01-PE04	Pt England Reserve	R11:771782

Soil Parent Rock	Sample ID	Site Name	Map Reference
Waitematas	201	Pakiri Reserve	R08:590538
	202	Burma Rd	Q09:317342
	203	Kaipara Hills Rd	Q09:424248
	204	Green Hollows Rd	R10:592161
	205	The Dome	R09:563368
	206	Inland Rd	Q10:430023
	207	Kumeu Heights	Q10:473931
	KH01-KH04	Kumeu Heights	Q10:471929
	208	Whangaparaoa	R10:693083
	209	Long Bay Regional Park	R10:640000
	KP01-KP04	Kauri Point Centennial Park	R11:628853
	211	Cottle Rd	Q11:475852
	212	Cape Horn	R11:646725
	213	Kepa Bush Park	R11:738806
	214	Redoubt Rd	R11:830657
	215	Cyclades Reserve	R11:841755
	216	Kaipara Rd	R12:866584
	217	Beaver Rd	R12:865417
	218	McKenzie Rd	S11:004621
	219	Takapuna Grammar	R11:703875
Soil Parent Rock	Sample ID	Site Name	Map Reference
Quaternary Sediments	301	Sandspit Rd	R12:635395
	302	Waiau Pa	R12:660501
	WP01-WP04	Waiau Pa Domain Reserve	R12:659504
	303	Urquhart Rd	R12:752563
	304	Manukau City	R11:768659
	305	Orere Point	S11:106670
	306	Monument Rd	S11:923640
	307	Omana Regional Park	S11:908782
Soil Parent Rock	Sample ID	Site Name	Map Reference
Quaternary Sediments	308	Highland Park	R11:803764
	309	New Lynn	R11:600766
	311	Hobsonville Airbase	R11:590885
	312	Kumeu A&P Showgrounds	Q10:495902
Soil Parent Rock	Sample ID	Site Name	Map Reference
Sands	401	South Head	Q09:222232
	402	Wilson Rd	Q10:263134
	403	Rimmer Rd Lookout	Q10:355007
	404	Pulpit Rd	Q10:391915
	405	Okahukura Peninsula	Q09:273381
	406	Pakiri Block Rd	R08:623522
	407	Pakiri River Rd	R09:654492
	408	Omaha Bay	R09:704385
	409	Awhitu Central	R12:509550
	AW01-AW04	Awhitu Central	R12:509550
	410	Douglas Rd	R12:541451
	411	Karotahi School Rd	R12:597355
	412	Orewa	R10:622155

Soil Parent Rock	Sample ID	Site Name	Map Reference
<b>Greywacke</b>	501	Cape Rodney Rd	R09:730451
	502	Lilburne Rd	S12:998521
	503	Tapapakanga Hill	S11:119661
	504	Maraetai	S11:907772
	505	Waiheke	S11:941887
	506	Waiheke	S11:028840
Soil Parent Rock	Sample ID	Site Name	Map Reference
<b>Limestone</b>	601	Marsh Rd	Q09:353404
	602	North Shore Aerodrome	R10:583038
	603	Snells Algies	R09:663293
	604	Partridge Rd	Q09:417410
Soil Parent Rock	Sample ID	Site Name	Map Reference
<b>Onerahi Chaos Breccia</b>	701	Glorit-Kaipara Hills Rd	Q09:487313
	702	Pebblebrook Rd	R10:508092
Soil Parent Rock	Sample ID	Site Name	Map Reference
<b>Manukau Breccia</b>	801	Anawhata Rd	Q11:463718
	802	Goldie Bush	Q11:418830

## Appendix 2: Analytical Results for Auckland Soils

## VOLCANIC SAMPLES

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
101	3.68	120	174	0.32	89.5	286	82	0.081	903	1151	1826	3842	128	1260	1280*	733	411.3*	196	84	4.97
TP01	-	-	-	-	-	195	-	-	-	-	-	-	-	-	14.6	-	0.9	-	-	-
TP02	-	-	-	-	-	196	-	-	-	-	-	-	-	-	15.8	-	0.9	-	-	-
TP03	-	-	-	-	-	200	-	-	-	-	-	-	-	-	13.4	-	0.8	-	-	-
TP04	-	-	-	-	-	260	-	-	-	-	-	-	-	-	15	-	1.0	-	-	-
102	1.67	119	224	0.19	228.4*	124	36.5	0.265	751	8612	2110	3779	253	804	23.3	700	<0.7	256	748	4.39
LP01	-	-	-	-	51.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LP02	-	-	-	-	34.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LP03	-	-	-	-	22.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LP04	-	-	-	-	13.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
103	1.99	66.4	243	0.27	90.9	72.1	28.3	0.215	1130	3767	1354	4817	315	1259	46.6	915	<0.7	125	362	5.97
104	2.02	18.5	149	0.27	57.4	53.8	25.5	0.146	1280	8558	1008	3028	120	1014	13.7	601	<0.7	41.6	108	4.07
105	0.41	239	220	0.15	143.4	3.6	38	0.085	3660	7230	1498	5190	4.6	592	3.04	1036	<0.7	268	114	8.77
106	1.08	71.5	288	0.28	83.2	101	53.1	0.125	2530	34188	1006	1762	251	1325	13.1	407	<0.7	127	280	3.78
107	0.48	40.1	34	0.18	32.9	101	53.8	0.06	1580	30483	848	530	235	246	3.3	389	<0.7	74.2	127	0.85
108	2.15	249	123	0.31	223*	98.8	79.9	0.235	1270	22612	1502	4732	223	1592	34.1	805	<0.7	366	1038	6.47
ME01	-	-	-	-	49.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ME02	-	-	-	-	45.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ME03	-	-	-	-	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ME04	-	-	-	-	41.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
109	7.8	31.8	76	0.28	63.6	35.3	36.6	0.098	1520	31820	768	2976	229	2344	23.9	422	<0.7	72.2	191	3.37
110	6.61	57*	116	0.77*	45.7	61.3	88.6	0.271	498	22217	2484	8422	317*	3729	475*	1520	<0.7	104	484*	11.64
MS01	4.5	4	-	0.33	26.3	55.1	65	0.11	-	-	-	-	50.8	-	88.5	-	3.1	-	142	-
MS02	3.7	3	-	0.27	24.4	42.5	65.9	0.06	-	-	-	-	28.7	-	61.7	-	1.8	-	116	-
MS03	4.8	5	-	0.4	29.8	64.4	84.1	0.18	-	-	-	-	46.7	-	102	-	5.5	-	205	-
MS04	4.8	17	-	0.48	37.9	71.6	81.2	0.13	-	-	-	-	104	-	143	-	4.5	-	258	-
111	1.92	15.4	49	0.59	30.5	9.1	26.6	0.059	681	23384	429	6366	121	1373	11.8	669	<0.7	15.6	54.5	10.68
112	5.82	163	207	0.63	121	105	39.1	0.12	1290	10705	1325	5093	168	2228	21.9	762	<0.7	291	549	6.78
113	2.8	43.1	88	0.57	36.2	15.5	34.7	0.084	1350	16273	877	3669	93.4	1992	15.7	539	<0.7	28	143	4.85
114	4.33	179	197	0.39	119	54.5	33.9	2.303*	1480	4157	1565	5790	98.3	1935	16.3	938	<0.7	508*	742	6.55
OT01	-	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-	-	120	-	-
OT02	-	-	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-	-	137	-	-
OT03	-	-	-	-	-	-	-	0.1	-	-	-	-	-	-	-	-	-	132	-	-
OT04	-	-	-	-	-	-	-	0.09	-	-	-	-	-	-	-	-	-	116	-	-
115	3.55	196	786*	0.39	124	73.2	42.1	0.146	1880	11964	1749	5689	149	2830	32.8	887	<0.7	331	1160	6.32
GM01	-	-	193	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GM02	-	-	128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GM03	-	-	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GM04	-	-	139	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
116	5.29	55.9	239	0.48	34.7	72.5	28.7	0.167	1930	3948	2420	5149	84.1	1086	128*	679	<0.7	87.9	547	6.56
IH01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16.8	-	-	-	-	-
IH02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.7	-	-	-	-	-
IH03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3	-	-	-	-	-
IH04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	-	-	-	-	-
117	0.69	198	123	0.24	138	114	75.9	0.047	747	37795	1063	1577	227	1152	11.2	2288	<0.7	313	853	1.88
118	4.14	29.4	151	0.21	27.6	38.4	22.9	0.148	1280	3579	1010	3505	41.4	901	55.4	496	<0.7	66	235	3.94
119	2.27	107	72	0.43	105	89.1	53.2	0.147	1510	33794	1321	7237	320	2068	43	1026	<0.7	155	421	9.47
120	1.99	35.7	347	0.31	61.1	46.8	51.4	0.093	2110	64998	1088	3392	207	2590	19.2	1593	<0.7	326	728	3.91
121	4.12	227	142	0.15	128	79.6	48.5	0.143	2160	13300	1217	2709	164	1610	60.2	790	<0.7	310	913	4.72
122	6.61	73	301	0.3	50	53.1	55.1	0.107	2080	76564	992	3730	137	3366	39.6	649	<0.7	128	363	4.43
124	1.93	18.7	69	0.11	29.1	39.7	37.2	<0.03	1600	17327	634	324	95.6	1269	13.1	475	<0.7	23	88.3	1.42
125	1.6	81	279	0.27	93.6	110	41.5	0.169	927	14992	1436	3240	223	972	23.2	732	<0.7	208	288	5.42
126	0.62	243	691*	0.15	134	67.3	81	0.219	978	3594	710	3172	161	1343	27.4	783	<0.7	603*	835	4.56
AD01	-	-	112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	-	-
AD02	-	-	83.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	-	-
AD03	-	-	77.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	-	-
AD04	-	-	98.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	57	-	-
127	7.77	54.6	230	<0.1	23.4	13.7	20.6	0.333	489	1419	497	2678	13.6	333	26.2	753	1.85	147	70.6	4.58
128	6.85	60.9	216	0.13	53.4	11.6	51	0.377	1150	1414	675	2147	11.9	361	52.1	801	3.14	158	166	2.65
129	6.83	61.7	204	<0.1	33.5	27.2	33.4	0.351	1200	194	1516	2904	30.1	598	31	767	3.44	150	109	4.49
130	8.45	57.3	213	<0.1	34.1	14.2	24.9	0.401	496	1753	2094	2798	9.7	376	36.9	742	3.13	151	86.1	4.22
131	0.78	255	132	0.22	114	49.4	57.2	0.184	735	1004	436	4347	17.8	1122	21.2	769	<0.7	158	789	7.11
132	2.41	190	97	0.12	166	98.4	21.8	0.208	493	3281	362	1107	22.7	399	14.1	313	<0.7	155	71.4	1.89
133	2.56	157	157	0.31	93.1	80.3	111*	0.187	275	750	1480	3767	116	1812	13.4	775	<0.7	158	70	5.4
RR01	-	-	-	-	-	-	56.7	-	-	-	-	-	-	-	-	-	-	-	-	-
RR02	-	-	-	-	-	-	51.3	-	-	-	-	-	-	-	-	-	-	-	-	-
RR03	-	-	-	-	-	-	51	-	-	-	-	-	-	-	-	-	-	-	-	-
RR04	-	-	-	-	-	-	60.3	-	-	-	-	-	-	-	-	-	-	-	-	-
134	3.17	839*	181	0.24	385*	64	46.6	0.202	406	860	685	4118	107	955	15.4	863	<0.7	181	87.5	5.83
PR01	-	<2	-	-	11.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR02	-	2	-	-	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR03	-	3	-	-	10.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PR04	-	3	-	-	10.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
310	3.15	190	803*	<0.1	75.8	40.1	20.8	0.074	1900	4812	907	3750	57.2	2148	17.3	670	<0.7	335	689	4.76
PE01	-	-	287	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE02	-	-	325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE03	-	-	304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PE04	-	-	317	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

WAITEMATA GROUP SAMPLES

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
201	2.63	42.2	188	0.25	23.6	20	35.3	0.113	2730	10261	876	607	23.2	770	6.6	1064	<0.7	56.3	106	7.93
202	4.57	19.2	27	0.21	3	8.1	5.7	0.18	389	872	376	4322	3.6	454	7.22	902	<0.7	49.3	43	5
203	1.58	14.8	218	0.14	18.3	25	9.3	0.058	830	3095	966	1982	6.9	227	6.08	425	<0.7	61	46	2.41
204	2.48	30.8	95.3	<0.1	6.2	26.3	21.8	0.096	2310	5110	133	5141	11.7	580	7.2	819	1.49	91.1	98.3	6.43
205	1.36	41.1	30	0.15	5.3	38.3	29	0.13	1300	3844	334	1934	15.7	482	8	1532	<0.7	135	123	4.43
206	4.02	23.6	81	<0.1	8.5	16.9	16.8	0.074	3070	3601	332	3844	6.8	531	21.1	661	<0.7	54.3	57.1	5.03
207	2.12	8.4	12.1	<0.1	0.2	3.7	2.2	0.137	520	654	56	1650	0.93	163	3.74	2513*	1.87	41	11.5	2.44
KH01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-
KH02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-	-
KH03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-	-
KH04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-	-	-	-
208	1.93	7.4	16.1	<0.1	0.7	2.2	4.1	0.071	275	474	338	1083	1.5	92	13.9	265	<0.7	40.3	16.3	2.36
209	1.32	4.8	8.7	<0.1	1	2.4	4	0.131	226	743	42	1032	2.38	76	10.7	180	<0.7	21.9	9.6	2.05
KP01	-	-	-	-	-	-	7.1	0.06	-	-	-	-	-	216	8.26	-	0.5	-	-	-
KP02	-	-	-	-	-	-	6.7	0.06	-	-	-	-	-	217	8.34	-	0.4	-	-	-
KP03	-	-	-	-	-	-	4.9	0.07	-	-	-	-	-	185	7.36	-	0.4	-	-	-
KP04	-	-	-	-	-	-	5	0.09	-	-	-	-	-	158	9.07	-	0.5	-	-	-
211	5	20.8	15.2	<0.1	1.9	5.5	10.8	0.145	348	904	28	1626	3.3	250	9.64	1145	2.11	114	32.2	3.88
212	11.54	5.8	29	0.14	2.4	7.6	7.5	0.092	401	597	384	2363	3.46	309	17.6	401	<0.7	33.5	24.9	2.67
213	2.93	30.2	71	<0.1	26.3	40.4	11.1	0.154	908	1585	1121	2821	19.5	417	25.7	586	<0.7	65.4	71.3	4.14
214	5.17	11.5	58	<0.1	1.7	14.6	13.9	0.035	2490	2394	13	805	11.5	122	12.7	103	1.18	29	45.5	0.84
215	2.29	8.2	74	<0.1	5.3	19.8	4.6	0.196	724	951	60	1168	12	137	9.8	338	<0.7	63.8	28.1	1.7
216	1.7	13.6	182	<0.1	5.5	4.9	2.8	0.049	847	909	61	1944	2.5	173	2.78	322	1.55	45.8	43.6	3.18
217	6.07	34.2	31.2	<0.1	3.6	149*	11.7	0.048	1230	2092	33	532	25.8	237	6.31	168	1.8	96.7	82.3	0.63
218	10.16	37.3	313	0.15	9.3	18.5	21.3	0.313	1030	782	586	3198	15	824	40.9	748	3.91	105	68.5	4.5
219	3.1	16.7	53	0.17	18.6	25.4	21.5	0.067	2040	7563	104	4644	34.1	597	8.9	913	<0.7	41.3	70.6	6.84

QUATERNARY SEDIMENTS

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
301	3.98	14.8	179	<0.1	10.9	16.5	20.5	0.325	1380	2411	389	4127	20.2	666	44.3	802	2.41	64	92.5	5.99
302	17.83*	30.6	117	0.5*	13.4	11.5	23.7	0.302	447	1417	520	5202	10.7	1213	28.7	1191	<0.7	111	111	7.45
WP01	8.2	-	-	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WP02	10.1	-	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WP03	10.6	-	-	0.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WP04	8.3	-	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
303	6.97	35.2	198	<0.1	8.8	8	27.4	0.337	1510	1172	150	346	12.6	454	26.7	1202	1.5	113	78.7	2.14
304	3.11	17.7	98	0.27	17.1	21.1	8.3	0.11	861	2344	1391	2070	11	457	21.3	475	2.44	43.2	63.9	2.65
305	7.07	21	211	0.46	3.7	5.4	8.3	0.165	281	645	284	3749	5.9	756	19.3	722	3.61	74	90	4.92
306	1.91	9.6	47.2	<0.1	0.5	3.9	7.6	0.169	777	847	83	2728	5.4	363	11.2	426	1.21	34.2	36.9	3.49
307	3.76	9	47.1	0.15	2.9	3.9	4.8	0.107	624	656	397	3416	2.7	486	16.4	570	1.49	30.1	28.2	3.89
308	2.75	17.6	68	<0.1	15.8	28.1	11.5	0.106	1270	3529	612	3101	23.2	632	12.9	562	<0.7	51.8	55.9	3.78
309	6.09	12.1	28	0.15	3.4	7.9	15.2	0.247	700	1118	39	2066	8.53	350	56.2	585	11.47*	41.8	52.1	6.67
311	7.6	29.6	183	0.21	5.6	11.1	25.7	0.311	906	1555	96	2327	23.3	401	52.6	529	7.48*	118	96.6	3.74
312	9.11	8.7	42.1	<0.1	1.5	4.8	17.7	0.421	648	886	39	6108	2.8	465	22.6	1178	2.17	33	21	13.96



## SANDS

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
401	5.33	20.4	81	<0.1	9.9	10.6	8.3	0.26	867	1805	376	1950	7.1	358	10.4	470	<0.7	68.3	95.3	3.49
402	8.34	24.1	170	<0.1	6.8	9.1	8.6	0.296	1050	1328	101	1069	9.3	240	12.4	358	1.24	80.3	91.7	1.45
403	6.73	39.3	109	<0.1	13.6	11.6	1.1	0.191	1020	2084	429	2491	8.9	548	12.8	545	<0.7	95.6	179	4.31
404	3.4	17.9	47.9	<0.1	8.8	5.9	2.8	0.124	350	1020	393	336	5.6	140	14.2	325	<0.7	72.3	61.8	1.21
405	4.02	23.7	78	0.18	20.9	19.1	10.2	0.12	873	2310	1704	1993	11.7	303	9.6	618	<0.7	81	106	2.23
406	7.44	3.6	13.4	0.11	1.5	5.5	1.1	<0.03	308	583	58	926	1.94	611	1.7	103	<0.7	12.2	16.6	1.04
407	5.23	3.6	12.2	<0.1	1.3	4.9	1.1	<0.03	547	802	45	1509	1.94	196	3.04	197	<0.7	9.6	12.8	2.12
408	3.92	3	11	<0.1	1.6	5.8	2.2	<0.03	259	635	49	538	2.21	220	<1.5	85	<0.7	8.6	10.7	0.85
409	5.49	63.3*	202	0.22	54.4*	33.1	33.1	0.319	1060	2212	8496*	4224	18.1	633	31.4	1009	<0.7	303	158	5.39
AW01	-	2	-	-	28.2	52.3	52.3	-	-	-	3390	-	-	-	15.1	-	-	320	-	-
AW02	-	2	-	-	30.4	47.4	47.4	-	-	-	3730	-	-	-	38.3	-	-	299	-	-
AW03	-	2	-	-	24.3	48.2	48.2	-	-	-	4050	-	-	-	22.5	-	-	301	-	-
AW04	-	2	-	-	29.3	41.3	41.3	-	-	-	5840	-	-	-	538*	-	-	271	-	-
410	5.09	23.7	55	<0.1	23.1	20.2	20.2	0.047	750	3107	544	2265	9.5	598	4.14	411	<0.7	151	78.1	2.69
411	7.56	23.6	73.5	<0.1	17	11.1	11.1	0.198	676	2324	462	3624	9.6	505	12.7	787	<0.7	129	70.4	4.98
412	7.22	5.2	30	<0.1	2.4	4.5	4.5	<0.03	436	1468	61	1954	3.4	281	11.6	180	<0.7	19	20.7	2.03

## GREYWACKE

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
501	9.78	20.4	36	0.12	4.2	13.3	28.2	<0.03	2380	1171	453	1563	3	855	26.7	345	1.5	26.5	29.8	2.06
502	4.74	13.2	178	<0.1	5.2	6.1	12.9	0.117	1550	1903	337	1776	5.6	233	13.5	392	1.76	47.7	42.2	2.42
503	6.98	20.2	85.5	<0.1	2.7	4.8	8.4	0.12	448	843	179	558	3	316	17.8	349	2.71	86.1	43.7	0.96
504	3.91	10.9	63.1	<0.1	2.8	8.5	7.3	0.031	1380	1182	142	1685	2.7	321	13.6	219	0.91	46.4	36.1	2.33
505	8.6	21.1	212	0.17	31.8	23.8	44.8	0.104	5840*	590	1450	732	26.3	471	25.7	370	<0.7	17	103	3.86
506	7.01	13.4	181	0.17	4.4	12.1	25.6	0.081	3500	2109	924	3535	8.96	439	19.1	448	<0.7	14	34	4.69

## LIMESTONE

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
601	1.72	9.7	31.1	0.12	0.6	7.9	1.5	0.073	888	1540	50	1028	2.11	177	2.42	375	<0.7	26.5	10.5	2.85
602	2.3	22.1	120	0.18	9.3	10.2	17.1	0.086	949	2487	464	4427	8.29	448	12.6	755	<0.7	38.4	63.9	4.54
603	1.19	7.5	17	<0.1	0.5	3.5	1.3	0.063	601	814	28	1141	0.94	117	6.6	607	0.94	20.6	9.2	2.68
604	1.57	10	63	<0.1	2	8.6	5.1	0.097	1160	1539	85	4085	3.32	260	4.83	525	<0.7	27	17.7	3.2

## ONERAHI CHAOS BRECCIA

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
701	3.03	16.6	78	0.2	10.4	11.2	8.6	0.091	1890	2312	1202	3392	6.6	348	9.13	537	<0.7	362	143	7.19
702	4.88	28.7	49.5	<0.1	<0.2	10.9	4	0.099	1580	2504	14	1495	2.5	223	13	255	3.69	506	333	2.91

## MANUKAU BRECCIA

ID	As	B	Ba	Cd	Co	Cr	Cu	Hg	K	Mg	Mn	N	Ni	P	Pb	S	Sn	V	Zn	TOC
801	1.49	77.8	41	0.12	7.4	4	53.2	0.245	434	1283	117	3543	4.96	420	16	767	<0.7	362	143	7.19
802	4.92	184	50.6	<0.1	2.3	13.8	49.5	0.114	1340	5315	193	1500	5.4	188	10.8	597	3.69	506	333	2.91

2. CSQG Summary table is from “Canadian Environmental Quality Guidelines,” Canadian Council of Ministers of the Environment, CCME 1991 (update 2002).

Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health

SUMMARY TABLES  
Update 2002

Table 1. Canadian soil quality guidelines (mg kg<sup>-1</sup>)

Substance	Year revised/ released <sup>a</sup>	Landuse			
		Agricultural	Residential/parkland	Commercial	Industrial
Arsenic (inorganic)	1997	12 <sup>b</sup>	12 <sup>b</sup>	12 <sup>b</sup>	12 <sup>b</sup>
Barium	1999	750 <sup>c</sup>	500 <sup>c</sup>	2000 <sup>c</sup>	2000 <sup>c</sup>
Benzene	1997	0.05 <sup>d</sup>	0.5 <sup>d</sup>	5 <sup>d</sup>	5 <sup>d</sup>
Benzo(a) pyrene	1997	0.1 <sup>e</sup>	0.7 <sup>f</sup>	0.7 <sup>f</sup>	0.7 <sup>f</sup>
Cadmium	1999	1.4 <sup>b</sup>	10 <sup>g</sup>	22 <sup>b</sup>	22 <sup>b</sup>
Chromium					
Total chromium	1997	64 <sup>b</sup>	64 <sup>b</sup>	87 <sup>b</sup>	87 <sup>b</sup>
Hexavalent chromium (VI)	1999	0.4 <sup>h</sup>	0.4 <sup>h</sup>	1.4 <sup>h</sup>	1.4 <sup>h</sup>
Copper	1999	63 <sup>b</sup>	63 <sup>b</sup>	91 <sup>b</sup>	91 <sup>b</sup>
Cyanide (free)	1997	0.9 <sup>b</sup>	0.9 <sup>b</sup>	8.0 <sup>b</sup>	8.0 <sup>b</sup>
DDT (total)	1999	0.7 <sup>i</sup>	0.7 <sup>i</sup>	0.7 <sup>ij</sup>	0.7 <sup>ij</sup>
Ethylbenzene	1997	0.1 <sup>d</sup>	1.2 <sup>h</sup>	20 <sup>h</sup>	20 <sup>h</sup>
Ethylene glycol	1999	960 <sup>k</sup>	960 <sup>k</sup>	960 <sup>k</sup>	960 <sup>k</sup>
Lead	1999	70 <sup>b</sup>	140 <sup>b</sup>	260 <sup>b</sup>	600 <sup>b</sup>
Mercury (inorganic)	1999	6.6 <sup>b</sup>	6.6 <sup>b</sup>	24 <sup>b</sup>	50 <sup>b</sup>
Naphthalene	1997	0.1 <sup>d</sup>	0.6 <sup>h</sup>	22 <sup>h</sup>	22 <sup>h</sup>
Nonylphenol	2002	5.7 <sup>p</sup>	5.7 <sup>p</sup>	14 <sup>p</sup>	14 <sup>p</sup>
Nickel	1999	50 <sup>i</sup>	50 <sup>i</sup>	50 <sup>i</sup>	50 <sup>i</sup>
Pentachlorophenol	1997	7.6 <sup>b</sup>	7.6 <sup>b</sup>	7.6 <sup>b</sup>	7.6 <sup>b</sup>
Phenol	1997	3.8 <sup>b</sup>	3.8 <sup>b</sup>	3.8 <sup>b</sup>	3.8 <sup>b</sup>
Polychlorinated dibenzo- <i>p</i> -dioxins/ dibenzofurans (PCDD/Fs)	2002	4 ng TEQ·kg <sup>-1q</sup>	5 ng TEQ·kg <sup>-1q</sup>	6 ng TEQ·kg <sup>-1r</sup>	7 ng TEQ·kg <sup>-1s</sup>
Polychlorinated biphenyls (PCBs)	1999	0.5 <sup>m</sup>	1.3 <sup>i</sup>	33 <sup>ij</sup>	33 <sup>ij</sup>
Selenium	2002	1 <sup>b</sup>	1 <sup>b</sup>	3.9 <sup>b</sup>	3.9 <sup>b</sup>
Tetrachoroethylene	1997	0.1 <sup>e</sup>	0.2 <sup>f</sup>	0.5 <sup>f</sup>	0.6 <sup>f</sup>
Thallium	1999	1 <sup>n</sup>	1 <sup>o</sup>	1 <sup>o</sup>	1 <sup>o</sup>
Toluene	1997	0.1 <sup>e</sup>	0.8 <sup>f</sup>	0.8 <sup>f</sup>	0.8 <sup>f</sup>
Trichoroethylene	1997	0.1 <sup>d</sup>	3 <sup>h</sup>	31 <sup>h</sup>	31 <sup>h</sup>
Vanadium	1997	130 <sup>i</sup>	130 <sup>i</sup>	130 <sup>i</sup>	130 <sup>i</sup>
Xylene	1997	0.1 <sup>e</sup>	1 <sup>f</sup>	17 <sup>f</sup>	20 <sup>f</sup>
Zinc	1999	200 <sup>i</sup>	200 <sup>i</sup>	360 <sup>i</sup>	360 <sup>i</sup>

Notes: SQG<sub>E</sub> = soil quality guideline for environmental health; SQG<sub>HH</sub> = soil quality guideline for human health.

<sup>a</sup>Guidelines released in 1997 were originally published in the working document entitled "Recommended Canadian Soil Quality Guidelines" (CCME 1997) and have been revised, edited, and reprinted here. Guidelines revised/released in 1999 are published here for the first time (see Table 2).

<sup>b</sup>Data are sufficient and adequate to calculate an SQG<sub>HH</sub> and an SQG<sub>E</sub>. Therefore the soil quality guideline is the lower of the two and represents a fully integrated de novo guideline for this land use, derived in accordance with the soil protocol (CCME 1996). The corresponding interim soil quality criterion (CCME 1991) is superseded by the soil quality guideline.

<sup>c</sup>Data are insufficient/inadequate to calculate an SQG<sub>HH</sub>, a provisional SQG<sub>HH</sub>, an SQG<sub>E</sub>, or a provisional SQG<sub>E</sub>. Therefore the interim soil quality

Module 4 Tables are from "Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand, Ministry for the Environment, 1999.

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

**Table 4.10 Tier 1 Soil acceptance criteria *Residential Use* <sup>(1,3,6)</sup> ALL PATHWAYS (all values in mg/kg)**

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
<b>SAND</b> MAHS	Benzene	1.1 <sup>(v)</sup>	1.9 <sup>(7,v)</sup>	2.4 <sup>(7,v)</sup>
	Toluene	(68) <sup>(4,v)</sup>	(94) <sup>(4,m)</sup>	(230) <sup>(4,v)</sup>
	Ethylbenzene	(53) <sup>(4,v)</sup>	(92) <sup>(4,7,v)</sup>	(120) <sup>(4,v)</sup>
	Xylenes	(48) <sup>(4,v)</sup>	(130) <sup>(4,7,v)</sup>	(180) <sup>(4,v)</sup>
	PAHS			
	Napthalene	58 <sup>(v)</sup>	70 <sup>(v)</sup>	80 <sup>(v)</sup>
	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
<b>SANDY SILT</b> MAHS	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	1.1 <sup>(v)</sup>	1.9 <sup>(v)</sup>	2.4 <sup>(v)</sup>
	Toluene	(82) <sup>(4,v)</sup>	(170) <sup>(4,v)</sup>	(240) <sup>(4,v)</sup>
	Ethylbenzene	(59) <sup>(4,v)</sup>	(92) <sup>(4,v)</sup>	(140) <sup>(4,v)</sup>
	Xylenes	(59) <sup>(4,v)</sup>	(130) <sup>(4,v)</sup>	(180) <sup>(4,v)</sup>
	PAHS			
	Napthalene	63 <sup>(v)</sup>	83 <sup>(v)</sup>	(130) <sup>(4,v)</sup>
<b>SILTY CLAY</b> MAHS	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	1.7 <sup>(v)</sup>	4.6 <sup>(v)</sup>	12 <sup>(v)</sup>
	Toluene	(210) <sup>(4,v)</sup>	(950) <sup>(4,v)</sup>	(3,000) <sup>(4,v)</sup>
	Ethylbenzene	(110) <sup>(4,v)</sup>	(800) <sup>(4,v)</sup>	(2,800) <sup>(4,v)</sup>
	Xylenes	(160) <sup>(4,v)</sup>	(710) <sup>(4,v)</sup>	(2,200) <sup>(4,v)</sup>
	PAHS			
<b>CLAY</b> MAHS	Napthalene	69 <sup>(v)</sup>	(330) <sup>(4,v)</sup>	(1,100) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	2.7 <sup>(v)</sup>	8.8 <sup>(v)</sup>	(26) <sup>(4,v)</sup>
	Toluene	(320) <sup>(4,v)</sup>	(2,400) <sup>(4,v)</sup>	(8,500) <sup>(4,v)</sup>
	Ethylbenzene	(160) <sup>(4,v)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Xylenes	(250) <sup>(4,v)</sup>	(1,800) <sup>(4,v)</sup>	(6,500) <sup>(4,v)</sup>
<b>CLAY</b> MAHS	PAHS			
	Napthalene	71 <sup>(v)</sup>	(360) <sup>(4,v)</sup>	(1,200) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

**Table 4.10 (CONTINUED)**  
**Tier 1 Soil acceptance criteria *Residential Use* <sup>(1,3,6)</sup> ALL PATHWAYS (all values in mg/kg)**

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
<b>PUMICE</b>				
MAHS	Benzene	1.2 <sup>(v)</sup>	2.4 <sup>(4,v)</sup>	3.1 <sup>(v)</sup>
	Toluene	(73) <sup>(4,v)</sup>	(240) <sup>(4,v)</sup>	(350) <sup>(4,v)</sup>
	Ethylbenzene	(48) <sup>(4,v)</sup>	(140) <sup>(4,v)</sup>	(220) <sup>(4,v)</sup>
	Xylenes	(53) <sup>(4,v)</sup>	(180) <sup>(4,v)</sup>	(260) <sup>(4,v)</sup>
PAHS				
	Napthalene	49 <sup>(v)</sup>	140 <sup>(v)</sup>	(220) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
<b>PEATS AND HIGHLY ORGANIC SOILS</b>				
MAHS	Benzene	5.7 <sup>(v)</sup>	10 <sup>(v)</sup>	13 <sup>(v)</sup>
	Toluene	(2,500) <sup>(4,v)</sup>	(2,900) <sup>(4,v)</sup>	(3,800) <sup>(4,v)</sup>
	Ethylbenzene	(2,200) <sup>(4,v)</sup>	(2,500) <sup>(4,v)</sup>	(3,200) <sup>(4,v)</sup>
	Xylenes	(1,700) <sup>(4,v)</sup>	(2,000) <sup>(4,v)</sup>	(2,600) <sup>(4,v)</sup>
PAHS				
	Napthalene	72 <sup>(p)</sup>	(2,700) <sup>(4,v)</sup>	(3,500) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(1,600) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.27 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

NOTES:

1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site-specific consideration of aesthetic and ecological impacts is required.

2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.

3. Surface soils acceptance criteria are based on the lower value of volatilisation criteria (Table 4.16), other pathway criteria (Table 4.18) and criteria for the protection of maintenance workers (4.19). Criteria for soils at 1m are based on the lower value of those arising from volatilisation and maintenance criteria. Criteria for soils at 4m are based on volatilisation only.

4. Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4m.

5. Risk associated with mixture of carcinogenic PAHs assessed by comparison with criteria based on benzo(a)pyrene equivalent concentration. Refer to Section 4.4.3 for details of the calculation of Benzo(a)pyrene equivalent concentrations.

6. The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation

7. Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil type. Therefore, the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

## Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

## Module 4 - Tier 1 Soil Screening Criteria

**Table 4.11 Tier 1 Soil acceptance criteria Commercial/ Industrial Use<sup>(1,3,6)</sup> ALL PATHWAYS**  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
<b>SAND</b> MAHS	Benzene	3.0 <sup>(m)</sup>	3.0 <sup>(m)</sup>	9.3 <sup>(7,v)</sup>
	Toluene	(94) <sup>(4,m)</sup>	(94) <sup>(4,m)</sup>	(770) <sup>(4,v)</sup>
	Ethylbenzene	(180) <sup>(4,v)</sup>	(300) <sup>(4,7,v)</sup>	(390) <sup>(4,v)</sup>
	Xylenes	(150) <sup>(4,m)</sup>	(150) <sup>(4,m)</sup>	(580) <sup>(4,v)</sup>
	PAHS			
	Napthalene	190 <sup>(4,v)</sup>	(230) <sup>(4,v)</sup>	(260) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
<b>SANDY SILT</b> MAHS	Benzene	3.6 <sup>(v)</sup>	7.2 <sup>(v)</sup>	9.3 <sup>(v)</sup>
	Toluene	(270) <sup>(4,v)</sup>	(480) <sup>(4,m)</sup>	(790) <sup>(4,v)</sup>
	Ethylbenzene	(200) <sup>(4,v)</sup>	(300) <sup>(4,v)</sup>	(450) <sup>(4,v)</sup>
	Xylenes	(200) <sup>(4,v)</sup>	(420) <sup>(4,v)</sup>	(590) <sup>(4,v)</sup>
	PAHS			
	Napthalene	210 <sup>(4,v)</sup>	270 <sup>(4,v)</sup>	(420) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
<b>SILTY CLAY</b> MAHS	Benzene	7.2 <sup>(v)</sup>	(20) <sup>(4,v)</sup>	54 <sup>(4,v)</sup>
	Toluene	(670) <sup>(4,v)</sup>	(3,100) <sup>(4,v)</sup>	(10,000) <sup>(4,v)</sup>
	Ethylbenzene	(350) <sup>(4,v)</sup>	(2,600) <sup>(4,v)</sup>	(9,100) <sup>(4,v)</sup>
	Xylenes	(510) <sup>(4,v)</sup>	(2,300) <sup>(4,v)</sup>	(7,300) <sup>(4,v)</sup>
	PAHS			
	Napthalene	(230) <sup>(4,v)</sup>	(1,100) <sup>(4,v)</sup>	(3,500) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
<b>CLAY</b> MAHS	Benzene	11 <sup>(v)</sup>	(41) <sup>(4,v)</sup>	(120) <sup>(4,v)</sup>
	Toluene	(1,000) <sup>(4,v)</sup>	(7,900) <sup>(4,v)</sup>	NA <sup>(2)</sup>
	Ethylbenzene	(540) <sup>(4,v)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Xylenes	(810) <sup>(4,v)</sup>	6,000 <sup>(4,v)</sup>	NA <sup>(2)</sup>
	PAHS			
	Napthalene	(230) <sup>(4,v)</sup>	(1,200) <sup>(4,v)</sup>	(3,800) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

Table 4.11 (CONTINUED)  
Tier 1 Soil acceptance criteria *Commercial/ Industrial Use*<sup>(1,3,6)</sup> ALL PATHWAYS  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
PUMICE MAHS	Benzene	4.0 <sup>(v)</sup>	9.0 <sup>(v)</sup>	12 <sup>(v)</sup>
	Toluene	(250) <sup>(4,v)</sup>	(780) <sup>(4,v)</sup>	(1,100) <sup>(4,v)</sup>
	Ethylbenzene	(170) <sup>(4,v)</sup>	(470) <sup>(4,v)</sup>	(710) <sup>(4,v)</sup>
	Xylenes	(180) <sup>(4,v)</sup>	(880) <sup>(4,v)</sup>	(850) <sup>(4,v)</sup>
	PAHS			
	Napthalene	170 <sup>(v)</sup>	450 <sup>(4,v)</sup>	(710) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
PEATS AND HIGHLY ORGANIC SOILS MAHS	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	28 <sup>(v)</sup>	44 <sup>(4,v)</sup>	55 <sup>(4,v)</sup>
	Toluene	(7,500) <sup>(4,m)</sup>	(7,500) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Ethylbenzene	(7,200) <sup>(4,v)</sup>	(8,100) <sup>(4,v)</sup>	(10,000) <sup>(4,v)</sup>
	Xylenes	(5,700) <sup>(4,v)</sup>	(6,600) <sup>(4,v)</sup>	(8,500) <sup>(4,v)</sup>
	PAHS			
	Napthalene	(8,000) <sup>(4,v)</sup>	(9,000) <sup>(4,v)</sup>	NA <sup>(2)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	(11) <sup>(4,d)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

- NOTES:
1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site-specific consideration of aesthetic and ecological impacts is required.
  2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.
  3. Surface soils acceptance criteria are based on the lower value of volatilisation criteria (Table 4.16), other pathway criteria (Table 4.18) and criteria for the protection of maintenance workers (4.19). Criteria for soils at 1m are based on the lower value of those arising from volatilisation and maintenance criteria. Criteria for soils at 4m are based on volatilisation only.
  4. Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4m.
  5. Risk associated with mixture of carcinogenic PAHs assessed by comparison with criteria based on benzo(a)pyrene equivalent concentration. Refer to Section 4.4.3 for details of the calculation of Benzo(a)pyrene equivalent concentrations.
  6. The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation
  7. Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil type. Therefore, the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

Table 4.12

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

Module 4 - Tier 1 Soil Screening Criteria

**Table 4.12** Tier 1 Soil acceptance criteria *Agricultural Use*<sup>(1,3,6)</sup> **ALL PATHWAYS**  
(all values in mg/kg)

Soil Type/ Contaminant	Depth of contamination		
	Surface (<1m)	1m - 4m	>4m
<b>SAND</b>			
MAHS			
Benzene	1.1 <sup>(v)</sup>	1.9 <sup>(7,v)</sup>	2.4 <sup>(7,v)</sup>
Toluene	(68) <sup>(4,v)</sup>	(94) <sup>(4,m)</sup>	(230) <sup>(4,v)</sup>
Ethylbenzene	(53) <sup>(4,v)</sup>	(92) <sup>(4,7,v)</sup>	(120) <sup>(4,v)</sup>
Xylenes	(48) <sup>(4,v)</sup>	(130) <sup>(4,7,v)</sup>	(180) <sup>(4,v)</sup>
PAHS			
Napthalene	7.2 <sup>(p)</sup>	70 <sup>(v)</sup>	80 <sup>(v)</sup>
Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
<b>SANDY SILT</b>			
MAHS			
Benzene	1.1 <sup>(v)</sup>	1.9 <sup>(v)</sup>	2.4 <sup>(v)</sup>
Toluene	(82) <sup>(4,v)</sup>	(170) <sup>(4,v)</sup>	(240) <sup>(4,v)</sup>
Ethylbenzene	(59) <sup>(4,v)</sup>	(92) <sup>(4,v)</sup>	(140) <sup>(4,v)</sup>
Xylenes	(59) <sup>(4,v)</sup>	(130) <sup>(4,v)</sup>	(180) <sup>(4,v)</sup>
PAHS			
Napthalene	7.2 <sup>(p)</sup>	83 <sup>(v)</sup>	(130) <sup>(4,v)</sup>
Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

Table 4.12 (CONTINUED)  
Tier 1 Soil acceptance criteria *Agricultural Use*<sup>(1,3,6)</sup> ALL PATHWAYS  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
SILTY CLAY MAHS	Benzene	1.7 <sup>(v)</sup>	4.6 <sup>(.v)</sup>	12 <sup>(v)</sup>
	Toluene	(210) <sup>(4,v)</sup>	(950) <sup>(4,v)</sup>	(3,000) <sup>(4,v)</sup>
	Ethylbenzene	(110) <sup>(4,v)</sup>	(800) <sup>(4,v)</sup>	(2,800) <sup>(4,v)</sup>
	Xylenes	(160) <sup>(4,v)</sup>	(710) <sup>(4,v)</sup>	(2,200) <sup>(4,v)</sup>
	PAHS			
	Napthalene	7.2 <sup>(p)</sup>	(330) <sup>(4,v)</sup>	(1,100) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
CLAY MAHS	Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	2.7 <sup>(v)</sup>	8.8 <sup>(v)</sup>	(26) <sup>(4,v)</sup>
	Toluene	(320) <sup>(4,v)</sup>	(2,400) <sup>(4,v)</sup>	8,500 <sup>(4,v)</sup>
	Ethylbenzene	(160) <sup>(4,v)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Xylenes	(250) <sup>(4,v)</sup>	1,800 <sup>(4,v)</sup>	6,500 <sup>(4,v)</sup>
	PAHS			
	Napthalene	7.2 <sup>(p)</sup>	(360) <sup>(4,v)</sup>	(1,200) <sup>(4,v)</sup>
PUMICE MAHS	Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>
	Benzene	1.2 <sup>(v)</sup>	2.4 <sup>(v)</sup>	3.1 <sup>(v)</sup>
	Toluene	(73) <sup>(4,v)</sup>	(240) <sup>(4,v)</sup>	(350) <sup>(4,v)</sup>
	Ethylbenzene	(48) <sup>(4,v)</sup>	(140) <sup>(4,v)</sup>	(220) <sup>(4,v)</sup>
	Xylenes	(53) <sup>(4,v)</sup>	(180) <sup>(4,v)</sup>	(260) <sup>(4,v)</sup>
	PAHS			
	Napthalene	7.2 <sup>(p)</sup>	140 <sup>(v)</sup>	(220) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>



## Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

## Module 4 - Tier 1 Soil Screening Criteria

Table 4.12 (CONTINUED)

**Tier 1 Soil acceptance criteria *Agricultural Use*<sup>(1,3,6)</sup> ALL PATHWAYS**  
**(all values in mg/kg)**

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
<b>PEATS AND HIGHLY ORGANIC SOILS</b>				
MAHS				
	Benzene	5.7 <sup>(v)</sup>	10 <sup>(v)</sup>	13 <sup>(v)</sup>
	Toluene	(2,500) <sup>(4,m)</sup>	(2,900) <sup>(4,v)</sup>	(3,800) <sup>(4,v)</sup>
	Ethylbenzene	(2,200) <sup>(4,v)</sup>	(2,500) <sup>(4,v)</sup>	(3,200) <sup>(4,v)</sup>
	Xylenes	(1,700) <sup>(4,v)</sup>	(2,000) <sup>(4,v)</sup>	(2,600) <sup>(4,v)</sup>
PAHS				
	Napthalene	7.2 <sup>(p)</sup>	(2,700) <sup>(4,v)</sup>	(3,500) <sup>(4,v)</sup>
	Non-carc. (Pyrene)	(160) <sup>(4,p)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	Benzo(a)pyrene eq. <sup>(5)</sup>	0.027 <sup>(p)</sup>	(25) <sup>(4,m)</sup>	NA <sup>(2)</sup>

## NOTES:

1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site-specific consideration of aesthetic and ecological impacts is required.
2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.
3. Surface soils acceptance criteria are based on the lower value of volatilisation criteria (Table 4.16), other pathway criteria (Table 4.18) and criteria for the protection of maintenance workers (4.19). Criteria for soils at 1m are based on the lower value of those arising from volatilisation and maintenance criteria. Criteria for soils at 4m are based on volatilisation only.
4. Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4m.
5. Risk associated with mixture of carcinogenic PAHs assessed by comparison with criteria based on benzo(a)pyrene equivalent concentration. Refer to Section 4.4.3 for details of the calculation of Benzo(a)pyrene equivalent concentrations.
6. The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation
7. Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil type. Therefore, the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

Table 4.13 Tier 1 Soil acceptance criteria TPH <sup>(1,3,5,6)</sup> Residential use ALL PATHWAYS (all values in mg/kg)

Soil Type/ Contaminant	Depth of contamination		
	Surface (<1m)	1m - 4m	>4m
SAND	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	120 <sup>(m)</sup>	120 <sup>(m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(470) <sup>(7,x)</sup>	(560) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
SANDY SILT	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(500) <sup>(7,m)</sup>	(500) <sup>(7,m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(510) <sup>(7,x)</sup>	(670) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
SILTY CLAY	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(2,700) <sup>(7,v)</sup>	(7,300) <sup>(7,v)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(560) <sup>(7,x)</sup>	(2,700) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
CLAY	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(15,000) <sup>(7,v)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(570) <sup>(7,x)</sup>	(2,900) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
PUMICE	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(810) <sup>(7,m)</sup>	(810) <sup>(7,m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(400) <sup>(7,x)</sup>	(1,100) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>

NOTES:

1. Criteria for C10-C14 are based on consideration of aliphatic component of TPH measurement and consideration of TPH as a surrogate measure for PAH, consideration of PAHs completed by extrapolation of PAH content of diesel and PAH criteria (refer Table 4.10)

2. NA indicates estimated criterion exceeds 20,000 mg/kg. At 20,000 mg/kg residual separate phase is expected to have formed in soil matrix. Some aesthetic impact may be noted.

