

# Section 32 report: Discharges to land

for the Proposed Natural Resources Plan for the Wellington Region



greater WELLINGTON

REGIONAL COUNCIL

Te Pane Matua Taiao



## Issues and Evaluation Report



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for the Proposed Natural Resources Plan for the  
Wellington Region

For more information, contact the Greater Wellington Regional Council:

Wellington  
PO Box 11646

Masterton  
PO Box 41

T 04 384 5708  
F 04 385 6960  
[www.gw.govt.nz](http://www.gw.govt.nz)

T 06 378 2484  
F 06 378 2146  
[www.gw.govt.nz](http://www.gw.govt.nz)

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[www.gw.govt.nz](http://www.gw.govt.nz)  
[regionalplan@govt.nz](mailto:regionalplan@govt.nz)



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## 1. Overview and purpose

This report provides an analysis of the appropriateness of the proposed objectives, policies and methods contained in the Proposed Natural Resources Plan for the Wellington Region (proposed Plan) related to discharges of contaminants to land. The analysis in this report is guided by the requirements of section 32 of the Resource Management Act 1991.

The provisions for discharges to land discussed in this report are grouped in the following categories:

- Cleanfills and landfills
- Rural waste
- Manufacture and storage of silage and compost
- Collected animal effluent and other fertilisers
- Wastewater treatment systems
- Drinking water treatment plant waste
- Vertebrate toxic agents
- Hydraulic fracturing

This report should be read in conjunction with the following section 32 reports prepared for the proposed Plan to gain a full assessment of the proposed objectives, policies and methods related to discharges to land:

- Section 32 report: Introduction to the Resource Management Act 1991
- Section 32 report: Ki uta ki tai – mountains to the sea
- Section 32 report: Contaminated land and hazardous substances
- Section 32 report: Air quality
- Section 32 report: Discharges to water
- Section 32 report: Water quality

### 1.1 Legislative background

Wellington Regional Council's (WRC) approach to the management of discharges to land is guided by Part 2, section 15 and section 30 of the Resource Management Act 1991 (RMA). Section 5(2)(a) of Part 2 of the RMA directs the sustainable management of the use and development of natural resources while sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generation. Section 5(2)(b) identifies water and ecosystems as important resources to be safeguarded for their life-supporting capacity. More detail on the legislative background is provided in section 3.1 of this report.

### 1.2 Report methodology

To fulfil the requirements of section 32(2) of the RMA, this report identifies and assesses the benefits and costs of the environmental, economic, social, and cultural effects that are anticipated from the implementation of the provisions. In accordance with s32(2), the analysis identifies the opportunities for economic growth that are anticipated to be provided or reduced. In addition, the analysis, where practicable, quantifies the benefits and costs and assesses the risk of acting or not acting if there is uncertain or insufficient information.

This report is structured as follows:

- *Resource management issues*: an outline of the main issues identified by the community relating to the interaction between rural land-use and water quality (section 2 of this report)
- *Regulatory and policy context*: identification of relevant national and regional legislation and policy directions (section 3 of this report)
- *Appropriateness of the objectives*: an evaluation of the extent to which the proposed objectives are the most appropriate way to achieve the purpose of the RMA as required by s32(1)(a) (section 4 of this report)
- *Efficiency and effectiveness of the policies and methods*: an assessment of the efficiency and effectiveness of the provisions as to whether they are the most appropriate way to achieve the objectives, in accordance with s32(1)(b) and s32(2) (section 5 of this report)

## **2. Resource management issues**

WRC began a region-wide engagement process with the community in 2010 to identify their views regarding natural resource management and to help define the relevant issues that the proposed Plan would address (Parminter 2011). This involved conversations with mana whenua partner organisations, the general public, agencies and organisations with interests in resource management, resource users, school children, developers and policy makers. The issues related to managing the effects of discharges to land in the region (GWRC 2014) have helped guide the framing of the objectives.

These five issues are discussed below. Note that the numbers of each issue discussed below are taken from the issues report GWRC (2014).

### **2.1 Issue 3.9: Discharges to land**

*Discharges to land have adverse effects on water and air quality, and some have the potential to contaminate soil and cause adverse effects on people's health.*

There are many discharge activities that occur within the region and these need to be managed to minimise adverse effects on water and air quality and ensure they do not create contaminated sites. Discharges to land can leach through land into ground water or run off into surface water bodies. The consequences of leaching will vary depending on the amounts and type of discharge and the conditions that the discharge is occurring in, for example soil type and depth to ground water. Discharges with toxic content will potentially contaminate the soil on which the discharge occurs. Some discharges will also create air quality impacts, in particular odours, which will also need to be managed. The discharge of raw sewage is considered unacceptable for public health reasons.

These discharges include the following activities:

- Industrial discharges to land (e.g. viticulture, abattoirs, timber treatment plants, dry cleaning operations, water treatment plants)
- Raw sewage

- Agrichemicals
- Silage leachate
- Pit latrines
- Composting leachate
- Stock dip effluent
- Illegal dump sites
- Waste oil
- Emergency services foam
- Biosolids

## **2.2 Issue 3.6: Cleanfills**

*Cleanfills can cause dust nuisance and impacts on waterways and if used to dispose of non-cleanfill materials can result in further adverse environmental effects from leachate.*

Cleanfill is any inert substance which is free of contamination. Deposits of unacceptable cleanfill materials such as biodegradable waste, hazardous substances, and metals can leach contaminants into the surrounding environment. Inadequate controls or location can lead to dust nuisance, sedimentation or bulk materials entering waterways.