3. Based on protection of human health only. Site specific consideration of aesthetic and ecological impact is required.

4. Based on health effects associated with aliphatic component only. Separate consideration of the health effects associated with the aromatic component (i.e BTEX) is required.

5. Soil acceptance criteria are based on the lower value of criteria based on volatilisation (Table 4.16), other pathways (Table 4.18), criteria for the protection of maintenance workers (4.19) and TPH criteria developed as surrogates for PAHs (Table 4.22). Surface soils criteria are based on all three pathways, criteria for soils at 1m are based on volatilisation and maintenance workers, and criteria for soils at 4m are based on volatilisation only. PAH surrogate considerations apply at all depths.

6. The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation, x - PAH surrogate

7. Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4M.

8. Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil types. Therefore the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

Table 4.13 (Continued)

**Tier 1 Soil acceptance criteria TPH<sup>(1,3,5,6)</sup> Residential use ALL PATHWAYS**  
(all values in mg/kg)

Soil Type/ Contaminant	Depth of contamination		
	Surface (<1m)	1m - 4m	>4m
<b>PEATS AND HIGHLY ORGANIC SOILS</b>			
C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(6,700) <sup>(7,m)</sup>	(6,700) <sup>(7,m)</sup>	NA <sup>(2)</sup>
C <sub>10</sub> -C <sub>14</sub>	(580) <sup>(7,x)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>

## NOTES:

- Criteria for C10-C14 are based on consideration of aliphatic component of TPH measurement and consideration of TPH as a surrogate measure for PAH, consideration of PAHs completed by extrapolation of PAH content of diesel and PAH criteria (refer Table 4.10)
- NA indicates estimated criterion exceeds 20,000 mg/kg. At 20,000 mg/kg residual separate phase is expected to have formed in soil matrix. Some aesthetic impact may be noted.
- Based on protection of human health only. Site specific consideration of aesthetic and ecological impact is required.
- Based on health effects associated with aliphatic component only. Separate consideration of the health effects associated with the aromatic component (i.e BTEX) is required.
- Soil acceptance criteria are based on the lower value of criteria based on volatilisation (Table 4.16), other pathways (Table 4.18), criteria for the protection of maintenance workers (4.19) and TPH criteria developed as surrogates for PAHs (Table 4.22). Surface soils criteria are based on all three pathways, criteria for soils at 1m are based on volatilisation and maintenance workers, and criteria for soils at 4m are based on volatilisation only. PAH surrogate considerations apply at all depths.
- The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation, x - PAH surrogate
- Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4M.
- Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil types. Therefore the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

Module 4 - Tier 1 Soil Screening Criteria

Table 4.14

Tier 1 Soil acceptance criteria TPH <sup>(1,3,5,6)</sup> *Commercial/ Industrial Use ALL PATHWAYS*  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of contamination		
		Surface (<1m)	1m - 4m	>4m
SAND	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	120 <sup>(m)</sup>	120 <sup>(m)</sup>	(12,000) <sup>(7,8,v)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(1,500) <sup>(7,x)</sup>	(1,900) <sup>(7,x)</sup>	(2,100) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
SANDY SILT	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(500) <sup>(7,m)</sup>	(500) <sup>(7,m)</sup>	(12,000) <sup>(7,v)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(1,700) <sup>(7,x)</sup>	(2,200) <sup>(7,x)</sup>	(3,400) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
SILTY CLAY	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(8,800) <sup>(7,v)</sup>	(20,000) <sup>(7,m)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(1,900) <sup>(7,x)</sup>	(8,900) <sup>(7,x)</sup>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
CLAY	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(1,900) <sup>(7,x)</sup>	(9,700) <sup>(7,x)</sup>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
PUMICE	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(810) <sup>(7,m)</sup>	(810) <sup>(7,m)</sup>	(16,000) <sup>(7,v)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(1,400) <sup>(7,x)</sup>	(3,600) <sup>(7,x)</sup>	(5,700) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
PEATS AND HIGHLY ORGANIC SOILS	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(6,700) <sup>(7,m)</sup>	(6,700) <sup>(7,m)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>

- NOTES:
- Criteria for C10-C14 are based on consideration of aliphatic component of TPH measurement and consideration of TPH as a surrogate measure for PAH, consideration of PAHs completed by extrapolation of PAH content of diesel and PAH criteria (refer Table 4.10)
  - NA indicates estimated criterion exceeds 20,000 mg/kg. At 20,000 mg/kg residual separate phase is expected to have formed in soil matrix. Some aesthetic impact may be noted.
  - Based on protection of human health only. Site specific consideration of aesthetic and ecological impact is required.
  - Based on health effects associated with aliphatic component only. Separate consideration of the health effects associated with the aromatic component (i.e BTEX) is required.
  - Soil acceptance criteria are based on the lower value of criteria based on volatilisation (Table 4.16), other pathways (Table 4.18), criteria for the protection of maintenance workers (4.19) and TPH criteria developed as surrogates for PAHs (Table 4.22). Surface soils criteria are based on all three pathways, criteria for soils at 1m are based on volatilisation and maintenance workers, and criteria for soils at 4m are based on volatilisation only. PAH surrogate considerations apply at all depths.
  - The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation, x - PAH surrogate
  - Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4M.
  - Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil types. Therefore the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

Table 4.15

**Tier 1 Soil acceptance criteria TPH<sup>(1,3,5,6)</sup> Agricultural Use ALL PATHWAYS**  
(all values in mg/kg)

Soil Type/ Contaminant	Depth of contamination		
	Surface (<1m)	1m - 4m	>4m
<b>SAND</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	120 <sup>(m)</sup>	120 <sup>(m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	(3,800) <sup>(7,8,v)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(560) <sup>(7,x)</sup>	(650) <sup>(7,x)</sup>
<b>SANDY SILT</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	NA <sup>(2)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(4,000) <sup>(7,x)</sup>	(500) <sup>(7,m)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(500) <sup>(7,m)</sup>	(560) <sup>(7,x)</sup>
<b>SILTY CLAY</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(500) <sup>(7,m)</sup>	(500) <sup>(7,m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	(670) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(4,000) <sup>(7,x)</sup>	NA <sup>(2)</sup>
<b>CLAY</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(2,700) <sup>(7,v)</sup>	(7,300) <sup>(7,v)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	(2,900) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(4,000) <sup>(7,x)</sup>	NA <sup>(2)</sup>
<b>PUMICE</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(15,000) <sup>(7,v)</sup>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	(2,900) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(4,000) <sup>(7,x)</sup>	NA <sup>(2)</sup>
<b>PEATS AND HIGHLY ORGANIC SOILS</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(810) <sup>(7,m)</sup>	(810) <sup>(7,m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	(1,100) <sup>(7,x)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(4,000) <sup>(7,x)</sup>	NA <sup>(2)</sup>
<b>PEATS AND HIGHLY ORGANIC SOILS</b>	C <sub>7</sub> -C <sub>9</sub> <sup>(4)</sup>	(6,700) <sup>(7,m)</sup>	(6,700) <sup>(7,m)</sup>
	C <sub>10</sub> -C <sub>14</sub>	58 <sup>(x)</sup>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	(4,000) <sup>(7,x)</sup>	NA <sup>(2)</sup>

## NOTES:

- Criteria for C<sub>10</sub>-C<sub>14</sub> are based on consideration of aliphatic component of TPH measurement and consideration of TPH as a surrogate measure for PAH, consideration of PAHs completed by extrapolation of PAH content of diesel and PAH criteria (refer Table 4.10)
- NA indicates estimated criterion exceeds 20,000 mg/kg. At 20,000 mg/kg residual separate phase is expected to have formed in soil matrix. Some aesthetic impact may be noted.
- Based on protection of human health only. Site specific consideration of aesthetic and ecological impact is required.
- Based on health effects associated with aliphatic component only. Separate consideration of the health effects associated with the aromatic component (i.e BTEX) is required.
- Soil acceptance criteria are based on the lower value of criteria based on volatilisation (Table 4.16), other pathways (Table 4.18), criteria for the protection of maintenance workers (4.19) and TPH criteria developed as surrogates for PAHs (Table 4.22). Surface soils criteria are based on all three pathways, criteria for soils at 1m are based on volatilisation and maintenance workers, and criteria for soils at 4m are based on volatilisation only. PAH surrogate considerations apply at all depths.
- The following notes indicate the limiting pathway for each criterion: v - volatilisation, s - Soil Ingestion, d - Dermal, p - Produce, m - Maintenance/Excavation, x - PAH surrogate
- Brackets denote values exceed threshold likely to correspond to formation of residual separate phase hydrocarbons. For further explanation refer to Appendix 4M.
- Due to the nature of boundary conditions in volatilisation model, calculated criteria for sandy soils are higher than that for silt soil types. Therefore the criteria for sand are set equal to the criteria for silt. Refer Appendix 4D for details.

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Module 4 - Tier 1 Soil Screening Criteria

Table 4.19

Tier 1 Soil acceptance criteria *Maintenance/Excavation workers*  
(all values in mg/kg)

Soil Type/ Contaminant	Surface Soil (mg/kg)
<b>SAND</b>	
Alkanes	
C <sub>7</sub> -C <sub>9</sub>	120
C <sub>10</sub> -C <sub>14</sub>	6,500
C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>
MAHS	
Benzene	3.0
Toluene	94
Ethylbenzene	670
Xylenes	150
PAHS	
Naphthalene	640
Non-carc. (Pyrene)	NA <sup>(2)</sup>
Benzo(a)pyrene eq.	25
<b>SANDY SILT</b>	
Alkanes	
C <sub>7</sub> -C <sub>9</sub>	500
C <sub>10</sub> -C <sub>14</sub>	31,000
C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>
MAHS	
Benzene	17
Toluene	480
Ethylbenzene	3,200
Xylenes	780
PAHS	
Naphthalene	3,100
Non-carc. (Pyrene)	NA <sup>(2)</sup>
Benzo(a)pyrene eq.	25

NOTES:

1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site specific consideration of aesthetic and ecological impacts is required.

2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.

3. Criteria based on lower of criteria for maintenance workers (Appendix 4G Table 4G4) and excavation workers (Appendix K).

Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

**Table 4.19** (Continued)  
**Tier 1 Soil acceptance criteria *Maintenance/Excavation workers***  
(all values in mg/kg)

Soil Type/ Contaminant		Surface Soil (mg/kg)
<b>SILTY CLAY</b> Alkanes  MAHS  PAHS	C <sub>7</sub> -C <sub>9</sub>	20,000
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>
	Benzene	700
	Toluene	NA <sup>(2)</sup>
	Ethylbenzene	NA <sup>(2)</sup>
	Xylenes	NA <sup>(2)</sup>
	Naphthalene	NA <sup>(2)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>
	Benzo(a)pyrene eq.	25
<b>CLAY</b> Alkanes  MAHS  PAHS	C <sub>7</sub> -C <sub>9</sub>	NA <sup>(2)</sup>
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(2)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>
	Benzene	870
	Toluene	NA <sup>(2)</sup>
	Ethylbenzene	NA <sup>(2)</sup>
	Xylenes	NA <sup>(2)</sup>
	Naphthalene	NA <sup>(2)</sup>
	Non-carc. (Pyrene)	NA <sup>(2)</sup>
	Benzo(a)pyrene eq.	25

NOTES:

1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site specific consideration of aesthetic and ecological impacts is required.
2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.
3. Criteria based on lower of criteria for maintenance workers (Appendix G Table G4) and excavation workers (Appendix K).

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Module 4 - Tier 1 Soil Screening Criteria

Table 4.19

(Continued)

Tier 1 Soil acceptance criteria *Maintenance/Excavation workers*

(all values in mg/kg)

Soil Type/ Contaminant		Surface Soil (mg/kg)	
PUMICE	Alkanes		
		C <sub>7</sub> -C <sub>9</sub>	810
		C <sub>10</sub> -C <sub>14</sub>	NA <sup>(2)</sup>
		C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>
	MAHS		
		Benzene	28
		Toluene	820
		Ethylbenzene	5,600
	PAHS	Xylenes	1,300
		Naphthalene	5,300
		Non-carc. (Pyrene)	NA <sup>(2)</sup>
	Benzo(a)pyrene eq.	25	
PEATS AND HIGHLY ORGANIC SOILS			
Alkanes	C <sub>7</sub> -C <sub>9</sub>	6,700	
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(2)</sup>	
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(2)</sup>	
MAHS	Benzene	190	
	Toluene	7,500	
	Ethylbenzene	NA <sup>(2)</sup>	
	Xylenes	NA <sup>(2)</sup>	
PAHS			
	Naphthalene	NA <sup>(2)</sup>	
	Non-carc. (Pyrene)	NA <sup>(2)</sup>	
	Benzo(a)pyrene eq.	25	

NOTES:

1. Based on protection of human health. Refer to Table 4.20 for protection of groundwater. Site specific consideration of aesthetic and ecological impacts is required.

2. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site.

3. Criteria based on lower of criteria for maintenance workers (Appendix G Table G4) and excavation workers (Appendix K).



Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand  
Module 4 - Tier 1 Soil Screening Criteria

**Table 4.20 Tier 1 Soil acceptance criteria PROTECTION OF GROUNDWATER QUALITY**  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of Contamination					
		Surface (<1m)			1m - 4m		>4m
		GW 2m <sup>(5)</sup>	GW 4m	GW 8m	GW 4m <sup>(5)</sup>	GW 8m	GW 8m
<b>SAND</b> TPHs	C <sub>7</sub> -C <sub>9</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
<b>MAHS</b>	Benzene	0.17	2.8	9.2	0.78	5.1	1.3
	Toluene	(39)	(700)	(6,000)	(200)	(1,300)	(320)
	Ethylbenzene	(50)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	(280)	NA <sup>(1)</sup>	(790)
	Xylenes	(24)	(410)	(1,400)	(120)	(750)	(190)
<b>PAHS</b>	Naphthalene	1.9	53	NA <sup>(1)</sup>	3.7	NA <sup>(1)</sup>	20
	Non-carc. (Pyrene)	(56)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Benzo(a)pyrene eq.	(40)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
<b>SANDY SILT</b>							
TPHs	C <sub>7</sub> -C <sub>9</sub>	(5,200)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>10</sub> -C <sub>14</sub>	(9,200)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
<b>MAHS</b>	Benzene	0.029	0.46	4.8	0.084	2.0	0.21
	Toluene	6.0	(100)	NA <sup>(1)</sup>	18	(540)	45
	Ethylbenzene	7.2	(2,600)	NA <sup>(1)</sup>	(23)	NA <sup>(1)</sup>	(170)
	Xylenes	3.7	(61)	(1400)	11	(250)	(27)
<b>PAHS</b>	Naphthalene	0.28	16	NA <sup>(1)</sup>	0.62	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Non-carc. (Pyrene)	7.9	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Benzo(a)pyrene eq.	(5.7)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>

**NOTE:**

1. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site (i.e 20,000 mg/kg for TPH, 10,000 mg/kg for other contaminants).
2. Based on Tier 1 groundwater acceptance criteria for potable use.
3. Each depth is measured from surface to top of contaminated soil layer or to the groundwater table. Contaminated soil layer assumed to be 2 m thick.
4. Criteria based on assumption of absorbed phase hydrocarbons only and 1st order biodegradation. Migration of separate phase hydrocarbons through soil profile may result in greater impact than indicated by above criteria.
5. Contaminated soil layer is in direct contact with groundwater and hence no attenuation associated with vertical migration through the soil column occurs.

Table 4.20 (CONTINUED)  
Tier 1 Soil acceptance criteria PROTECTION OF GROUNDWATER QUALITY  
(all values in mg/kg)

Soil Type/ Contaminant	Depth of Contamination					
	Surface (<1m)			1m - 4m		>4m
	GW 2m <sup>(5)</sup>	GW 4m	GW 8m	GW 4m <sup>(5)</sup>	GW 8m	GW 8m
<b>SILTY CLAY</b>						
TPHs						
C <sub>7</sub> -C <sub>9</sub>	(710)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
C <sub>10</sub> -C <sub>14</sub>	(1500)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
MAHS						
Benzene	0.0057	0.66	NA <sup>(1)</sup>	0.11	NA <sup>(1)</sup>	0.34
Toluene	1.1	(8,900)	NA <sup>(1)</sup>	8.3	NA <sup>(1)</sup>	(8,800)
Ethylbenzene	1.2	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Xylenes	0.67	(51)	NA <sup>(1)</sup>	5.9	NA <sup>(1)</sup>	(50)
PAHS						
Naphthalene	0.047	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Non-carc. (Pyrene)	1.3	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Benzo(a)pyrene eq.	0.93	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
<b>SAND</b>						
TPHs						
C <sub>7</sub> -C <sub>9</sub>	(590)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
C <sub>10</sub> -C <sub>14</sub>	(1,400)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
MAHS						
Benzene	0.0054	(850)	NA <sup>(1)</sup>	0.75	NA <sup>(1)</sup>	(830)
Toluene	1.0	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Ethylbenzene	1.1	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Xylenes	0.61	NA <sup>(1)</sup>	NA <sup>(1)</sup>	(840)	NA <sup>(1)</sup>	NA <sup>(1)</sup>
PAHS						
Naphthalene	0.043	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Non-carc. (Pyrene)	1.2	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
Benzo(a)pyrene eq.	0.85	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>

NOTE:

1. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site (i.e 20,000 mg/kg for TPH, 10,000 mg/kg for other contaminants).

2. Based on Tier 1 groundwater acceptance criteria for potable use.

3. Each depth is measured from surface to top of contaminated soil layer or to the groundwater table. Contaminated soil layer assumed to be 2 m thick.

4. Criteria based on assumption of absorbed phase hydrocarbons only and 1st order biodegradation. Migration of separate phase hydrocarbons through soil profile may result in greater impact than indicated by above criteria.

5. Contaminated soil layer is in direct contact with groundwater and hence no attenuation associated with vertical migration through the soil column occurs.

## Guidelines for Assessing and Managing Petroleum Hydrocarbon Contaminated Sites in New Zealand

## Module 4 - Tier 1 Soil Screening Criteria

Table 4.20 (CONTINUED)

Tier 1 Soil acceptance criteria PROTECTION OF GROUNDWATER QUALITY  
(all values in mg/kg)

Soil Type/ Contaminant		Depth of Contamination					
		Surface (<1m)			1m - 4m		>4m
		GW 2m <sup>(5)</sup>	GW 4m	GW 8m	GW 4m <sup>(5)</sup>	GW 8m	GW 8m
TPHs	C <sub>7</sub> -C <sub>9</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
MAHS	Benzene	0.24	0.25	17	0.52	8.1	1.1
	Toluene	51	(560)	(10,000)	(120)	(1,600)	(250)
	Ethylbenzene	63	(1,800)	NA <sup>(1)</sup>	(150)	NA <sup>(1)</sup>	(730)
	Xylenes	32	(330)	(2,200)	(70)	(1,100)	(150)
PAHS	Naphthalene	2.4	60	NA <sup>(1)</sup>	4.0	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Non-carc. (Pyrene)	(70)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Benzo(a)pyrene eq.	(50)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
<b>SILTY CLAY</b>							
TPHs							
	C <sub>7</sub> -C <sub>9</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>10</sub> -C <sub>14</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	C <sub>15</sub> -C <sub>36</sub>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
MAHS	Benzene	3.7	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Toluene	(1,000)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Ethylbenzene	(1,400)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Xylenes	(630)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
PAHS	Naphthalene	55	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Non-carc. (Pyrene)	(1,600)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>
	Benzo(a)pyrene eq.	(1,200)	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>	NA <sup>(1)</sup>

## NOTE:

1. NA indicates contaminant not limiting as estimated health-based criterion is significantly higher than that likely to be encountered on site (i.e 20,000 mg/kg for TPH, 10,000 mg/kg for other contaminants).
2. Based on Tier 1 groundwater acceptance criteria for potable use.
3. Each depth is measured from surface to top of contaminated soil layer or to the groundwater table. Contaminated soil layer assumed to be 2 m thick.
4. Criteria based on assumption of absorbed phase hydrocarbons only and 1st order biodegradation. Migration of separate phase hydrocarbons through soil profile may result in greater impact than indicated by above criteria.
5. Contaminated soil layer is in direct contact with groundwater and hence no attenuation associated with vertical migration through the soil column occurs.

4. Table A.5 Sheep Dip Guidelines is from “Identifying, Investigating and Managing Risks Associated with former Sheep-dip Sites: A guide for Local Authorities”, Ministry for the Environment, 2006.

Table A.5 Summary of soil guideline values (mg/kg) for individual pathways

Contaminant	Scenario	Soil Ingestion	Dermal absorption	Produce Ingestion	Combined*
ΣDDTs	Rural/lifestyle	72	2,735	9.6	8.4
	Standard Residential	72	2,735	48	28
	High-density urban residential	72	2,735	-	70
	Parks/recreation	143	4,100	-	139
	Commercial/ Industrial	1,955	15,600	-	1,740
Dieldrin	Rural/lifestyle	16	60	0.7	0.7
	Standard Residential	16	60	3.4	2.7
	High-density urban residential	16	60	-	12
	Parks/recreation	31	89	-	23
	Commercial/ Industrial	425	339	-	190
Lindane	Rural/lifestyle	782	7,450	35	33
	Standard Residential	782	7,450	173	139
	High-density urban residential	782	7,450	-	707
	Parks/recreation	1,560	11,200	-	1,370
	Commercial/ Industrial	>20,000	>20,000	-	14,180

\* The combined value is calculated by taking the inverse of the sum of the inverse value of each pathway.

5. Tables 3.4.1 and 3.5.1 are from “Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC) Guidelines”, October 2000.

**Table 3.4.1** Trigger values for toxicants at alternative levels of protection. Values in grey shading are the trigger values applying to typical *slightly-moderately disturbed systems*; see table 3.4.2 and Section 3.4.2.4 for guidance on applying these levels to different ecosystem conditions.

Chemical		Trigger values for freshwater				Trigger values for marine			
		(µg/L <sup>-1</sup> )				(µg/L <sup>-1</sup> )			
		Level of protection (% species)				Level of protection (% species)			
		99%	95%	90%	80%	99%	95%	90%	80%
<b>METALS &amp; METALLOIDS</b>									
Aluminium	pH>6.5	27	55	80	150	ID	ID	ID	ID
Aluminium	pH<6.5	ID	ID	ID	ID	ID	ID	ID	ID
Antimony		ID	ID	ID	ID	ID	ID	ID	ID
Arsenic (As III)		1	24	94 <sup>C</sup>	360 <sup>C</sup>	ID	ID	ID	ID
Arsenic (As V)		0.8	13	42	140 <sup>C</sup>	ID	ID	ID	ID
Beryllium		ID	ID	ID	ID	ID	ID	ID	ID
Bismuth		ID	ID	ID	ID	ID	ID	ID	ID
Boron		90	370 <sup>C</sup>	680 <sup>C</sup>	1300 <sup>C</sup>	ID	ID	ID	ID
Cadmium	H	0.06	0.2	0.4	0.8 <sup>C</sup>	0.7 <sup>B</sup>	5.5 <sup>B,C</sup>	14 <sup>B,C</sup>	36 <sup>B,A</sup>
Chromium (Cr III)	H	ID	ID	ID	ID	7.7	27.4	48.6	90.6
Chromium (Cr VI)		0.01	1.0 <sup>C</sup>	6 <sup>A</sup>	40 <sup>A</sup>	0.14	4.4	20 <sup>C</sup>	85 <sup>C</sup>
Cobalt		ID	ID	ID	ID	0.005	1	14	150 <sup>C</sup>
Copper	H	1.0	1.4	1.8 <sup>C</sup>	2.5 <sup>C</sup>	0.3	1.3	3 <sup>C</sup>	8 <sup>A</sup>
Gallium		ID	ID	ID	ID	ID	ID	ID	ID
Iron		ID	ID	ID	ID	ID	ID	ID	ID
Lanthanum		ID	ID	ID	ID	ID	ID	ID	ID
Lead	H	1.0	3.4	5.6	9.4 <sup>C</sup>	2.2	4.4	6.6 <sup>C</sup>	12 <sup>C</sup>
Manganese		1200	1900 <sup>C</sup>	2500 <sup>C</sup>	3600 <sup>C</sup>	ID	ID	ID	ID
Mercury (inorganic)	B	0.06	0.6	1.9 <sup>C</sup>	5.4 <sup>A</sup>	0.1	0.4 <sup>C</sup>	0.7 <sup>C</sup>	1.4 <sup>C</sup>
Mercury (methyl)		ID	ID	ID	ID	ID	ID	ID	ID
Molybdenum		ID	ID	ID	ID	ID	ID	ID	ID
Nickel	H	8	11	13	17 <sup>C</sup>	7	70 <sup>C</sup>	200 <sup>A</sup>	560 <sup>A</sup>
Selenium (Total)	B	5	11	18	34	ID	ID	ID	ID
Selenium (SeIV)	B	ID	ID	ID	ID	ID	ID	ID	ID
Silver		0.02	0.05	0.1	0.2 <sup>C</sup>	0.8	1.4	1.8	2.6 <sup>C</sup>
Thallium		ID	ID	ID	ID	ID	ID	ID	ID
Tin (inorganic, SnIV)		ID	ID	ID	ID	ID	ID	ID	ID
Tributyltin (as µg/L Sn)		ID	ID	ID	ID	0.0004	0.006 <sup>C</sup>	0.02 <sup>C</sup>	0.05 <sup>C</sup>
Uranium		ID	ID	ID	ID	ID	ID	ID	ID
Vanadium		ID	ID	ID	ID	50	100	160	280
Zinc	H	2.4	8.0 <sup>C</sup>	15 <sup>C</sup>	31 <sup>C</sup>	7	15 <sup>C</sup>	23 <sup>C</sup>	43 <sup>C</sup>
<b>NON-METALLIC INORGANICS</b>									
Ammonia	D	320	900 <sup>C</sup>	1430 <sup>C</sup>	2300 <sup>A</sup>	500	910	1200	1700
Chlorine	E	0.4	3	6 <sup>A</sup>	13 <sup>A</sup>	ID	ID	ID	ID
Cyanide	F	4	7	11	18	2	4	7	14
Nitrate	J	17	700	3400 <sup>C</sup>	17000 <sup>A</sup>	ID	ID	ID	ID
Hydrogen sulfide	G	0.5	1.0	1.5	2.6	ID	ID	ID	ID
<b>ORGANIC ALCOHOLS</b>									
Ethanol		400	1400	2400 <sup>C</sup>	4000 <sup>C</sup>	ID	ID	ID	ID
Ethylene glycol		ID	ID	ID	ID	ID	ID	ID	ID
Isopropyl alcohol		ID	ID	ID	ID	ID	ID	ID	ID
<b>CHLORINATED ALKANES</b>									
<b>Chloromethanes</b>									
Dichloromethane		ID	ID	ID	ID	ID	ID	ID	ID
Chloroform		ID	ID	ID	ID	ID	ID	ID	ID
Carbon tetrachloride		ID	ID	ID	ID	ID	ID	ID	ID
<b>Chloroethanes</b>									
1,2-dichloroethane		ID	ID	ID	ID	ID	ID	ID	ID
1,1,1-trichloroethane		ID	ID	ID	ID	ID	ID	ID	ID

Chemical	Trigger values for freshwater				Trigger values for marine			
	(µg/L <sup>-1</sup> )				(µg/L <sup>-1</sup> )			
	Level of protection (% species)				Level of protection (% species)			
	99%	95%	90%	80%	99%	95%	90%	80%
1,1,2-trichloroethane	5400	6500	7300	8400	140	1900	5800 <sup>C</sup>	18000 <sup>C</sup>
1,1,2,2-trichloroethane	ID	ID	ID	ID	ID	ID	ID	ID
Pentachloroethane	ID	ID	ID	ID	ID	ID	ID	ID
Hexachloroethane	B	290	360	420	500	ID	ID	ID
<b>Chloropropanes</b>								
1,1-dichloropropane	ID	ID	ID	ID	ID	ID	ID	ID
1,2-dichloropropane	ID	ID	ID	ID	ID	ID	ID	ID
1,3-dichloropropane	ID	ID	ID	ID	ID	ID	ID	ID
<b>CHLORINATED ALKENES</b>								
Chloroethylene	ID	ID	ID	ID	ID	ID	ID	ID
1,1-dichloroethylene	ID	ID	ID	ID	ID	ID	ID	ID
1,1,2-trichloroethylene	ID	ID	ID	ID	ID	ID	ID	ID
1,1,2,2-tetrachloroethylene	ID	ID	ID	ID	ID	ID	ID	ID
3-chloropropane	ID	ID	ID	ID	ID	ID	ID	ID
1,3-dichloropropane	ID	ID	ID	ID	ID	ID	ID	ID
<b>ANILINES</b>								
Aniline	8	250 <sup>A</sup>	1100 <sup>A</sup>	4800 <sup>A</sup>	ID	ID	ID	ID
2,4-dichloroaniline	0.6	7	20	60 <sup>C</sup>	ID	ID	ID	ID
2,5-dichloroaniline	ID	ID	ID	ID	ID	ID	ID	ID
3,4-dichloroaniline	1.3	3	6 <sup>C</sup>	13 <sup>C</sup>	85	150	190	260
3,5-dichloroaniline	ID	ID	ID	ID	ID	ID	ID	ID
Benzidine	ID	ID	ID	ID	ID	ID	ID	ID
Dichlorobenzidine	ID	ID	ID	ID	ID	ID	ID	ID
<b>AROMATIC HYDROCARBONS</b>								
Benzene	600	950	1300	2000	500 <sup>C</sup>	700 <sup>C</sup>	900 <sup>C</sup>	1300 <sup>C</sup>
Toluene	ID	ID	ID	ID	ID	ID	ID	ID
Ethylbenzene	ID	ID	ID	ID	ID	ID	ID	ID
o-xylene	200	350	470	640	ID	ID	ID	ID
m-xylene	ID	ID	ID	ID	ID	ID	ID	ID
p-xylene	140	200	250	340	ID	ID	ID	ID
m+p-xylene	ID	ID	ID	ID	ID	ID	ID	ID
Cumene	ID	ID	ID	ID	ID	ID	ID	ID
<b>Polycyclic Aromatic Hydrocarbons</b>								
Naphthalene	2.5	16	37	85	50 <sup>C</sup>	70 <sup>C</sup>	90 <sup>C</sup>	1300 <sup>C</sup>
Anthracene	B	ID	ID	ID	ID	ID	ID	ID
Phenanthrene	B	ID	ID	ID	ID	ID	ID	ID
Fluoranthene	B	ID	ID	ID	ID	ID	ID	ID
Benzo(a)pyrene	B	ID	ID	ID	ID	ID	ID	ID
<b>Nitrobenzenes</b>								
Nitrobenzene	230	550	820	1300	ID	ID	ID	ID
1,2-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,3-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,4-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,3,5-trinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-methoxy-2-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-methoxy-4-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-chloro-2-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-chloro-3-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-chloro-4-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-chloro-2,4-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,2-dichloro-3-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,3-dichloro-5-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,4-dichloro-2-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
2,4-dichloro-2-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID

Chemical	Trigger values for freshwater				Trigger values for marine			
	(µg/L <sup>1</sup> )				(µg/L <sup>1</sup> )			
	Level of protection (% species)				Level of protection (% species)			
	99%	95%	90%	80%	99%	95%	90%	80%
1,2,4,5-tetrachloro-3-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,5-dichloro-2,4-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,3,5-trichloro-2,4-dinitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1-fluoro-4-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
<b>Nitrotoluenes</b>								
2-nitrotoluene	ID	ID	ID	ID	ID	ID	ID	ID
3-nitrotoluene	ID	ID	ID	ID	ID	ID	ID	ID
4-nitrotoluene	ID	ID	ID	ID	ID	ID	ID	ID
2,3-dinitrotoluene	ID	ID	ID	ID	ID	ID	ID	ID
2,4-dinitrotoluene	16	65 <sup>C</sup>	130 <sup>C</sup>	250 <sup>C</sup>	ID	ID	ID	ID
2,4,6-dinitrotoluene	100	140	160	210	ID	ID	ID	ID
1,2-dimethyl-3-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,2-dimethyl-4-nitrobenzene	ID	ID	ID	ID	ID	ID	ID	ID
4-chloro-3-nitrotoluene	ID	ID	ID	ID	ID	ID	ID	ID
<b>Chlorobenzenes and Chloronaphthalenes</b>								
Monochlorobenzene	ID	ID	ID	ID	ID	ID	ID	ID
1,2-dichlorobenzene	120	160	200	270	ID	ID	ID	ID
1,3-dichlorobenzene	160	260	350	520 <sup>C</sup>	ID	ID	ID	ID
1,4-dichlorobenzene	40	60	75	100	ID	ID	ID	ID
1,2,3-trichlorobenzene	B 3	10	16	30 <sup>C</sup>	ID	ID	ID	ID
1,2,4-trichlorobenzene	B 85	170 <sup>C</sup>	220 <sup>C</sup>	300 <sup>C</sup>	20	80	140	240
1,2,5-trichlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
1,2,3,4-tetrachlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
1,2,3,5-tetrachlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
1,2,4,5-tetrachlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
Pentachlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
Hexachlorobenzene	B ID	ID	ID	ID	ID	ID	ID	ID
1-chloronaphthalene	ID	ID	ID	ID	ID	ID	ID	ID
<b>Polychlorinated Biphenyls (PCBs) &amp; Dioxins</b>								
Capacitor 21	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1016	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1221	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1232	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1242	B 0.3	0.6	1.0	1.7	ID	ID	ID	ID
Aroclor 1248	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1254	B 0.01	0.03	0.07	0.2	ID	ID	ID	ID
Aroclor 1260	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1262	B ID	ID	ID	ID	ID	ID	ID	ID
Aroclor 1268	B ID	ID	ID	ID	ID	ID	ID	ID
2,3,4'-trichlorobiphenyl	B ID	ID	ID	ID	ID	ID	ID	ID
4,4'-dichlorobiphenyl	B ID	ID	ID	ID	ID	ID	ID	ID
2,4,6,2',4',6'-hexachlorobiphenyl	B ID	ID	ID	ID	ID	ID	ID	ID
2,2',4,5,5'-pentachloro-1,1'-biphenyl	B ID	ID	ID	ID	ID	ID	ID	ID
Total PCBs	B ID	ID	ID	ID	ID	ID	ID	ID
2,3,7,8-TCDD	B ID	ID	ID	ID	ID	ID	ID	ID
<b>PHENOLS and XYLENOLS</b>								
Phenols	85	320	600	1200 <sup>C</sup>	270	400	520	720
2,4-dimethylphenol	ID	ID	ID	ID	ID	ID	ID	ID
Nonylphenol	ID	ID	ID	ID	ID	ID	ID	ID
2-chlorophenol	T 340 <sup>C</sup>	490 <sup>C</sup>	630 <sup>C</sup>	870 <sup>C</sup>	ID	ID	ID	ID
3-chlorophenol	T ID	ID	ID	ID	ID	ID	ID	ID
4-chlorophenol	T 160	220	280 <sup>C</sup>	360 <sup>C</sup>	ID	ID	ID	ID
2,3-dichlorophenol	T ID	ID	ID	ID	ID	ID	ID	ID
2,4-dichlorophenol	T 120	160 <sup>C</sup>	200 <sup>C</sup>	270 <sup>C</sup>	ID	ID	ID	ID

Chemical		Trigger values for freshwater				Trigger values for marine			
		(µg/L <sup>-1</sup> )				(µg/L <sup>-1</sup> )			
		Level of protection (% species)				Level of protection (% species)			
		99%	95%	90%	80%	99%	95%	90%	80%
2,5-dichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
2,6-dichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
3,4-dichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
3,5-dichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
2,3,4-trichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
2,3,5-trichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
2,3,6-trichlorophenol	T	ID	ID	ID	ID	ID	ID	ID	ID
2,4,5-trichlorophenol	T,B	ID	ID	ID	ID	ID	ID	ID	ID
2,4,6-trichlorophenol	T,B	3	20	40	95	ID	ID	ID	ID
2,3,4,5-tetrachlorophenol	T,B	ID	ID	ID	ID	ID	ID	ID	ID
2,3,4,6-tetrachlorophenol	T,B	10	20	25	30	ID	ID	ID	ID
2,3,5,6-tetrachlorophenol	T,B	ID	ID	ID	ID	ID	ID	ID	ID
Pentachlorophenol	T,B	3.6	10	17	27 <sup>A</sup>	11	22	33	55 <sup>A</sup>
Nitrophenols									
2-nitrophenol		ID	ID	ID	ID	ID	ID	ID	ID
3-nitrophenol		ID	ID	ID	ID	ID	ID	ID	ID
4-nitrophenol		ID	ID	ID	ID	ID	ID	ID	ID
2,4-dinitrophenol		13	45	80	140	ID	ID	ID	ID
2,4,6-trinitrophenol		ID	ID	ID	ID	ID	ID	ID	ID
ORGANIC SULPUR COMPOUNDS									
Carbon disulfide		ID	ID	ID	ID	ID	ID	ID	ID
Isopropyl disulfide		ID	ID	ID	ID	ID	ID	ID	ID
n-propyl sulfide		ID	ID	ID	ID	ID	ID	ID	ID
Propyl disulfide		ID	ID	ID	ID	ID	ID	ID	ID
Tert-butyl sulfide		ID	ID	ID	ID	ID	ID	ID	ID
Phenyl disulfide		ID	ID	ID	ID	ID	ID	ID	ID
Bis(dimethylthiocarbamyl) sulfide		ID	ID	ID	ID	ID	ID	ID	ID
Bis(diethylthiocarbamyl) disulfide		ID	ID	ID	ID	ID	ID	ID	ID
2-methoxy-4H-1,3,2-benzodioxaphosphorium-2-sulfide		ID	ID	ID	ID	ID	ID	ID	ID
Xanthates									
Potassium amyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Potassium ethyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Potassium hexyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Potassium isopropyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Sodium ethyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Sodium isobutyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Sodium isopropyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
Sodium sec-butyl xanthate		ID	ID	ID	ID	ID	ID	ID	ID
PHTHALATES									
Dimethylphthalate		3000	3700	4300	5100	ID	ID	ID	ID
Diethylphthalate		900	1000	1100	1300	ID	ID	ID	ID
Dibutylphthalate	B	9.9	26	40.2	64.6	ID	ID	ID	ID
Di(2-ethylhexyl)phthalate	B	ID	ID	ID	ID	ID	ID	ID	ID
MISCELLANEOUS INDUSTRIAL CHEMICALS									
Acetonitrile		ID	ID	ID	ID	ID	ID	ID	ID
Acrylonitrile		ID	ID	ID	ID	ID	ID	ID	ID
Poly(acrylonitrile-co-butadiene-co-styrene)		200	530	800 <sup>C</sup>	1200 <sup>C</sup>	200	250	280	340
Dimethylformamide		ID	ID	ID	ID	ID	ID	ID	ID
1,2-diphenylhydrazine		ID	ID	ID	ID	ID	ID	ID	ID
Diphenylnitrosamine		ID	ID	ID	ID	ID	ID	ID	ID
Hexachlorobutadiene		ID	ID	ID	ID	ID	ID	ID	ID
Hexachlorocyclopentadiene		ID	ID	ID	ID	ID	ID	ID	ID



Chemical		Trigger values for freshwater				Trigger values for marine			
		(µg/L <sup>-1</sup> )				(µg/L <sup>-1</sup> )			
		Level of protection (% species)				Level of protection (% species)			
		99%	95%	90%	80%	99%	95%	90%	80%
Isophorone		ID	ID	ID	ID	ID	ID	ID	ID
<b>ORGANOCHLORINE PESTICIDES</b>									
Aldrin	B	ID	ID	ID	ID	ID	ID	ID	ID
Chlorodane	B	0.03	0.08	0.14	0.27 <sup>C</sup>	ID	ID	ID	ID
DDE	B	ID	ID	ID	ID	ID	ID	ID	ID
DDT	B	0.006	0.01	0.02	0.04	ID	ID	ID	ID
Dicofol	B	ID	ID	ID	ID	ID	ID	ID	ID
Dieldrin	B	ID	ID	ID	ID	ID	ID	ID	ID
Endosulfan	B	0.03	0.2 <sup>A</sup>	0.6 <sup>A</sup>	1.8 <sup>A</sup>	0.005	0.01	0.02	0.05 <sup>A</sup>
Endosulfan alpha	B	ID	ID	ID	ID	ID	ID	ID	ID
Endosulfan beta	B	ID	ID	ID	ID	ID	ID	ID	ID
Endrin	B	0.01	0.02	0.04 <sup>C</sup>	0.06 <sup>A</sup>	0.004	0.008	0.01	0.02
Heptachlor	B	0.01	0.09	0.25	0.7 <sup>A</sup>	ID	ID	ID	ID
Lindane		0.07	0.2	0.4	1.0 <sup>A</sup>	ID	ID	ID	ID
Methoxychlor	B	ID	ID	ID	ID	ID	ID	ID	ID
Mirex	B	ID	ID	ID	ID	ID	ID	ID	ID
Toxaphene	B	0.1	0.2	0.3	0.5	ID	ID	ID	ID
<b>ORGANOPHOSPHORUS PESTICIDES</b>									
Azinphos methyl		0.01	0.02	0.05	0.11 <sup>A</sup>	ID	ID	ID	ID
Chloropyrifos	B	0.00004	0.01	0.11 <sup>A</sup>	1.2 <sup>A</sup>	0.0005	0.0009	0.04 <sup>A</sup>	0.3 <sup>A</sup>
Demeton		ID	ID	ID	ID	ID	ID	ID	ID
Demeton-S-methyl		ID	ID	ID	ID	ID	ID	ID	ID
Diazinon		0.00003	0.01	0.2 <sup>A</sup>	2 <sup>A</sup>	ID	ID	ID	ID
Dimethoate		0.1	0.15	0.2	0.3	ID	ID	ID	ID
Fenitrothion		0.1	0.2	0.3	0.4	ID	ID	ID	ID
Melathion		0.002	0.05	0.2	1.1 <sup>A</sup>	ID	ID	ID	ID
Parathion		0.0007	0.004 <sup>C</sup>	0.01 <sup>C</sup>	0.04 <sup>A</sup>	ID	ID	ID	ID
Profenofos	B	ID	ID	ID	ID	ID	ID	ID	ID
Temphos	B	ID	ID	ID	ID	0.0004	0.05	0.4	3.6 <sup>A</sup>
<b>CARBAMATE &amp; OTHER PESTICIDES</b>									
Carbofuran		0.06	1.2 <sup>A</sup>	4 <sup>A</sup>	15 <sup>A</sup>	ID	ID	ID	ID
Methomyl		0.5	3.5	9.5	23	ID	ID	ID	ID
S-methoprene		ID	ID	ID	ID	ID	ID	ID	ID
<b>PYRETHROIDS</b>									
Deltamethrin		ID	ID	ID	ID	ID	ID	ID	ID
Esfenvalerate		ID	0.001*	ID	ID	ID	ID	ID	ID
<b>HERBICIDES &amp; FUNGICIDES</b>									
<b>Bypyridilium herbicides</b>									
Diquat		0.01	1.4	10	80 <sup>A</sup>	ID	ID	ID	ID
Paraquat		ID	ID	ID	ID	ID	ID	ID	ID
<b>Phenoxyacetic acid herbicides</b>									
MCPA		ID	ID	ID	ID	ID	ID	ID	ID
2,4-D		140	280	450	830	ID	ID	ID	ID
2,4,5-T		3	36	100	290 <sup>A</sup>	ID	ID	ID	ID
<b>Sulfonylurea herbicides</b>									
Bensulfuron		ID	ID	ID	ID	ID	ID	ID	ID
Metsulfuran		ID	ID	ID	ID	ID	ID	ID	ID
<b>Triocarbamate herbicides</b>									
Molinate		0.1	3.4	14	57	ID	ID	ID	ID
Thiobencarb		1	2.8	4.6	8 <sup>C</sup>	ID	ID	ID	ID
Thiram		0.01	0.2	0.8 <sup>C</sup>	3 <sup>A</sup>	ID	ID	ID	ID
<b>Triazine herbicides</b>									
Amitrole		ID	ID	ID	ID	ID	ID	ID	ID
Atrazine		0.7	13	45 <sup>C</sup>	150 <sup>C</sup>	ID	ID	ID	ID

Chemical	Trigger values for freshwater				Trigger values for marine			
	(µg/L <sup>-1</sup> )				(µg/L <sup>-1</sup> )			
	Level of protection (% species)				Level of protection (% species)			
	99%	95%	90%	80%	99%	95%	90%	80%
Hexazinone	ID	ID	ID	ID	ID	ID	ID	ID
Simazine	0.2	3.2	11	35	ID	ID	ID	ID
Urea herbicides								
Diuron	ID	ID	ID	ID	ID	ID	ID	ID
Tebuthiuron	0.02	2.2	20	160 <sup>C</sup>	ID	ID	ID	ID
Miscellaneous herbicides								
Acrolein	ID	ID	ID	ID	ID	ID	ID	ID
Bromacil	ID	ID	ID	ID	ID	ID	ID	ID
Glyphosate	370	1200	2000	3600 <sup>A</sup>	ID	ID	ID	ID
Imazethapyr	ID	ID	ID	ID	ID	ID	ID	ID
Ioxynil	ID	ID	ID	ID	ID	ID	ID	ID
Metolachlor	ID	ID	ID	ID	ID	ID	ID	ID
Sethoxydim	ID	ID	ID	ID	ID	ID	ID	ID
Trifluralin	B	2.6	4.4	6	9 <sup>A</sup>	ID	ID	ID
GENERIC GROUPS OF CHEMICALS								
Surfactants								
Linear alkylbenzene sulfonates (LAS)	65	280	520 <sup>C</sup>	1000 <sup>C</sup>	ID	ID	ID	ID
Alcohol ethoxylated sulfate (AES)	340	650	850 <sup>C</sup>	1100 <sup>C</sup>	ID	ID	ID	ID
Alcohol ethoxylated surfactants (AE)	50	140	220	360 <sup>C</sup>	ID	ID	ID	ID
Oils & Petroleum Hydrocarbons								
Oil Spill Dispersants								
BP 1100X	ID	ID	ID	ID	ID	ID	ID	ID
Corexit 7664	ID	ID	ID	ID	ID	ID	ID	ID
Corexit 8667		ID	ID	ID	ID	ID	ID	ID
Corexit 9527	ID	ID	ID	ID	230	1100	2200	4400 <sup>A</sup>
Corexit 9550	ID	ID	ID	ID	ID	ID	ID	ID

**Notes:** Where the final water quality guideline to be applied to a site is below current analytical practical quantitation limits, see Section 3.4.3.3 for guidance.

Most trigger values listed here for metals and metalloids are *High reliability* figures, derived from field or chronic NOEC data (see 3.4.2.3 for reference to Volume 2). The exceptions are *Moderate reliability* for freshwater aluminium (pH>6.5), manganese and marine chromium (III).

Most trigger values listed here for non-metallic inorganics and organic chemicals are *Moderate reliability* figures, derived from acute LC<sub>50</sub> data (see 3.4.2.3 for reference to Volume 2). The exceptions are *High reliability* for freshwater ammonia, 3,4-DCA, endosulfan, chlorpyrifos, esfenvalerate, tebuthiuron, three surfactants and marine for 1,1,2,-TCE and chlorpyrifos.

\* = *High reliability* figure for esfenvalerate derived from mesocosm NOEC data (no alternative protection levels available).

A = Figure may not protect key test species from acute toxicity (and chronic) - check Section 8.3.7 for spread of data and its significance.

'A' indicates that trigger value > acute toxicity figure; note that trigger value should be <1/3 of acute figure (Section 8.3.4.4).

B = Chemicals for which possible bioaccumulation and secondary poisoning effects should be considered ( see Section 8.3.3.4 and 8.3.5.7).

C = Figure may not protect key test species from chronic toxicity (this refers to experimental chronic figures or geometric mean for species) - check Section 8.3.7 for spread of data and its significance. Where grey shading and 'C' coincide, refer to text in Section 8.3.7.2.

D = Ammonia as TOTAL ammonia as [NH<sub>3</sub>-N] at pH 8. For changes in trigger value with pH refer to Section 8.3.7.2

E = Chlorine as total chlorine, as [Cl]; see Section 8.3.7.2

F = Cyanide as un-ionised HCN, measured as [CN]; see Section 8.3.7.2

G = Sulfide as un-ionised H<sub>2</sub>S, measured as [S]; see Section 8.3.7.2

H = Chemicals for which algorithms have been provided in table 3.4.3 to account for the effects of hardness. The values have been calculated using a hardness of 30mg/L CaCO<sub>3</sub>. These should be adjusted to the site-specific hardness (see Section 3.4.3).

J = Figures protect against toxicity and do not relate to eutrophication issues. Refer to Section 3.3 if eutrophication is the issue of concern.

ID = Insufficient data to derive a reliable trigger value. Users advised to check if a low reliability value or an ECL is given in Section 8.3.7.

T = Tainting or flavour impairment of fish flesh may possibly occur at concentrations below the trigger value. See Sections 4.4.5.3/3 and 8.3.7.

**Table 3.5.1** Recommended sediment quality guidelines<sup>a</sup>

Contaminant	ISQG-Low (Trigger value)	ISQG-High
<b>METALS (mg/kg dry wt)</b>		
Antimony	2	25
Cadmium	1.5	10
Chromium	80	370
Copper	65	270
Lead	50	220
Mercury	0.15	1
Nickel	21	52
Silver	1	3.7
Zinc	200	410
<b>METALLOIDS (mg/kg dry wt)</b>		
Arsenic	20	70
<b>ORGANOMETALLICS</b>		
Tributyltin (µg Sn/kg dry wt.)	5	70
<b>ORGANICS (µg/kg dry wt)<sup>b</sup></b>		
Acenaphthene	16	500
Acenaphthalene	44	640
Anthracene	85	1100
Fluorene	19	540
Naphthalene	160	2100
Phenanthrene	240	1500
Low Molecular Weight PAHs <sup>c</sup>	552	3160
Benzo(a)anthracene	261	1600
Benzo(a)pyrene	430	1600
Dibenzo(a,h)anthracene	63	260
Chrysene	384	2800
Fluoranthene	600	5100
Pyrene	665	2600
High Molecular Weight PAHs <sup>c</sup>	1700	9600
Total PAHs	4000	45000
Total DDT	1.6	46
p,p'-DDE	2.2	27
o,p'-+p,p'-DDD	2	20
Chlordane	0.5	6
Dieldrin	0.02	8
Endrin	0.02	8
Lindane	0.32	1
Total PCBs	23	-

a Primarily adapted from Long et al. (1995);

b Normalised to 1% organic carbon;

c Low molecular weight PAHs are the sum of concentrations of acenaphthene, acenaphthalene, anthracene, fluorene, 2-methylnaphthalene, naphthalene and phenanthrene;

high molecular weight PAHs are the sum of concentrations of benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene and pyrene.



## Schedule 12

### Rainfall Runoff Management for Cultivated Soil

Compliance with Rule 5.5.32(b)(iii) is achieved by ensuring all sediment laden stormwater from cultivated land is directed to silt traps (excavated pond-like areas) or long bunded areas. There are four components to a silt trap:

- The bund or walls
- The detention area
- The overflow or spillway
- The discharge mechanism or snorkel.

The following specifications for the design and construction of silt traps and bunds are extracted from "Doing it Right Franklin Sustainability Project Guide to Sustainable Land Management".

#### Bund or walls

1. These must be thoroughly compacted; otherwise they can blow out in storm events. Compact each 200mm layer of material added to the height of walls. Usually a minimum of three passes with compacting or heavy machinery over each new surface layer is required.
2. Establish vegetation cover. It may be necessary to pin down coarse shade cloth to stabilise the slope face, and plant with grasses such as Yorkshire fog, Wana cocksfoot, Vulcan tall fescue, Browntop or Creeping bents.
3. If clay has been used to build a bund it will be necessary to add a layer of topsoil over the clay to promote grass establishment. Fertiliser should also be applied.

#### Detention Area or Silt Trap Capacity

Silt traps should have the minimum capacity or detention area specified in Table 1.

Table 1: Silt Trap Capacity

Catchment Area	Slope*	Row Length	Capacity	Silt Trap and Bund Capacity Examples^
Less than 5ha	<6° or 10%	<200m	50m <sup>3</sup> per ha of cultivated soil catchment	1ha catchment, trap dimensions = 5m x 5m x 2m = 50m <sup>3</sup>
5ha or greater (500m <sup>3</sup> required)	>6° or 10%	<200m	100m <sup>3</sup> per ha of cultivated soil catchment	5ha catchment, trap dimensions = 19 x 19 x 1.4m = 505m <sup>3</sup>

\*Measure the slope as the steepest angle of the nearest 50m of land to the silt trap.

^ These silt trap dimensions are one example only of how to achieve the required trap capacity.

Overflow or Spillway

An overflow or spillway discharges the excess water runoff in major storm events and can prevent bunds from breaking. Spillways and discharge pipes should be constructed in accordance with Figures 1 and 2 of the “Doing it Right: Franklin Sustainability Project Guide to Sustainable Land Management” and the criteria listed.

Select the spillway position carefully to minimise construction and later maintenance.

- 1. Position the spillway so it is not directly in line with water entrance points. This avoids short circuiting.
- 2. If possible, situate the spillway on firm, undisturbed ground.
- 3. Ensure spillway runoff discharges won’t cause erosion.
- 4. Ensure that the minimum spillway width is 1.5m per ha of cultivated soil catchment.
- 5. Ensure that the spillway is level across its width.
- 6. Make sure you protect the spillway sides against erosion, using either coarse shade cloth and sowing grass, or by placing large rocks on the sides (especially in areas where soil type is silty or sandy).

Snorkel or discharge pipe

The snorkel or discharge pipe drains the silt trap between rainfall events.

How do I install the pipes?

- 1. The pipes are placed at the lowest point of the silt trap, and should discharge to an erosion-proof outfall. This may be the water table, a drain or stream.
- 2. Avoid crushing the pipe during installation. The soil should be thoroughly compacted around the pipe by hand held methods.
- 3. Use non-perforated pipe through the bund wall, for example, solid PVC pipe.
- 4. For the upstand, use solid drainage pipe with six rows of 10mm diameter holes, drilled at 50mm spacings.
- 5. Use an 88° elbow to join the upstand and the pipe. It may be necessary to install a waratah into the ground next to the pipes for support.
- 6. Ensure the top of the snorkel is 100mm below the spillway.

How large should the pipes be?

Pipe diameters	Catchment Area
100mm	<1ha
150mm	1-2ha
225mm	>2ha but less than 4 ha

For catchments larger than 4 ha multiple pipes will be required.

## Schedule 13

### Schedules for Reporting on Contaminated Land

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#### Schedule A1:

#### Site Specific Human Health and Environmental Risk Assessment Report (RA)

The purpose of Schedule A1: Site Specific Human Health and Environmental Risk Assessment Report (RA) is to provide guidance to people submitting risk assessment reports to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular RA should reflect the scale and complexity of the problem being addressed.

For example, on some sites the RA may be as simple as indicating that a particular potential exposure pathway is not complete such as when a site is underlain by a thick layer of low permeability clay. On other more complex sites, a full scale RA may be appropriate including, pathway analysis, fate and transport modeling and toxicity exposure modeling.

The purpose of an RA is to identify whether a site has the potential to cause significant adverse effects on human health or the receiving environment. An RA can be carried out either separately from or in conjunction with remediation of a site.

The following checklist for preparation of a detailed RA is provided for guidance only and it is acknowledged that an RA for a particular site may require consideration only of some of the checklist items.

#### Executive Summary

- Background
- Objectives of the risk assessment
- Scope of work to be undertaken
- Summary of conclusions and recommendations

#### Scope of Work

- A clear statement of the scope of work to be undertaken

Site Identification

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic coordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage, and other locally significant features onsite and immediately offsite.

Site History (summary only)

- Summary of information on past uses of site that may have caused contamination onsite or offsite
- Summary of chemical usage and storage onsite including underground and above ground storage tanks
- Records of chemical spills/losses
- Records of known discharges to land, water or air
- Onsite and offsite disposal locations

Environmental Setting (summary only)

- Summary of hydrology including stormwater reticulation
- Summary of hydrogeology including connections between aquifers, marine or freshwater systems.
- Description of the receiving environment
- Location, depth and extent of imported fill
- Locations and depths of wells on and near site

Site Characterisation (summary only)

- Site plan(s) showing the concentrations of contaminants for each different medium (soil, sediment, groundwater, surface water), location and sample depth

Conceptual Model of Exposure Pathways

- Detailed description and prioritization of contaminants of concern including breakdown products
- Identification of all potential contaminant pathways to human and environmental receptors
- Analysis of completeness of each potential contaminant pathway
- Assessment of potential future contaminant pathways and possible completeness of pathways

Fate and Transport Modeling

- Description of model(s) and its appropriateness for the particular site
- Assumptions in the model(s) and the potential effects of the assumptions on model output
- List all model input parameters and potential ranges for each parameter
- Identify whether model input parameters were measured onsite or from the literature
- Carry out model sensitivity analyses on main input parameters
- Use the 95% Upper Confidence Limit (UCL) of the mean contaminant concentrations for each potential exposure area as determined from site investigation



### Human Health Risk

- Use methodologies described in Health and Environmental Guidelines for Selected Timber Treatment Chemicals (Ministry for the Environment and Ministry of Health, 1997) to derive health-based soil acceptance criteria and/or to estimate risk. Except that the following two equations need to be substituted for the respective equations in the Timber Treatment Guidelines because the equations have been found to be mathematically incorrect. All the terms used in the equations are defined in the Timber Treatment Guidelines.

Inhalation of dust:  $CDI = Cs \times IH \times ED \times EF \times MF \times R / (AT \times BW \times PEF)$  (4)

Dermal absorption:  $CDI = Cs \times CF \times AR \times AH \times AF \times ED \times EF / (AT \times BW)$  (5)

- Use default input parameters from above reference unless site specific information available
- Use acceptable cancer risk of 10<sup>-5</sup>
- Describe and justify the potential human health exposure pathways
- List all exposure equations
- Carry out sensitivity analyses on main input parameters
- Calculate cumulative risk from all potential exposure routes

### Environmental Risk

- Describe and justify the selected environmental exposure pathways
- Describe and justify environmental criteria (referencing guidelines)

### Conclusions and Recommendations

- Brief summary of all relevant findings
- Assumptions used in making conclusions
- Extent of uncertainties in the results
- A clear statement that the consultant considers the site to be suitable for the current and, where applicable, the proposed use
- Recommendations for further work, if appropriate

## Schedule A2: Preliminary Site Investigation Report (PSI)

The purpose of Schedule A2: Preliminary Site Investigation Report (PSI) is to provide guidance to people submitting preliminary site investigation (desk top) reports to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular PSI should reflect the scale and complexity of the problem being addressed. For example, for some sites a PSI may consist only of a review of relevant Council files (Territorial Authority and Regional), a title search and available aerial photographs. On other more complex sites, a more detailed PSI may be appropriate including summarizing known baseline environmental conditions, listing all potential sources and types of contamination and describing previous site investigations.

The purpose of a PSI is to describe the history and present use of a site to identify the potential for site contamination that may cause significant adverse effects on human health or the environment. If a PSI clearly demonstrates that site activities have been non-contaminating then there is no need for further intrusive investigation or sampling. However, if the PSI demonstrates that contaminating activities have or may have occurred, or if the site history is incomplete, it may be necessary to undertake an intrusive sampling and analysis investigation on the site.

The following checklist for preparation of a detailed PSI is provided for guidance only and it is acknowledged that a PSI for a particular site may only require consideration of some of the checklist items. The checklist is consistent with the Ministry for the Environment guidance document Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand, MfE, 2003.

**Executive Summary**

- Background
- Objectives of the investigation stage(s) being reported
- Scope of work to be, or which has been, undertaken
- Summary of conclusions and recommendations

**Scope of Work**

- A clear statement of the scope of work to be, or which has been, undertaken

**Site Identification**

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic co-ordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage and other locally significant features on-site and immediately off-site. The plan should also show the historical location of structures that may have affected the distribution of contamination (e.g. buildings, underground storage tanks, treatment baths, etc)
- Locality map

**Site History**

- Chronological list of site ownership and uses (including the relevant HAIL2 codes for those uses) indicating information gaps, unoccupied periods and, if relevant, proposed uses
- An outline of those contaminants commonly associated with each land use
- Zoning – previous, present and, if relevant, proposed, with summary of reasons for changes to zoning that have occurred
- Details of relevant building and related permits, licences, resource consents, approvals and trade waste agreements with records of compliance
- Local usage of ground and surface water resources, including presence, rate and location of takes (current and historical)
- Site layout plans showing present and past industrial processes, location of buildings, unsealed areas, waste or chemical storage
- Sewer and services plans identifying active and abandoned services
- Historical uses of adjacent land
- Relevant complaint history
- Local knowledge of site by staff and residents – present and former
- Summary of literature relating to the site, including newspaper articles
- Review of aerial and site photography with date and location (including direction of photography) indicated on site maps

- Description of manufacturing processes
- Inventory of materials and waste products associated with site use and their on-site storage and/or disposal locations
- Details and locations of current and former underground and aboveground storage tanks with details of integrity testing
- Product spill and loss history
- Recorded discharges to land, water and air (authorised and unauthorised)
- On-site and off-site disposal locations
- Contaminant source areas and pathways on-site and off-site
- Integrity assessment (assessment of the completeness and accuracy of the information)
- Source of information used – e.g. topo/geological maps, aerial photos, source of groundwater/surface water/climatic data
- All plans should include, north point, key, title, scale etc

#### Site Condition and Surrounding Environment

- Topography, means of measurement and site map
- Condition of buildings and roadways, sealed (%), unsealed (%)
- Presence of drums, wastes and fill materials
- Odours
- Visual or quantified details of surface water quality
- surface runoff pathways (historic, existing and proposed)
- Flood potential described or mapped
- Describe and discuss potential for contaminant migration through service trenches, both currently used services and abandoned
- Discuss inverts of services relative to appropriate groundwater levels, map cesspits, soak holes etc
- Conditions at site boundary such as type and condition of fencing, soil stability, erosion, and stormwater discharge
- Visible signs of contamination such as identifiable waste products, discoloration or staining of soil, bare soil patches – on-site and at site boundary
- Visible signs of plant stress
- Produce a map identifying the key pathways for contaminant migration and potential receiving environments
- Details of any relevant local sensitive environment – rivers, lakes, creeks, wetlands, local habitat areas, endangered flora and fauna, groundwater, seeps, harbour, groundwater takes, surrounding bores, neighbouring landuses
- Describe the sensitivity of the receiving environment
- Potential impact of soil, groundwater or other contamination on site uses and sites above plume
- Potential impact of volatiles to air including odour and health effects
- Source of information used – e.g. topo/geological maps, aerial photos, source of groundwater/surface water/climatic data
- All plans should include, north point, key, title, scale etc

**Geology and Hydrology (only summary of readily available information)**

- Summary of local meteorology
- Description of site geology
- Permeability/ infiltration rate across the site for paved, unpaved areas and different soils.
- Map and description of location, design and construction of on-site wells, boreholes and pits
- Reported range of water table depths below ground surface including to any shallow/ perched aquifers and the local/regional aquifer system
- Description and location of springs and wells in the vicinity
- Location, depth and extent of imported and locally derived fill
- Direction(s) and rate of groundwater flow including, where applicable, groundwater levels surveyed to a common datum and gradient – provide technical basis for assumptions, sensitivity analysis and information sources
- Groundwater level fluctuations, including tidal, seasonal, take, infiltration

**Previous Investigation Results (summary only)**

- Site plan(s) showing all samples and sampling locations, giving sample identification numbers and sample depth
- Summary of all results in tabular form:
  - identifying essential details such as sample identification numbers and sample depth
  - showing comparison with relevant guideline values
  - highlighting every result exceeding the guideline values
- Summary table of results containing the following statistics: minimum, maximum, arithmetic mean and 95% upper confidence limit on the arithmetic mean for each analyte in accordance with Ministry for the Environment Contaminated Land Management Guideline No.5, in particular Section 5.4 and Appendices B and I
- Site plan showing the extent of soil and/or groundwater contamination exceeding the relevant guideline values for each medium, location and sample depth

**Preliminary Site Characterisation**

- Assessment of the type of environmental contamination, particularly in soil and groundwater
- Assessment of the extent of soil and groundwater contamination, including identifiable off-site contamination that may cause environmental effects

**Conclusions and Recommendations**

- Brief summary of all relevant findings
- Assumptions used in making conclusions
- Extent of uncertainties in the results
- A clear statement that the consultant considers the site to be suitable for the current and, where applicable, the proposed use
- A statement detailing all limitations and constraints on the use of the site (where applicable)
- Recommendations for further work, if appropriate

### Schedule A3: Intrusive Site Investigation Report (SIR)

The purpose of Schedule A3: Intrusive Site Investigation Report (SIR) is to provide guidance to people submitting site investigation (intrusive) reports to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular SIR should reflect the scale and complexity of the problem being addressed. For example, for some sites a SIR may consist only of limited soil sampling and characterization of contamination associated with clearly identified contamination hotspots. On other more complex sites, a more detailed SIR may require detailed sampling and testing of soil, sediment, stormwater and groundwater.

The purpose of a SIR is to describe the extent and severity of contamination associated with a site, including contamination associated with the site that may have moved beyond the boundary of the site, that has the potential to cause significant adverse effects on human health or the environment. If the SIR clearly demonstrates that there is no significant contamination on the site or the contamination on the site is not having a significant adverse effect on the environment then there is no need for further investigation or sampling. However, if the SIR identifies contamination associated with the site (on or adjacent to the site) that may have a significant adverse effect on human health or the environment then a resource consent will be required for the site and either further site investigation, site specific human health and environmental risk assessment, or remediation of the site may be required.

A comprehensive (intrusive) site investigation report should include a summary of the preliminary site investigation report, but should also provide information on:

- the type, extent and level of contamination anticipated;
- the nature of samples collected and the sampling procedures followed, including quality assurance / quality control requirements;
- the analyses undertaken, methodologies used and laboratory quality assurance / quality control procedures.
- the actual extent and concentrations of contaminants in all appropriate media at the site;
- any likely dispersal in air, surface water, groundwater, soil and dust from the detected contaminants;
- where applicable, the location and magnitude of any on-site or off-site impacts on soil, water, sediment and biota;
- any potential significant adverse effects of contaminants on public health, the environment;
- the adequacy and completeness of all information used in decisions on remedial options;
- if remediation, management or ongoing monitoring is intended at the site.

The following checklist for preparation of a detailed SIR is provided for guidance only and it is acknowledged that a SIR for a particular site may only require consideration of some of the checklist items. The checklist is consistent with the Ministry for the Environment guidance document Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand, MfE, 2003.

#### Executive Summary

- Background
- Objectives of the investigation stage(s) being reported
- Scope of work to be, or which has been, undertaken
- Summary of conclusions and recommendations

**Scope of Work**

- A clear statement of the scope of work to be, or which has been, undertaken

**Site Identification**

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic co-ordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage and other locally significant features on-site and immediately off-site. The plan should also show the historical location of structures that may have affected the distribution of contamination (e.g. buildings, underground storage tanks, treatment baths, etc)
- Locality map

**Site History (summary only)**

- Full site history required if a Preliminary Site Investigation Report for the site is not available.

**Site Condition and Surrounding Environment (summary only)**

- Full description only required if a Preliminary site Investigation report for the site is not available.

**Geology and Hydrology**

- Summary of local meteorology
- Description of site geology
- Permeability/ infiltration rate across the site for paved, unpaved areas and different soils.
- Lateral and vertical investigation of site soil and geology to the extent to which any contaminants have potentially migrated.
- Location, depth and extent of imported and locally derived fill
- Site borehole logs / test pit logs showing stratigraphy using a recognised classification system and depth to groundwater table
- Any subsurface visual staining or odours or evidence of fire/waste materials including on site observations
- Drill sufficient wells to characterise each contaminant source and plume (at least 3 wells needed to determine groundwater flow direction by triangulation)
  - Provide consent reference of drilling permit, and confirm logs have been submitted to the ARC officer issuing the consent
  - Discuss well location and installation strategy, including screen location and length, field observations
  - Method used (with or without water/drilling muds) including reasons for choosing the method i.e. advantages and limitations with regard to data obtained (Drilling to be carried out in accordance with NZS 4411:2001 Environmental Standard for Drilling of Soil and Rock or variations justified)
  - Logs require: lithological log, aquifer/aquitard interpretation, groundwater ingress/loss, static groundwater level, and well construction, sampling locations
  - Well purging – field monitor pH, EC, Temperature, DO, Eh and graph, stabilisation of these parameters. Record the volume purged
  - Well Abandonment

- Description and location of springs and wells in the vicinity
- Direction(s) and rate of groundwater flow including, where applicable, groundwater levels surveyed to a common datum and gradient – provide technical basis for assumptions, sensitivity analysis and information sources
- Magnitude of groundwater level variations/trends and the controls on these changes e.g. natural recharge/discharge, take, potential future changes in groundwater regime tidal and seasonal.

### Sampling and Analysis Plan and Sampling Methodology

#### For all sampling

- Sampling and analysis data quality objectives
- Rationale for selection of:
  - sampling pattern, locations and depths (as shown on site maps)
  - sampling density, including estimated size of the residual hotspots that may remain undetected and statistical confidence in the estimate
  - which samples were submitted for analysis and which samples were not analysed
  - analytes for each sample and the analytical methods used
- Description of the sampling methods including:
  - sampling devices and equipment type
  - sampling containers and the type of seal used
  - sample preservation methods and reference from recognised protocols e.g. APHA (1988) or US EPA SW846 (1992)
  - sample handling procedures
  - equipment decontamination procedures
- Description of any field-screening protocols, methods and equipment, and their calibration

#### Soil

- Soil sampling – refer to MfE Guideline No.5
- Where site activity information lacking, analysis for common contaminants of concern – metal suite, total petroleum hydrocarbon, semi volatile organic compound, volatile organic compound, pesticides
- Rationale for selection of:
  - sampling pattern, locations and depths (as shown on site maps), including consideration of geology, odour and visual observations
- pH, EC, temperature of the contaminants if significantly changing risk
- Speciation of the contaminants if have a significant risk especially CrIII and CrVI
- Geological log or soil description of soil borings, test pits
- Log showing sample location/ depth of sample
- If exceed guidelines as specified by ALW plan or MfE guideline No. 2 undertake leaching tests to help determine the ability of contaminants to leach to groundwater, and to help determine bio-availability for ecosystems

**Surface Water / Sediment**

- Justification if not sampling surface water or sediments

**Groundwater**

- Sound technical justification if not sampling groundwater ie low permeability soils and significant separation between contaminants of concern and groundwater
- Describe equipment/instruments used, cleaning procedures
- Groundwater sampling strategy (refer As standard)
- Where possible, data for at least three rounds of sampling and analysis, at least one summer low and one winter high round.
- Contaminants of concern appropriate to site history - or where site information lacking, confidence that contaminants of concern are identified
- Depth, thickness and justify likely mobility of LNAPL, DNAPL
- Discuss seasonal variation in data
- Describe drilling/logging on site observation e.g. loss core, flushed well, equipment break due to hard ground, etc.

**Hydraulic Aquifer/Aquitard Testing**

- Provide test methodology (slug tests should be repeated for confidence in results and include insertion and removal of slug)
- Provide static water level data prior to test starting
- Equipment and hydraulic test procedure, and justification for why this type of test chosen (advantages/disadvantages)
- Test interval
- Provide maximum drawdown/ increase
- Provide a linear plot of test data of time vs. drawdown and time vs recharge
- Provide semi-log or log-log plot analysis plot
- Discuss well construction effects and ‘skin effects’ on data
- Other relevant field data
- How and when measured (season/rainfall events)
- Tidal (continuous monitoring of groundwater) when required
- Reduced level survey by whom and datum

**Field Quality Assurance and Quality Control (QA/QC)**

- Details of the sampling team, identifying unique initials for each member
- Statement of intended duplicate and blank frequency
- Records for each sample collected, including date, time and location, samplers’ initials, duplicate/ blank location and type, analyses to be performed, site observations and weather conditions
- Chain of custody, identifying for each sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from site, dispatch courier used
- Background sample, field blank, trip blank, and rinsafe sample results and laboratory prepared trip spike results for volatile analytes



- Decontamination procedures carried out between sampling events
- Sample-splitting techniques and field instrument calibrations (where used)
- Standard solution, reference sample and check sample (including daily) results
- Laboratory duplicate, blank and standard results

#### Laboratory QA/QC

- Confirmation that detection limits are lower than guideline values
- Signed laboratory receipt of signed chain of custody form identifying date/time of receipt and identity of samples included in shipment
- Record of holding times where not consistent with method specifications
- Analytical methods used by laboratory and laboratory accreditation for analytical methods used
- Inter-laboratory comparisons for analytical methods used (where available)
- Description of spikes and surrogates used, with percent recoveries
- Instrument, method detection and practical quantification limits
- Standard solution, reference sample and check sample (including daily) results
- Laboratory duplicate, blank and standard results

#### QA/QC Data Evaluation

- Evaluation of all field and laboratory QA/QC information listed above against the stated data quality objectives, including a discussion of
  - documentation and data completeness
  - data representativeness
  - precision and accuracy for both sampling and analysis for each analyte in each environmental matrix informing data users of the reliability, unreliability or qualitative value of the data
  - Test reliability, the zone of influence of the test, the analysis method (confined/unconfined aquifer system) and significant assumptions in the analysis and method or data input.
- Data comparability checks, which should include bias assessment arising from various sources, including:
  - collection and analysis of samples by different personnel
  - collection and analysis by the same personnel using the same methods but at different times (including seasonal for long-running projects)
  - use of different sampling or analytical methodologies from those stipulated in guideline documents
  - spatial and temporal changes (because of environmental dynamics)
- Relative percent differences for inter- and intra-laboratory duplicates

#### Basis for Guideline Values

- Table listing all selected guideline values, with references
- Demonstration that selection of guideline values is consistent with the principles of Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values
- Assumptions and limitations of guideline values used

### Investigation Results

- Summary of previous results (where applicable)
- Site plan(s) showing all samples and sampling locations, giving sample identification numbers and sample depth
- Summary of all results in tabular form
- identifying essential details such as sample identification numbers and sample depth
- showing comparison with relevant guideline values
- highlighting every result exceeding the guideline values
- A summary table of results containing the following statistics: minimum, maximum, arithmetic mean and 95% upper confidence limit on the arithmetic mean for each analyte in accordance with Ministry for the Environment Contaminated land Management Guideline No.5, in particular Section 5.4 and Appendices B and I
- Site plan showing the extent of soil and/or groundwater contamination exceeding the relevant guideline values for each medium, location and sample depth

### Site Characterisation

- Assessment of the type of all environmental contamination, particularly in soil and groundwater
- Characterisation of geological heterogeneity and anisotropy
- Assessment of the extent of soil and groundwater contamination, including identifiable off-site contamination that may cause environmental effects
- A map showing:
  - site cover and buildings current and historic
  - north point, scale, key, title
  - the nature and extent of surface soil/lithology types and contamination plumes
  - the location of soil sampling points/trial pits
  - the lateral extent of the contaminant concentrations
  - the line of the geological cross-section
- A groundwater map for the existing systems and also for the proposed system if potential for significant changes to groundwater regime) showing:
  - the nature and extent of surface soil/lithology types and contamination
  - plumes – free product plumes
  - the location of the wells and RL values, screened interval
  - the aquifer piezometric contours for each aquifer identified may require more than 1 if significant piezo variation (seasonal, tides)
  - the location and type of any aquifer boundaries
  - direction of groundwater flow
  - north point, scale, key
- Provide at least 1 cross-section of the site showing:
  - site soil, geology and lithological variations vertically across the site and location of contaminated soil.

- the extent of the lateral and vertical contaminant concentrations
- Aquifer(s), aquitard(s) e.g. unconfined, confined, leaky
- depth to shallow/perched and local/regional groundwater system across the site
- show aquifer heterogeneity and anisotropy such as lithological layering and fracture orientation and connectivity
- well locations and screen depths
- base of aquifer if DNAPL
- Assessment of the potential for chemical degradation or interaction products
- Assessment of possible exposure routes and risk to exposed populations (human and ecological risk)
- Numerical/ Analytical Modelling
  - Model objectives
  - List all assumptions of model and relationship to conceptual model
  - Model used and justification
  - Conduct a sensitivity analysis and identify key model inputs
  - Identify whether input parameters measured onsite or estimated
  - Modelling results and description
  - Documentation

#### Conclusions and Recommendations

- Brief summary of all relevant findings
- Assumptions used in making conclusions
- Extent of uncertainties in the results
- A clear statement that the consultant considers the site to be suitable for the current and, where applicable, the proposed use
- A statement detailing all limitations and constraints on the use of the site (where applicable)
- Recommendations for further work, if appropriate

### Schedule A4: Remedial Action Plan (RAP)

The purpose of Schedule A4: Remedial Action Plan (RAP) is to provide guidance to people submitting remedial action plan reports to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular RAP should reflect the scale and complexity of the problem being addressed. For example, for some sites a RAP may consist only of a brief description of the proposed works, environmental controls and validation sampling to be carried out say for the excavation and offsite removal of a small quantity of contaminated soil. On other more complex sites, a more detailed RAP may require detailed description of remediation processes, environmental controls and validation sampling.

The purpose of a RAP is to document the proposed remediation programme, associated environmental controls and validation testing programme prior to remediation activities commencing. A RAP is required prior to any remediation works taking place because it is important to avoid a site being disturbed and exposed to the elements for any longer than absolutely necessary during remediation works, to ensure involvement of all relevant parties (including relevant regulatory authorities), and to ensure that contingencies are put in place to deal with any problems during remediation.

Once the site has been identified as requiring remediation or management, the RAP should be prepared as follows.

- Set remediation or management goals that ensure the site and any relevant additional land contaminated by site activities will be suitable for its current or proposed land use and will pose no unacceptable risk to human health or the environment, either on-site or off-site;
- Document in detail all risk-reducing procedures and plans to be implemented to achieve an acceptable level of risk for the current or proposed site land use;
- Establish a recording mechanism to ensure activities proceed as detailed in the remedial action plan;
- Establish the environmental safeguards required to complete the remediation in an environmentally acceptable manner;
- Identify and include proof of the necessary approvals, permits or licences required by regulatory authorities to undertake remediation;
- Describe a validation sampling programme.

Systematic and clear plans should be made of remedial work to be undertaken, ensuring among other things that dates, quantities, sampling, excavation and disposal locations will be recorded. Such data and records of any management or regulatory decisions made during or following the remedial process will be required for subsequent reporting stages.

Changes may need to be made to a RAP during site remediation to accommodate unexpected site conditions or events. Any significant variations to the original RAP should be recorded and explained in a site validation report (SVR) prepared following completion of site remediation.

The following checklist for preparation of a detailed RAP is provided for guidance only and it is acknowledged that a RAP for a particular site may only require consideration of some of the checklist items. The checklist is consistent with the Ministry for the Environment guidance document Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand, MfE, 2003.

**Executive Summary**

- Background
- Objectives of the investigation stage(s) being reported
- Scope of work to be, or which has been, undertaken
- Summary of conclusions and recommendations

**Scope of Work**

- A clear statement of the scope of work to be undertaken

**Site Identification**

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic co-ordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage and other locally significant features on-site and immediately off-site. The plan should also show the historical location of structures that may have affected the distribution of contamination (e.g. buildings, underground storage tanks, treatment baths, etc)
- Locality map

**Site History (summary only)**

- Site layout plans showing present and past industrial processes, location of buildings, unsealed areas, waste or chemical storage
- All plans should include, north point, key, title, and scale

**Site Condition and Surrounding Environment (summary only)**

- All plans should include, north point, key, title, and scale

**Basis for Guideline Values (summary only)**

- Table listing all selected guideline values, with references
- Demonstration that selection of guideline values is consistent with the principles of Contaminated Land Management Guidelines No. 2: Hierarchy and Application in New Zealand of Environmental Guideline Values
- Assumptions and limitations of guideline values used

**Investigation Results (summary only)**

- Summary of previous results where applicable
- Site plan showing the extent of soil and/or groundwater contamination exceeding the relevant guideline values for the medium, location and sample depth

**Site Characterisation (summary only)**

- Assessment of the extent of soil and groundwater contamination, including identifiable off-site contamination that may cause environmental effects

**Remedial Actions**

- Description of Remediation goal(s)
- Discussion of the remedial options available, including the status quo, identifying the means of risk reduction proposed for each option
- Rationale for selection of the recommended remedial option
- Discussion of the extent of remediation required to achieve the remedial goal(s)
- Identification of regulatory requirements such as permits, licences and approvals
- Pre-remediation site management plan (e.g. fencing, warning signs, stormwater diversion etc.)
- Methods proposed to minimise effects on groundwater from remedial works
- Methods proposed to minimize effects on air quality from remedial works
- Names and phone numbers of appropriate personnel to contact during remediation
- Demonstration of the disposal route for any material to be disposed off-site
- Remediation schedule, including proposed hours of operation
- Proposed testing to validate the site during and on-completion of the remedial activities including any post-remediation monitoring required to demonstrate compliance with the remedial goals
- Contingency plan if remedial strategy fails to reach the remediation goals
- Staged progress reporting (for long-running projects)

Site Management Plan

- Operational remediation site management plan including (where applicable):
  - suggested trigger levels for each contaminant of concern for soil, sediment, groundwater and storm water;
  - predicted changes of groundwater due to site redevelopment, both during and after;
  - effects of any groundwater diversion or other effects on groundwater flow;
  - future uses and expected development/ excavation;
  - stormwater controls proposed, especially during earth working;
  - any requirements for groundwater diversion consent;
  - contact at city/district council;
  - community relations;
  - stormwater and soil management;
  - noise and odour control;
  - dust control (including wheel wash);
  - contingency plans to respond to site incidents to obviate potential effects on the surrounding environment and community;
  - proposed long-term site management;
  - occupational safety and health issues and measures.

Conclusions and Recommendations

- Brief summary of all relevant findings
- Assumptions used in making conclusions
- Extent of uncertainties in the results
- Where remedial action has been taken, a list summarising the activities and the physical changes to the site
- A statement detailing all limitations and constraints on the use of the site (where applicable)
- Recommendations for further work, if appropriate, including requirements for site validation, management and monitoring

Schedule A5:  
Site Validation Report (SVR)

The purpose of Schedule A5: Site Validation Report (SVR) is to provide guidance to people submitting site validation reports to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular SVR should reflect the scale and complexity of the problem being addressed. For example, for some sites a SVR may consist only of a brief description of soil validation sampling and the disposal location of contaminated soil following excavation and offsite removal of a small quantity of contaminated soil. On other more complex sites, a more detailed SVR may require detailed description of the validation sampling strategy and programme, confirmation that the remediation programme followed the detail set out in the remedial action plan, documentation of the handling and final disposal of any material (soil, sediment, water, etc) removed from the site during the remediation programme, and confirmation that the remedial goals (as set out in the remedial action plan) have been met.

The purpose of a SVR is to confirm that a site has been remediated according to the approved remedial action plan for the site.

The SVR must assess the results of the post-remediation testing against the clean-up criteria stated in the remedial action plan. Where clean-up criteria have not been achieved, the reasons for this must be stated and additional site work proposed to achieve the specified remedial action plan objectives. If any contingency plans were detailed in earlier reports, they should have been implemented before the site validation report is submitted.

The SVR should also include, where possible, information confirming that all the requirements of regional council, unitary and territorial authority or other planning authority licences or permits have been met. In particular, documentary evidence should be included to show that any disposal of contaminated material off-site has been done in accordance with the remedial action plan, and with the requirements of the disposal site and the relevant local authority.

The following checklist for preparation of a detailed SVR is provided for guidance only and it is acknowledged that a SVR for a particular site may only require consideration of some of the checklist items. The checklist is consistent with the Ministry for the Environment guidance document Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand, MfE, 2003.

#### Executive Summary

- Background
- Objectives of the investigation stage(s) being reported
- Scope of work which has been undertaken
- Summary of conclusions and recommendations

#### Scope of Work

- A clear statement of the scope of work which has been undertaken

#### Site Identification

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic co-ordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage and other locally significant features on-site and immediately off-site. The plan should also show the historical location of structures that may have affected the distribution of contamination (e.g. buildings, underground storage tanks, treatment baths, etc)
- Locality map

#### Site History (summary only)

- Site layout plans showing present and past industrial processes, location of buildings, unsealed areas, waste or chemical storage
- All plans should include, north point, key, title, scale etc

#### Validation Sampling and Analysis Plan and Sampling Methodology

- Sampling and analysis data quality objectives
- Rationale for selection of:
  - sampling pattern, locations and depths (as shown on site maps)
  - sampling density, including estimated size of the residual hotspots that may remain undetected and statistical confidence to the estimate

- which samples and/were submitted for analysis and which samples are/were not analysed
  - analytes for each sample and the analytical methods used
- Detailed description of the sampling methods including:
  - sampling devices and equipment type
  - sampling containers and the type of seal used
  - sample preservation methods and reference to recognised protocols e.g. APHA (1988) or US EPA SW846 (1992)
  - sample handling procedures
  - equipment decontamination procedures
- Detailed description of any field-screening protocols, methods and equipment, and their calibration

**Field Quality Assurance and Quality Control (QA/QC)**

- Details of the sampling team, identifying unique initials for each member
- Statement of intended duplicate and blank frequency
- Records for each sample collected, including date, time and location, samplers’ initials, duplicate/blank location and type, analyses to be performed, site observations and weather conditions
- Chain of custody, identifying for each sampler, nature of the sample, collection date, analyses to be performed, sample preservation method, departure time from site, dispatch courier used
- Background sample, field blank, trip blank, and rinsafe sample results and laboratory prepared trip spike results for volatile analytes
- Decontamination procedures carried out between sampling events
- Sample-splitting techniques and field instrument calibrations (where used)

**Laboratory QA/QC**

- Confirmation that detection limits are lower than guideline values
- Signed laboratory receipt of signed chain of custody form identifying date/time of receipt and identity of samples included in shipment
- Record of holding times where not consistent with method specifications
- Analytical methods used by laboratory and laboratory accreditation for analytical methods used
- Inter-laboratory comparisons for analytical methods used (where available)
- Description of spikes and surrogates used, with percent recoveries
- Instrument, method detection and practical quantification limits
- Standard solution, reference sample and check sample (including daily) results
- Laboratory duplicate, blank and standard results



**QA/QC Data Evaluation**

- Evaluation of all field and laboratory QA/QC information listed above against the stated data quality objectives, including a discussion of
  - documentation and data completeness
  - data representativeness
  - precision and accuracy for both sampling and analysis for each analyte in each environmental matrix informing data users of the reliability, unreliability or qualitative value of the data
  - Test reliability, the zone of influence of the test, the analysis method (confined/unconfined aquifer system) and significant assumptions in the analysis and method or data input.
- Data comparability checks, which should include bias assessment arising from various sources, including:
  - collection and analysis of samples by different personnel
  - collection and analysis by the same personnel using the same methods but at different times (including seasonal for long-running projects)
  - use of different sampling or analytical methodologies from those stipulated in guideline documents
  - spatial and temporal changes (because of environmental dynamics)
- Relative percent differences for inter- and intra-laboratory duplicates

**Basis for Guideline Values (summary only)**

- Table listing all selected guideline values, with references

**Investigation Results (summary only)**

- Site plan(s) showing all samples and sampling locations, giving sample identification numbers and sample depth
- Summary of all results in tabular form:
  - identifying essential details such as sample identification numbers and sample depth
  - showing comparison with relevant guideline values
  - highlighting every result exceeding the guideline values
- A summary table of results containing the following statistics: minimum, maximum, arithmetic mean and 95% upper confidence limit on the arithmetic mean for each analyte in accordance with Ministry for the Environment Contaminated Land Management Guideline No.5, in particular Section 5.4 and Appendices B and I
- Site plan showing the extent of soil and/or groundwater contamination exceeding the relevant guideline values for the medium, location and sample depth

**Site Characterisation (summary only)**

- Assessment of the type of all environmental contamination
- Assessment of the extent of site contamination, including identifiable off-site contamination

Validation

- Rationale and justification for the validation strategy, including:
  - clean-up criteria selected
  - statistically based decision-making methodology
  - validation sampling and analysis plan
- Details of statistical analysis of validation results and evaluation against the clean-up criteria
- Verification of compliance with regulatory requirements set by all relevant local authorities
- Documentation demonstrating that any material moved off-site has been received at point of disposal

Conclusions and Recommendations

- Brief summary of all relevant findings
- Assumptions used in making conclusions
- Extent of uncertainties in the results
- A clear statement that the consultant considers the site to be suitable for the current and, where applicable, the proposed use
- A statement detailing all limitations and constraints on the use of the site (where applicable)
- Recommendations for further work, if appropriate

Schedule A6:  
Management and Monitoring Plan (MMP)

The purpose of Schedule A6: Management and Monitoring Plan (MMP) is to provide guidance to people submitting management and monitoring plans to the Auckland Regional Council (ARC) Contaminated Land Team. It should be clearly recognised that the scale and scope of a particular MMP should reflect the scale and complexity of the problem being addressed. For example, for some sites a MMP may consist only of a brief description of the future inspection and maintenance of an impervious covering layer and precautions to be taken if the impervious layer is disturbed in the future. On other more complex sites, a more detailed MMP may require description of monitoring of stormwater and groundwater and more detailed description of management and maintenance of the site.

A monitoring programme should detail the proposed monitoring strategy, what will be monitored, the location and frequency of monitoring, and the reporting requirements (format, content and frequency). It should also state the proposed period for reviewing the monitoring and management plan.

Where a management plan is used as the primary means of managing potential significant adverse effects on human health or the environment, its application and effectiveness must be reported on regularly to the ARC and relevant local authority.

The following checklist for preparation of a detailed MMP is provided for guidance only and it is acknowledged that a MMP for a particular site may only require consideration of some of the checklist items. The checklist is consistent with the Ministry for the Environment guidance document Contaminated Land Management Guidelines No1: Reporting on Contaminated Sites in New Zealand, MfE, 2003.

### Executive Summary

- Background
- Objectives of the monitoring and management provisions
- Scope of work to be undertaken
- Summary of conclusions and recommendations

### Scope of Work

- A clear statement of the scope of work to be undertaken

### Site Identification

- Street number, street name, suburb and town/city
- Legal description with lot, deposited plan and certificate of title number(s)
- Geographic co-ordinates as per NZ Map Series 260 when dealing with a small part of a larger site
- Current site plan with scale bar showing north direction, local water drainage and other locally significant features on-site and immediately off-site. The plan should also show the historical location of structures that may have affected the distribution of contamination (e.g. buildings, underground storage tanks, treatment baths, etc)
- Locality map
- Site layout plans showing present and past industrial processes, location of buildings, unsealed areas, waste or chemical storage (All plans should include, north point, key, title, and scale).

### Site Characterisation (summary only)

- Assessment of the extent of soil and groundwater contamination, including identifiable off-site contamination that may cause environmental effects

### Remedial Actions (summary only)

- Methods proposed to minimise effects on groundwater from remedial works
- Demonstration of the disposal route for any material to be disposed off-site
- Staged progress reporting (for long-running projects)

### Site Management Plan

- Operational remediation site management plan including (where applicable):
  - suggested trigger levels for each contaminants of concern for soil, sediment, groundwater and storm water;
  - predicted changes of groundwater due to site redevelopment, both during and after;
  - effects of any groundwater diversion or other dangers to groundwater flow;
  - future uses and expected development/ excavation;
  - stormwater controls proposed, especially during earth working;
  - any requirements for groundwater diversion consent;
  - contact at city/district council;

- community relations;
- stormwater and soil management;
- noise and odour control;
- dust control (including wheel wash);
- contingency plans to respond to site incidents to obviate potential effects on the surrounding environment and community;
- proposed long-term site management;
- occupational safety and health issues and measures.

Ongoing Site Monitoring

- Proposed ongoing site monitoring requirements (if any), including monitoring locations, parameters and frequency
- Results of monitoring analyses, including all relevant QA/QC requirements stated above
- Ongoing site or plant maintenance (e.g. containment cap integrity, etc) or contingency plans
- On-going monitoring to ensure effectiveness of the remediation process
- Details of those responsible for the maintenance/monitoring programme(s)
- Details to be included in the annual MMP report, including:
  - any changes to site owner or occupier
  - any changes to activities undertaken on-site
  - any changes to the physical layout of the site
  - any incidents where the management plan has had to be implemented (subsurface plan has had to be implemented (subsurface works, site development, etc)

Conclusions and Recommendations

- Brief summary of all relevant management and monitoring requirements
- Where remedial action has been taken, a list summarising the activities and the physical changes to the site
- A statement detailing all limitations and constraints on the use of the site (where applicable) including contingency plans if implemented
- 38 SongRen Road, Xinyi District Taipei,
- 38 SongRen Road, Xinyi District Taipei,

## Schedule 14

### Consented Existing High Risk Activities

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
25429	15666	A C I Operations New Zealand Ltd TA O-I New Zealand	752 Great South Road, Penrose	To authorise the diversion and discharge of stormwater	Sand filter	31/12/2021
2072	771362	Allied Concrete Limited	204 Wiri Station Road, Manukau	Discharge stormwater only from roofs and sealed areas from proposed new concrete batching plant	Ponds	31/12/2014
27992	16783	Allied Concrete Limited	77 Leonard Road, Penrose	To authorise the diversion and discharge of stormwater from a 2ha industrial site	Sand filter	31/12/2037
28049	16783	Allied Concrete Limited	4 Reliable Way, Mount Wellington	Sand filter application for the discharge of contaminants from a concrete batching site	Sand filter and ponds	31/12/2037
30624	18178	Alloy Yachts International Limited	10-12 The Concourse, Henderson	To authorise the diversion and discharge of stormwater	Storm filter	31/12/2039
27809	16695	Atlas Concrete Limited	25-29 Morrin Road, Panmure	Discharge of contaminated stormwater from a concrete batching plant via detention tanks to reticulated system and eventually Tamaki River	Stormwater discharge	31/12/2037
21351	9048	Auckland International Airport Ltd	George Bolt Memorial Drive, Auckland Airport	A catchment wide programme of works required to manage the discharge of stormwater from existing future development of Auckland International Airport	Stormwater Treatment pond, permeable bund across re-entrant channel and wetland	31/12/2029
28575	17050	Auckland International Airport Ltd	George Bolt Memorial Drive, Auckland Airport	To authorise the diversion and discharge of stormwater	Filter strips and wetlands	31/12/2029

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
29530	17627	Auckland International Airport Ltd	400 George Bolt Memorial Drive, Auckland Airport	To authorise the diversion and discharge of stormwater from the Live Fire Training ground	Reuse and detention	31/12/2038
2360	BR781727	Auckland International Airport Ltd	400 George Bolt Memorial Drive, Auckland Airport	To discharge stormwater from a 14.5ha catchment, including proposed incinerator and fumigations complex, into the Pukaki Creek	None	18/10/2013
28575	17050	Auckland International Airport Ltd	400 George Bolt Memorial Drive, Auckland Airport	To authorise the diversion and discharge of stormwater		31/12/2029
21351	9048	Auckland International Airport Ltd	400 George Bolt Memorial Drive, Auckland Airport	A catchment side programme of works required to manage the discharge of stormwater from existing future development of the Auckland International Airport	Ponds, Other & none	31/12/2029
31967	18802	Auckland Regional Transport Authority	Seymour Road, Howick	To authorise the diversion and discharge of stormwater	Sand filter	31/12/2040
31028	9048	Auckland Joint Users Hydrant Installation	400 George Bolt Memorial Drive, Auckland Airport	To authorise the discharge of contaminants onto or into land from an industrial or trade process (bulk fuel storage and handling)	Oil and water separator	31/12/2029
31498	18652	Balance AgriNutrients Ltd	34 Hart Road, Pukekohe	To discharge contaminants from an industrial or trade premise that operates a fertiliser storage depot	Wetland	31/12/2026
33491	18941	BP Oil New Zealand Limited	4 Canning Crescent, Mangere	To authorise the diversion and discharge of stormwater from an existing service station	Oil separators	31/12/2040

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
8052		BP Oil New Zealand Limited	476 Great South Road, Greenlane	To divert and discharge stormwater to ground soakage from a service station site	Stormwater discharge	31/12/2027
9780		BP Oil New Zealand Limited	1380 Great North Road, Waterview	Construction of oil separator and stormwater detention pond facilities, and stormwater discharge outfall structure	Stormwater discharge	31/12/2027
11752		BP Oil New Zealand Limited	216 Mill Road, Bombay	To divert and discharge stormwater from a motorway service area via stormwater quality treatment devices into a tributary of the Ngakaroa stream	Stormwater discharge	31/12/2038
34084		BP Oil New Zealand limited	60 Westney Road, Mangere	To discharge stormwater from a truck stop		31/12/2041
36904	21313	BP Oil New Zealand Limited	538 State Highway 16, Kumeu	To discharge stormwater from a service station		31/5/2044
9611515		BP Oil New Zealand Limited	102 Great South Road, Greenlane	To discharge stormwater from a truck stop		31/12/2031
14102		BP Oil New Zealand Limited	975 New North Road, Mt Albert	To divert and discharge stormwater from a redeveloped service station into the ground	Stormwater discharge	31/12/2031
14103		BP Oil New Zealand Limited	Kerrs Road, Manukau	To divert and discharge stormwater from a redeveloped service station into a council stormwater sewer	Stormwater discharge	31/12/2030
14874		BP Oil New Zealand Limited	132 Ridge Road, Howick	To divert and discharge stormwater from a redeveloped service station into the stormwater piped systems.	Stormwater discharge	31/12/2031

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
15158		BP Oil New Zealand Limited	152 Coronation Road, Mangere	To divert and discharge stormwater from a redeveloped of an existing service station with stormwater from the forecourt being discharged via stormwater treatment device into an existing Council stormwater piped system	Stormwater discharge	31/12/2031
15240		BP Oil New Zealand Limited	790-804 Remuera Road, Meadowbank	To divert and discharge stormwater from a redeveloped of an existing service station and adjacent properties, with stormwater from the forefront being discharged via a stormwater treatment device into a stormwater piped system	Stormwater discharge	31/12/2031
15394		BP Oil New Zealand Limited	40-42 Portage Road, New Lynn	To divert and discharge stormwater from a stormwater treatment device into a piped stormwater system	Stormwater discharge	31/12/2031
15809		BP Oil New Zealand Limited	500 Ti Rakau Drive, Pakuranga	To divert and discharge stormwater from a new service station, with stormwater from the forefront being discharged via a stormwater treatment device into a piped stormwater system	Stormwater discharge	31/12/2031
15813		BP Oil New Zealand Limited	4 Manuia Road, Takanini	To divert and discharge stormwater from a new service station, with stormwater from the forefront being discharged via a stormwater treatment device prior to being discharged into an existing stormwater system	Stormwater discharge and none	31/12/2031



Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
16267		BP Oil New Zealand Limited	223-227 Swanson Road, Henderson	To divert and discharge stormwater from a redeveloped service station, with stormwater from refuelling areas being discharged via a stormwater treatment device prior to being discharged from the site	Stormwater discharge	31/12/2032
20443		BP Oil New Zealand Limited	Side of Southern Motorway, Papakura	To divert surface water through a piped culvert, and under Section 15 of RMA to divert and discharge stormwater from a proposed 5Ha motorway service area comprising car parking, off and on ramps, a service station and truck stop	Stormwater discharge	31/12/2032
20638		BP Oil New Zealand Limited	23 Hibiscus Coast Highway, SH1, Silverdale	To divert and discharge stormwater from a redevelopment of an existing service station, with stormwater from the forefront being discharged via a stormwater treatment device	Stormwater discharge	31/12/2032
21812		BP Oil New Zealand Limited	264 Massey Road, Mangere East	To divert and discharge stormwater from a service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Stormwater discharge	31/12/2033
21812		BP Oil New Zealand Limited	96 Station Road, Papatoetoe	To divert and discharge stormwater from a redevelop existing service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Stormwater discharge	31/12/2033
23057		BP Oil New Zealand Limited	108-118 Fanshawe Street, Auckland Central	To authorise the diversion and discharge of stormwater from a partial drainage upgrade at an existing service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Stormwater discharge	31/12/2034

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
24843		BP Oil New Zealand Limited	433 Khyber Pass Road, Newmarket	To authorise discharge of stormwater from a redeveloped refuelling facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Stormwater discharge	31/12/2036
25195		BP Oil New Zealand Limited	152 Coronation Road, Mangere	To divert and discharge stormwater from the forecourt being discharged via a stormwater treatment device into an existing Council stormwater piped system	Stormwater discharge	31/12/2031
25647		BP Oil New Zealand Limited	216 Mill Road, Bombay	To divert and discharge stormwater from a motorway service area via stormwater quality treatment devices into a tributary of the Ngakaroa stream	Oil Separator, Vegetative Filter Strips, Soak hole	31/12/2028
25816		BP Oil New Zealand Limited	2-16 Te Atatu Road, Te Atatu South	To authorise the diversion and discharge of stormwater from a total redevelopment of an existing service station being discharged via a stormwater treatment device	Stormwater discharge and oil separators	31/12/2036
25817		BP Oil New Zealand Limited	8 Whitford-Maraetai Road, Whitford	To authorise the diversion and discharge of stormwater from partial redevelopment of an existing service station being discharged via a stormwater treatment	Stormwater discharge and oil separators	31/12/2036
25824		BP Oil New Zealand Limited	Eastern Side of Southern Motorway, Papakura	To divert surface water through a piped culvert, and to divert and discharge stormwater from a proposed 5HA motorway service area comprising car parking, off and on ramps, a service station, truck stop	Sand filter and oil separators	31/12/2032

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
25900		BP Oil New Zealand Limited	199 Weymouth Road, Manurewa	To authorise the diversion and discharge of stormwater from a total redevelopment of an existing service station being discharged via a stormwater treatment device	Stormwater discharge and oil separators	31/12/2036
26205		BP Oil New Zealand Limited	State Highway 1, Dairy Flat	To authorise the diversion and discharge of stormwater from the proposed BP motorway service centre with a total catchment area of 4HA	Stormwater discharge and ponds	31/12/2036
26258		BP Oil New Zealand Limited	Te Iirangi Drive, Flat Bush	To authorise the diversion and discharge of stormwater from a new service station being discharged via a stormwater treatment	Stormwater discharge and oil separators	31/12/2035
26598		BP Oil New Zealand Limited	Airfield Road, Ardmore Airport	To authorise the diversion and discharge of stormwater, from partial redevelopment of an existing aircraft refuelling Apron and a locked overnight mini-tanker and trailer storage facility service station, being discharged via a stormwater treatment device	Stormwater discharge and oil separators	31/12/2036
28099		BP Oil New Zealand Limited	925 Mount Eden Road, Three Kings	To authorise the diversion and discharge of stormwater from a partially redeveloped service station via a stormwater treatment	Stormwater discharge and oil separators	31/12/2037
28164		BP Oil New Zealand Limited	297 Lake Road, Takapuna	To authorise the diversion and discharge of stormwater from a partially redeveloped service station via a stormwater treatment	Stormwater discharge and oil separators	31/12/2037

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
28627		BP Oil New Zealand Limited	45 Neilson Street, Te Papapa	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2038
28995		BP Oil New Zealand Limited	1-19 quay Street, Auckland Central	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2038
29145		BP Oil New Zealand Limited	6 Richard Pearse Drive, Mangere	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2038
29214		BP Oil New Zealand Limited	141 Pakuranga Road, Pakuranga	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2038
29411		BP Oil New Zealand Limited	74 Edinburgh Street, Pukekohe	To authorise the diversion and discharge of treated stormwater from remote landfill and fuelling areas via an American petroleum institute (API) separator to the existing Franklin District Council stormwater reticulation system	Stormwater discharge and oil separators	31/12/2038
29863		BP Oil New Zealand Limited	2-16 Te Atatu Road, Te Atatu South	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2024
30913		BP Oil New Zealand Limited	7 Heb Place, Takanini	To authorise the diversion and discharge of stormwater from a refuelling area	Stormwater discharge and oil separators	31/12/2035
30940		BP Oil New Zealand Limited	10 Clemow Drive, Mount Wellington	To authorise the diversion and discharge of stormwater	Stormwater discharge and oil separators	31/12/2039
30959		BP Oil New Zealand Limited	1 Kerrs Road, Manukau Central	To authorise the diversion and discharge of stormwater from the remote landfill and fuelling areas via an American petroleum institute (API) separator	Stormwater discharge and oil separators	31/12/2039

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
31942		BP Oil New Zealand Limited	63 Hayr Road, Three Kings	To authorise the diversion and discharge of stormwater from the remote fill and fuelling areas via an American petroleum institute (API) separator	Stormwater discharge	31/12/2040
32682		BP Oil New Zealand Limited	58 Titi Street, Favona	To authorise the diversion and discharge of stormwater from a diesel stop within the Mainfreight terminal site	Stormwater discharge and oil separators	31/12/2038
28978	16696	Bridgeman Concrete Auckland Limited	59 Crooks Road, East Tamaki	Wetland Swale to discharge industrial waste from a ready mixed concrete production site. Change conditions 2, 5 & 6 (site increased by 100m2 / amended calculations / Wetlands built last)	Wetland swale	31/12/2022
28979	16696	Bridgeman Concrete Auckland Limited	43 Crooks Road, East Tamaki	To authorise the diversion and discharge of stormwater	Ponds	31/12/2022
27203	928380	Buckland's Beach Yacht Club Inc. General Manager	Granges point Hardstand, Half Moon Bay	To authorise the discharge of stormwater from the Granges Point hardstand	Sand filter	10/06/2038
8243		Caltex	682-686 Great South Road, Penrose	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2027
8273		Caltex	195-201 Great South Road, Greenlane	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2027
9020		Caltex	East Side Via Beaumont Street, Auckland City	To authorise the diversion discharge of service station runoff	Coastal Structure	20/12/2010
20371		Caltex	1433 SH 1	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2032

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
20394		Caltex	Cnr Mill Road and Great South Road, Bombay	To authorise the diversion discharge of service station runoff	Discharge permit of treated domestic wastewater	31/12/2005
20400		Caltex	Cn Mill Road and Great South Road, Bombay	To authorise the diversion discharge of service station runoff	Discharge permit	31/12/2032
20400		Caltex	Cn Mill Road and Great South Road, Bombay	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2032
21392		Caltex	Lawrence Stevens Drive, Auckland Airport	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
21490		Caltex	586-592 Upland Road, Remuera	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2034
22114		Caltex	339 Great North Road, Grey Lynn	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
22116		Caltex	215-227 Manukau Road	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2033
22140		Caltex	378 Manukau Road, Epsom	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	
22191		Caltex	221 St Heliers Bay Road, St Heliers	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	
22596		Caltex	Upper Harbour Drive, Mairangi Bay	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
22937		Caltex	313 Botany Road, Howick	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2034

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
23969		Caltex	Cnr Balmoral & Sandringham Road, Kingsland	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater), sandfilter, swales, oil separators and soak holes	31/12/2036
23972		Caltex	11 Mercari Way, Albany	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2035
24135		Caltex	19 Nandina Avenue, East Tamaki	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2035
24328		Caltex	Cnr Rodney Road & Port Albert Road, Wellsford	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2035
24775		Caltex	548 East Coast Road, Windsor Park	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2035
24776		Caltex	Cnr Maire Road and Grand Drive, Orewa	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2035
25483		Caltex	Morrison Drive, Warkworth	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2036
27285		Caltex	Mill Road & Great South Road, Bombay	To authorise the diversion discharge of service station runoff	Discharge permit (stormwater)	31/12/2032
30247		Caltex	30 Sandspit Road, Cockle Bay	To authorise the diversion discharge of service station runoff	Discharge permit	01/12/2014
8239		Caltex New Zealand Limited	682-686 Great South Road, Penrose	To discharge stormwater to ground soakage	Oil separators	31/12/2027

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
8309		Caltex New Zealand Limited	195-201 Great South Road, Greenlane	To discharge stormwater to ground soakage	Oil separators	31/12/2027
24094		Caltex New Zealand Limited	231 Manukau Road, Pukekohe	To divert and discharge stormwater from an upgraded existing truck stop facility with stormwater from refuelling areas being discharged via a stormwater treatment device, together with stormwater from an additional petrol refuelling facility being discharged via a new stormwater treatment device	Oil separators	31/12/2033
31037		Caltex New Zealand Limited	288-294 Te Atatu Road, Te Atatu South	To authorise the diversion and discharge of stormwater	Oil Separators	31/12/2039
31494		Caltex New Zealand Limited	324 Great South Road, Papatoetoe	To authorise the diversion and discharge of stormwater	Oil Separators	31/12/2039
31780		Caltex New Zealand Limited	SH 22, Karaka	To authorise the diversion and discharge of stormwater	Oil Separators	31/12/2039
32978		Caltex New Zealand Limited	SH 1, Dairy Flat	To authorise the diversion and discharge of stormwater from a wetland treatment system on site to roadside table drain and ultimately into an adjacent watercourse	Oil separators and wetlands	31/12/2032
24604	15198	Capet Holdings Limited C/- PR Healey	269 A Mt Smart Road, Onehunga	To authorise the diversion and discharge of stormwater from approximately 0.62ha of buildings and car park to ground (the porous basalt formation beneath the site)	Sand filter	31/01/2036
15385		Challenge	571 Te Atatu Road, Te Atatu Peninsula	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	22/07/2005



Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
21431		Challenge	788-802 Great North Road	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
21432		Challenge	571-575 Great South Road, Grey Lynn	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
21433		Challenge	11-15 Clark Street, New Lynn	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
21970		Challenge	19 Princess Street, Takapuna	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
21986		Challenge	144-152 Triangle Road, Massey	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
22571		Challenge	167-169 Manukau Road	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater) and oil separators	31/12/2033
22908		Challenge	71 Jellicoe Road, Panmure	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater)	31/12/2034
23428		Challenge	720 Swanson Road, Swanson	To authorise the diversion and discharge of service station runoff	Discharge permit (stormwater)	31/12/2034
33534		Chevron New Zealand Limited	27-29 Saleyards Road, Otahuhu	To authorise the diversion and discharge of service station from a service station	None	31/12/2041
31587	18650	Coca-Cola Amatil (NZ) Limited	33 Waipuna Road, Mount Wellington	To authorise the diversion and discharge of stormwater	Storm filter, rain garden and roof materials	31/12/2025

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
31900	18763	Coca-Cola Amatil (NZ) Limited	33 Waipuna Road, Mount Wellington	To discharge of contaminants from an industrial or trade process – beverage manufacturing	Rain garden and stormwater filters	31/12/2025
30186		Contact Energy Limited	68A Bairds Road, Otara	To authorise the diversion and discharge of stormwater	Outfall structures and holding pond	31/12/2031
27639	16613	Danja Holdings Limited	20 Jarvis Way, Otara	Wetland swale high	Stormwater pipes and their inlets: down pipes, stormwater cesspits catchpits, soakage pits and manholes	31/12/2023
31338	17383	Enviro Waste Services Limited	116 Patiki Road, Avondale	To discharge Industrial or Trade Process contaminants for a waste transfer station	Filtration – rain garden	31/12/2024
28016	16793	Flint Ink Limited	57 Walls Road, Penrose	To discharge stormwater from an ink manufacturing plant under redevelopment	Sand filter to stormwater discharge and soak holes	31/12/2025
26318	15751	Fulton Hogan Limited	4 Reliable Way, Mount Wellington	To authorise the discharge of contaminants from an industrial trade process site (asphalt manufacturing and associated activities)	Filtration-Sand / other mixed media	31/12/2026
21765	12765	Golden Bay Cement	65-75 Jellicoe Street, Auckland Central	To divert and discharge stormwater from an existing port unloading facility	Coarse sediment traps	31/12/2033
22067		Gull New Zealand Limited	642-650 Rosebank Road, Avondale	To discharge stormwater from forecourt and paved area through an API Oil Separator	Oil separators	31/12/2033

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
22397		Gull New Zealand Limited	3 Reeves Road, Pakuranga	To divert and discharge stormwater from an upgraded existing service station facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
22522		Gull New Zealand Limited	441 New North Road, Kingsland	To divert and discharge stormwater from a new service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2033
22903		Gull New Zealand Limited	103 Roscommon Road, Wiri	To divert and discharge stormwater from a new service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
22929		Gull New Zealand Limited	200-210 Swanson Road, Henderson	To divert and discharge stormwater from a new service station with stormwater from refuelling areas and from the bulk fuel tank slab, with a design impervious area off 118m <sup>2</sup> , being discharged via a stormwater treatment device	Oil separators	31/12/2034
23286		Gull New Zealand Limited	330 Great South Road, Otahuhu	To divert and discharge stormwater from a new service station with stormwater from refuelling areas and from the bulk fuel tank slab, with a design impervious area off 117m <sup>2</sup> , being discharged via a stormwater treatment device	Oil separators	31/12/2034

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
23852		Gull New Zealand Limited	1-3 Forest Hill Road, Henderson	To authorise the diversion and discharge of stormwater from a service station redevelopment with stormwater from refuelling areas and remote fill points being discharged via a stormwater treatment device	Oil separators	31/12/2035
24096		Gull New Zealand Limited	Greville Road, Pinehill	To divert and discharge stormwater from a service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24097		Gull New Zealand Limited	183 Albany Highway, Albany	To divert and discharge stormwater from a service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24190		Gull New Zealand Limited	455 East Tamaki Road, East Tamaki	To divert and discharge stormwater from a service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24423		Gull New Zealand Limited	380 Ti Rakau Drive, Burswood	To divert and discharge stormwater from a proposed service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24423		Gull New Zealand Limited	380 Ti Rakau Drive, Burswood	To divert and discharge stormwater from a proposed service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Swales	31/12/2035

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
24809		Gull New Zealand Limited	44A Portage Road, New Lynn	To authorise the discharge of stormwater from the new service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
27719		Gull New Zealand Limited	13 Sel Peacock Drive, Henderson	To authorise the diversion and discharge of stormwater from a service	Oil separators	31/12/2035
29172	17467	Heller Tasty Limited	8 Ha Crescent, Wiri	Discharge small meat goods operations	Swales and source control	31/12/2024
30709	18217	Higgins Contractors Limited T/A Higgins Contractors Auckland	20 Crooks Road, East Tamaki	To discharge contaminants from an industrial or Trade Process – asphalt plan, to ground	Filtration-Sand / other mixed media	31/12/2025
28631	17076	Industrial Textiles Limited	62 Patiki Road, Avondale	To authorise the diversion and discharge of stormwater from two commercial properties to the Whau River	Sand filter	31/12/2038
30742	17495	Laminex Group (NZ) Limited	5240 Hunua Road	Discharge of stormwater and contaminants from site manufacturing laminates	Reuse and Enironpods	31/12/2024
9054	928586	Holcim (New Zealand) Limited	54 Patiki Road, Avondale	To divert and discharge treatment via a settling tank to the Whau Estuary	Settling tank and stormwater ponds	31/12/2027
28168		Lubrication Manufacturing Plant	6 Jellicoe Street, Auckland Central	To authorise the diversion discharge of service station runoff	Con site discharge	30/11/2011
30001	17886	Mainfreight Limited	58 Titi Street, Otahuhu	To authorise the diversion and discharge of stormwater associated with an industrial development	Rain gardens	31/12/2038

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
25555	15783	Manson Contracts (Warkworth) Ltd	76 Hudson Road, Warkworth	Discharge of washwater from a truck wash facility	Rain garden	31/12/2016
26797	16265	Metal Protection Limited	14 Ross Reid Place, East Tamaki	To authorise the discharge of contaminants into land (electro trade and activities) or the trade process within the premises	Swale, sand filter and sand-peat filter	31/12/2037
26507	16142	Mobil Oil New Zealand Limited	164 Beaumont Street, Auckland Central	Bulk Hydrocarbon Product Storage Facility	Storm discharge	31/05/2022
15382	BM9611222	Mobil Oil New Zealand Limited	2-18 West Coast Road, Glen Eden	To divert and discharge stormwater from a stormwater treatment device into a stormwater piped system	Oil separators	31/12/2031
25361	15642	Mobil Oil New Zealand Limited	2060 Great South Road, Avondale – Mobil	To authorise the diversion and discharge of stormwater from a partially redeveloped service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2036
25362	15643	Mobil Oil New Zealand Limited	286 Puhinui Road, Papatoetoe	To authorise the discharge of stormwater from a partially redeveloped service station with stormwater from refuelling areas being discharged via a stormwater treatment	Oil separators	31/12/2036
26484	16136	Mobil Oil New Zealand Limited	348-364 St Heliers Bay Road, St Heliers	To authorise the diversion and discharge of stormwater from a partial redevelopment of an existing service station being discharged via a stormwater treatment device	Oil separators	31/12/2036

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
26784	16256	Mobil Oil New Zealand Limited	25 Lake Road, Devonport	To authorise the diversion and discharge of stormwater, from a partial redevelopment of an existing service station, being discharged via a stormwater treatment device	Oil separators	31/12/2036
29302	17526	Mobil Oil New Zealand Limited	351-347 Great South Road, Ellerslie	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2038
29898	17848	Mobil Oil New Zealand Limited	145 Wairau Road, Wairau	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2024
30471	11673	Mobil Oil New Zealand Limited	397 Don Buck Road, Massey	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2025
30958	18415	Mobil Oil New Zealand Limited	26 Titirangi Road, New Lynn	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2025
31259	18540	Mobil Oil New Zealand Limited	506-512 Parnell Road, Parnell	To authorise the diversion and discharge of stormwater	Oil separators and stormfilter	31/12/2039
31278	18546	Mobil Oil New Zealand Limited	296 Apirana Avenue, Glen Innes	To authorise the diversion and discharge of stormwater	Oil separators and stormfilter	31/12/2039
31281	18550	Mobil Oil New Zealand Limited	565 Karangahape Road, Auckland Central	To authorise the diversion and discharge of stormwater	Oil separators and stormfilter	31/12/2039
31866	18749	Mobil Oil New Zealand Limited	64 Green Lane East, Remuera	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2040
32206	18892	Mobil Oil New Zealand Limited	494-506 Mount Eden Road, Mt Eden	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2040
32567	19060	Mobil Oil New Zealand Limited	734-736 Dominion Road, Mt Eden	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2040
33287	19384	Mobil Oil New Zealand Limited	15-19 Selwyn Street, Onehunga	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2040

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
15345		Mobil Oil New Zealand Limited	95-99 Beaumont Street, Freemans Bay	To authorise the diversion and discharge of stormwater	Discharge permit – contaminated site discharge	31/12/2030
11551		Mobil Oil New Zealand Limited	Jellicoe Street & Pakenham Street, Auckland Central	To authorise the diversion and discharge of stormwater	Coastal permit – industrial waste discharge	31/12/2001
11550		Mobil Oil New Zealand Limited	Jellicoe Street & Pakenham Street, Auckland Central	To authorise the diversion and discharge of stormwater	Coastal permit – industrial waste discharge	31/12/2001
20177		Mobil Oil New Zealand Limited	51 St Lukes Road, Mount Albert	To authorise the diversion and discharge of stormwater	Discharge permit – stormwater discharge	31/12/2032
14016		Mobil Oil New Zealand Limited	167 Beach Road, Parnell	To authorise the diversion and discharge of stormwater	Coastal permit – stormwater discharge	31/12/2029
9611166		Mobil Oil New Zealand Limited	242 Ti Rakau Drive, East Tamaki	To authorise the diversion and discharge of stormwater	Stormwater discharge	31/12/2031
13034	BR949817	Mobil Oil New Zealand Limited	1 Margan Avenue, New Lynn	To divert and discharge stormwater from a redeveloped and expanded service station	Oil separators	31/12/2040
13794	BR9510328	Mobil Oil New Zealand Limited	1 Sunnysbrae Road, Northcote	To discharge stormwater from a new service station development	Oil separators	31/12/2028
13886	BR9510403	Mobil Oil New Zealand Limited	30 Verran Road, Birkdale	To discharge stormwater from a service station	Oil separators	31/12/2030
15329	BE9611166	Mobil Oil New Zealand Limited	242 Ti Rakau Drive, Burswood	To divert and discharge stormwater from a replacement stormwater treatment device into a stormwater piped system	Oil separators	31/12/2031



Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
16108	BH9711715	Mobil Oil New Zealand Limited	8-14 Quay Street, Auckland Central	To divert and discharge stormwater from a new service station, with stormwater from the forecourt being discharged via a stormwater treatment device prior to being discharged into an existing stormwater system	Oil separators	31/12/2031
20660	12241	Mobil Oil New Zealand Limited	7 High Street, Otahuhu	To divert and discharge stormwater from a new service station, with stormwater from refuelling areas via a stormwater treatment device prior to being discharged from the site	Oil separators	31/12/2032
21463	11914	Mobil Oil New Zealand Limited	51 St Lukes Road. Mt Albert	To divert and discharge stormwater from a new service station, with stormwater from the forecourt being discharged via a stormwater treatment device prior to being discharged to the ground	Oil separators	31/12/2032
21579	12662	Mobil Oil New Zealand Limited	548-550 West Coast Road, Oratia	To divert and discharge stormwater from an existing service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2033
21889	12823	Mobil Oil New Zealand Limited	51 Jellicoe Road, Auckland Central	To divert and discharge stormwater from a service station redevelopment, with stormwater from the refuelling and remote fill points area being discharged via a stormwater treatment device, to a local public stormwater system	Oil separators	31/12/2033

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
26508	16143	Mobil Oil New Zealand Limited	164-188 Beaumont Street, Freemans Bay	To authorise the diversion and/or discharge of stormwater and contaminated stormwater from an industrial or trade premise	Oil separators	31/5/2022
30939	18407	Mobil Oil New Zealand Limited	447 Roscommon Road, Clendon Park	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2025
28968	15948	Mt Rex Shipping Limited	215 Kaipara Coast Highway SH16, Helensville	The diversion and discharge of stormwater to an unnamed tributary of the Kaipara River from an industrial site development with an area of approximately 5.0ha		31/12/2037
28956	17405	Mt Rex Shipping Limited c/- Atlas concrete	215 Kaipara Coast Highway SH16, Helensville	Storing and manufacturing sand	Stormwater pond	31/12/2035
27731	16665	N C I Packaging (NZ) Limited	80 Mount Wellington Highway, Mt Wellington	To authorise the diversion and discharge of stormwater	Sand filter	31/12/2037
30072	17910	Northern Waste	12 Langley Road, Wiri	Discharge stormwater from an industrial or trade process from a proposed waste transfer station	Swales, rain tanks, soak holes	31/12/2025
28089	4540	Nurfam Health and Services (A division of Nurfam NZ Limited)	8 Manu Street, Otahuhu	Discharge contaminants from an industrial process	Sand filter	01/02/2039
24062		Om Petroleum (NZ) Limited T/A Challenge Milford	79 Kitchener Road, Milford	The diversion and discharge of stormwater from a partial drainage upgrade at an existing service station with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
30641	18202	Onehunga ITM trading as Umbraco Ltd	101 Neilson Street, Onehunga	To authorise the diversion and discharge of stormwater	Sand filter	31/12/2039
22822	12762	Orams Marine Limited	Westhaven Marina, Freemans Bay	To discharge stormwater containing contaminants from the Orams Marine site to the coastal marine area	Sand filter	10/07/2024
31867	18755	P J Hobbs Industries Limited	63 Hunua Road, Papakura	To authorise the discharge of stormwater	Swales	31/12/2040
15558	7494	Pacific Steel Limited	259 James Fletcher Drive, Otahuhu	To divert and discharge treated stormwater and contaminants from an industrial and trade premise via a treatment system	Ponds	31/12/2022
21476	12618	Pick a Part Limited	Alderman Place, Mangere East	To divert and discharge stormwater from a facility for the dismantling of wrecked vehicles, with stormwater from yard	Sand filter	31/12/2033
21972	12872	Ports of Auckland Ltd	French Street, Auckland	To discharge contaminated stormwater to water, following the first flush of wastewater being discharged to the sewer, for the purpose of disposing of highly diluted wastewater from a newly constructed vehicle cleaning facility	Dilution of wastewater	31/03/2034
15230	9611095	Ports of Auckland Ltd	Quay Street, Auckland	To divert and discharge stormwater from a replacement stormwater treatment device into a stormwater piped system	API tank	31/12/2031
25179	15613	Ports of Auckland Ltd	Quay Street, Auckland	To discharge contaminated water from industrial or trade processes into the central Waitemata Harbour	Various	30/07/2036

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
28384	10919	Ports of Auckland Ltd	Fergusson Container Terminal, Auckland	Discharging seawater and stormwater from the new reclamation during construction; and discharging stormwater from the extended terminal once construction completed	Sand filters	
23215	14403	Rohm & Haas NZ Ltd	26 Beach Road, Favona	To authorise the discharge of contaminants from an industrial trade process (Rohm and Haas NZ Ltd – manufacture of)	Ponds	31/12/2024
29218	14403	Rohm & Haas NZ Ltd	8 Beach Road, Favona	Run off from the site that produces acrylic emissions. Collected into a stormwater pond. Controlled release after testing into 15m open drain then into adjacent Mangere Inlet	Trade waste and pond	31/12/2024
22911		Shell New Zealand Limited	Hobbs Bay	To divert and discharge contaminants to water for the purpose of disposing of treated stormwater	Oil separators	01/09/2014
22996		Shell New Zealand Limited	88 Main Road, Kumeu	To divert and discharge stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
23082		Shell New Zealand Limited	150 Beach Road, Parnell	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
23151		Shell New Zealand Limited	423 Titirangi Road, Titirangi	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
23152		Shell New Zealand Limited	303 Remuera Road, Remuera	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment	Oil separators	31/12/2034
23155		Shell New Zealand Limited	154 Kapa Road, Orakei	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
23156		Shell New Zealand Limited	364 West Coast Road, Glen Eden	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2034
23157		Shell New Zealand Limited	847 East Coast Road, Northcross	To authorise the diversion and discharge of stormwater from a partial service station redevelopment with stormwater from refuelling areas being discharged via a stormwater treatment	Oil separators	31/12/2034
24142		Shell New Zealand Limited	100 Foundry Road, Silverdale	To divert and discharge stormwater from a truck stop facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
24417		Shell New Zealand Limited	Quarry Road	To divert and discharge stormwater from a proposed truck stop facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24436		Shell New Zealand Limited	167 Neilson Street, Onehunga	To divert and discharge stormwater from a truck stop with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24521		Shell New Zealand Limited	594 Corsair Lane, Ardmore	To divert and discharge stormwater from a new storage compound with stormwater from the storage compound subcatchment being discharged via a stormwater treatment device	Oil separators	31/12/2035
24656		Shell New Zealand Limited	14 Hudson Road, Warkworth	To authorise the discharge of stormwater from the redeveloped truck stop facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035
24688		Shell New Zealand Limited	21-13 Sylvia Park Road, Mt Wellington	To divert and discharge treated stormwater from a truck stop facility into a stormwater reticulation system	Oil separators	30/01/2036
25066		Shell New Zealand Limited	25-27 Quay Street, Auckland Central	To authorise the discharge of stormwater from a redeveloped refuelling facility with stormwater from refuelling areas being discharged via a stormwater treatment device	Oil separators	31/12/2035

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
25414		Shell New Zealand Limited	Asti Lane & SH 16, Massey	To authorise the diversion and discharge of stormwater from an existing service station with stormwater from the bulk fuel unloading area being discharged via a stormwater treatment device	Oil separators	31/12/2036
25657		Shell New Zealand Limited	700 Mount Albert Road, Royal Oak	To authorise the diversion and discharge of stormwater, from an upgrade of the existing service station via a stormwater treatment device	Oil separators	31/12/2037
25669		Shell New Zealand Limited	36 Constellation Drive, Mairangi Bay	To authorise the diversion and discharge of stormwater from partial redevelopment of an existing service station being discharged via a stormwater treatment device	Oil separators	31/12/2036
26378		Shell New Zealand Limited	Main Road, Kumeu	To authorise the diversion and discharge of stormwater from partial redevelopment of an existing service station being discharged via a stormwater treatment device	Oil separators	31/12/2036
27936		Shell New Zealand Limited	50-60 Ash Street, Avondale	To authorise the diversion and discharge of stormwater, from an upgrade of the existing service station via a stormwater treatment device	Oil separators	31/12/2037
28155		Shell New Zealand Limited	574 Great South Road, Ellerslie	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2024

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
29781		Shell New Zealand Limited	18 Clevedon Road, Papakura	To authorise the diversion and discharge of treated stormwater from remote fill and fuelling areas via an American Petroleum Institute (API) separator to the existing Papakura District Council stormwater reticulation system	Oil separators	31/12/2038
30045		Shell New Zealand Limited	18 Queen Street, Pukekohe	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2024
31311		Shell New Zealand Limited	413 Beach Road, Mairangi Bay	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2039
31737		Shell New Zealand Limited	8 Ormiston Road, Otara	To authorise the diversion and discharge of stormwater from a new service station operation	Oil separators	31/12/2040
31737		Shell New Zealand Limited	8 Ormiston Road, Otara	To authorise the diversion and discharge of stormwater from a new service station operation	Filtration devices	31/12/2040
31747		Shell New Zealand Limited	120 Queen Street, Waiuku	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2039
32189		Shell New Zealand Limited	151 East Coast Road, Milford	To authorise the diversion and discharge of stormwater	Oil separators	31/12/2040
32330		Shell New Zealand Limited	284 Ti Rakau Drive, Burswood	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32331		Shell New Zealand Limited	40-42 State Highway 16, Parnell	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32332		Shell New Zealand Limited	470 Pakuranga Road, Half Moon Bay	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32439		Shell New Zealand Limited	142 Harris Road, East Tamaki	To discharge stormwater in association with the redevelopment of an existing service station	Oil separators	31/12/2040



Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
32440		Shell New Zealand Limited	301 Ellerslie-Panmure Highway, Mt Wellington	To authorise the diversion and discharge of stormwater from a service station redevelopment	Other	31/12/2040
32440		Shell New Zealand Limited	301 Ellerslie-Panmure Highway, Mt Wellington	To authorise the diversion and discharge of stormwater from a service station redevelopment	Coarse sediment traps	31/12/2040
32441		Shell New Zealand Limited	345 Great South Road, Ellerslie	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32600		Shell New Zealand Limited	742 Great South Road, Penrose	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32767		Shell New Zealand Limited	236-222 Apirana Avenue, Glen Innes	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
32773		Shell New Zealand Limited	36 Constellation Drive, Mairangi Bay	To authorise the diversion and discharge of stormwater from the refuelling area of a service station	Gross Pollutant Trap	31/12/2040
33688		Shell New Zealand Limited	637-651 Whangaparaoa Road, Stanmore Bay	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2041
26036		Shell New Zealand Limited	9-5 Williamson Avenue, Grey Lynn	To authorise the diversion and discharge of stormwater from partial redevelopment of an existing service station being discharged via a stormwater treatment device	Oil separators	31/12/2036
31844		Shell New Zealand Limited	307 Puhinui Road, Papatoetoe	To authorise the diversion and discharge of stormwater from a heavy machinery hiring facility	Oil separators	31/12/2040
32262		Shell New Zealand Limited	72 East Tamaki Road, East Tamaki	To authorise the diversion and discharge of stormwater from a service station	Oil separators	31/12/2040
29505	17598	Smith and Nephew Limited	621 Rosebank Road, Avondale	To divert and discharge stormwater from a 1.47ha commercial / industrial site to the Waitemata Harbour	Cesspit filter	31/12/2038

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
28244	16897	Southdown Cogeneration Limited C/- Mighty River Power Limited	164-220 Hugo Johnston Drive, Penrose	To authorise the discharge of stormwater from the Southdown Power Station and the discharge of contaminants from an industrial or trade process site (power generation and associated activities)	Stormwater pond	31/12/2023
24766	15302	Sovereign Yachts NZ Ltd	Buckley Avenue, Hobsonville	To authorise the diversion and discharge of stormwater, through a treatment pond, from a boat building facility	Ponds	31/12/2035
29100	17443	Tasti Products limited	35-37 Totara Road, Whenuapai	To authorise the diversion and discharge of stormwater	Sand filter	20/12/2038
29648	17703	Tegal Foods Ltd	1 Bruce McLaren Road, Henderson	Industrial Trade of Process discharge from a poultry processing plant site	Pond-water quality	31/12/2025
27455	16566	The Laminex Group NZ C/- Fletcher Building Products Ltd	Access Road, Kumeu	To authorise the diversion and discharge of stormwater from Fletcher Wood Panels Limited – Kumeu site	Wetlands	31/12/2037
27519	16566	The Laminex Group NZ C/- Fletcher Building Products Ltd	Access Road, Kumeu	To authorise the diversion and discharge of contaminants from the Industrial and trade process (particle board manufacturing)	Ponds	31/12/2037
30271	17993	NZ Transport Agency (formerly Transit New Zealand)	51 Otanerua Road, Hatfields Beach	To authorise the discharge of contaminants from an industrial and trade process via an American Petroleum Institute (API) separator to the storm water detention pond, which is connected to the Otanerua Stream	Oil and water separators	31/12/2010
27424	16530	Transpower NZ Limited	83 Foundry Road, Silverdale	To authorise the diversion and discharge of stormwater	Swales	31/12/2037

Consent Number	File	Consent Holder	Address	Purpose and Description	Treatment Type	Expiry Date
11494	939025	Visy Recycling New Zealand Limited	McNab Street, Penrose	To discharge stormwater to groundwater soakage	Filtration devices	31/12/2027
30478	18100	W. Stevenson & Sons Ltd	475 Quarry Road, Drury	To authorise the discharge of contaminants onto or into land from an industrial or trade process (concrete tile plant) and discharge of contaminants onto or into land (soil waste and wastewater)	Swale discharge point	31/12/2025
13175	949926	Waste Management New Zealand Limited	15-27 Inlet Road, Takanini	To divert and discharge stormwater from a 1.34ha refuse transfer station and part of a 0.58ha access road through two outfalls into the Pahurehure inlet	Ponds	31/12/2029
32270	18916	WDP Investments Limited	57 Angle Street, Onehunga	To discharge from site that has car parts	Filtration-sand / other mixed media	31/12/2026
32707		Wiri Oil Services Ltd	149 Roscommon Road, Manukau City	Potential for discharges to stormwater	Wetland	31/08/2028
31173	17186	Works Infrastructure Limited	72 Lunn Avenue, Mt Wellington	Other – soak holes Discharge of potential contaminated stormwater from asphalt plant	Sand filters and an ingles	31/12/2024
				Any other resource consent that is the subject of a public notification process under Rule 5.5.15 of this Plan.		