## **2.3 Issue 3.7: Landfills**

*Landfills can have significant adverse effects on their surrounding environment and any new landfills will potentially have greater adverse effects as the availability of appropriate sites for new landfills is limited.*

Landfills are used to dispose of a wide variety of waste materials and even though hazardous substances must be dealt with separately, the leachate from the breakdown of material in landfills can enter soil and water if the landfill is not designed and managed properly. Odour and wind-blown litter nuisance beyond the boundary of the landfill is a common source of complaint. There is a lack of new sites available for future landfills in the Wellington Region which are an appropriate distance from ground and surface water and population centres. The lack of suitable sites means that any new landfills will have the potential for greater adverse effects which will need additional design and management controls.

Most economic activities have an impact on the environment, either by extracting resources from the environment or disposing wastes back into the environment, or both (Pretty et al. 2000; Prugh et al. 1999; Turner et al. 1994). The Government guidance on waste management and minimisation noted that, "effective and efficient waste management and minimisation is achieved when less waste is going to landfill, when resources are used wisely, when the



economic cost of managing waste is reduced and when societal costs and risks are minimised” (MfE 2009, p3). The two goals in the New Zealand waste strategy are to reduce the harmful effects of waste, and to improve the efficiency of resource use (MfE 2010).

Currently, municipal waste in New Zealand is disposed of in purpose-built landfill facilities. Waste that is disposed of in sites that are not designed or managed properly can result in leachate from the breakdown of materials entering soil and water. One of the biggest problems the region (and nation) faces over the next 10-20 years is the scarcity of suitable land for the development of new landfills or the expansion of existing facilities. There are approximately 23 operating landfills in our region and about 100 closed (non-operative) landfills.

## **2.4 Issue 4.3: Land uses and discharge of contaminants**

*Land uses and discharges of contaminants reduce the quality of water bodies.*

The water quality of rivers, lakes, wetlands and aquifers deteriorates as water flows from the mountains to the sea. Generally, the quality of water bodies in upper catchments is high and declines as water flows downstream into modified parts of catchments where discharges and land use contribute to pollution.

Places where water bodies are in their natural state have been reduced from their former extent. As a consequence of their high natural and ecosystem values, water quality in water bodies with outstanding values should be maintained.

A sufficient amount of high quality drinking water is needed for the health of communities. Over 85% of the region’s population has access to existing community sources of drinking water. These existing supplies of relatively high quality fresh water are fundamental to the health and well-being of communities.

Other purposes that water bodies are valued for include; aquatic ecosystems; mahinga kai and customary purposes; places, sites and areas with spiritual, cultural or historic heritage including, tauranga waka, taonga raranga, wāhi tapu, wāhi tipuna and urupā; domestic; drinking and washing water; animal drinking water; firefighting; electricity generation; commercial and industrial processes; irrigation; amenity and recreational activities; food production and harvesting; transport and access; cleaning; and dilution and disposal of waste.

Some rivers and lakes are no longer suitable for swimming or other forms of contact recreation and can no longer be used for customary uses such as mahinga kai. The ecosystems of some water bodies in the region have also changed to the extent that they now lie outside their range of natural variability. Livestock also need access to fresh water taken from water bodies of a suitable quality that is no longer met in some water bodies. The quality of these water bodies is not being managed sustainably and the amount of contaminants getting into them needs to be reduced.

## **2.5 Issue 5.3: Discharge of sewage directly to freshwater**

*Discharge of sewage (including treated sewage) directly to fresh water has adverse effects on the mauri of fresh water, and on people's health.*

Treated sewage often contains high levels of disease-causing organisms that can make the rivers unsafe for recreational use, as well as nutrients, which can promote nuisance aquatic weed and algal growth. Discharges of wastes into water bodies are of particular concern to tangata whenua because waste, particularly sewage waste, degrades the mauri (life force) of the water body.

There are eight major discharges of treated sewage to fresh water in the region – one from the treatment plant at Paraparaumu, one from Rathkeale College in Masterton, with the rest from the Wairarapa towns of Masterton, Castlepoint, Carterton, Greytown, Featherston and Martinborough. In addition to the discharge of sewage from treatment plants, sewage is currently discharged to fresh water in stormwater discharges via cross connections between sewage and stormwater reticulation systems.

The Regional Policy Statement promotes the discharge of treated human sewage to land. The social and economic costs associated with new sewage treatment systems in the cities and towns that currently discharge to fresh water, and the repair and maintenance of stormwater reticulation in all cities and large towns in the region mean a transitional period is inevitable.

## **3. Regulatory and policy context**

There are a number of statutes and policy statements, both national and regional, which are relevant to managing discharges to land, and to which the proposed Plan has to give effect. There are also a range of guidance documents, that have no legal effect, but which provide useful information to assist with managing discharges in a resource management context. These documents and statutes and their relevance to the topic is described below. Section 3.3 describes how discharges to land are managed in the operative regional plans.

### **3.1 National statutory requirements**

#### **3.1.1 Resource Management Act 1991**

Under the RMA, Regional Councils are given the functions to control the use of land for the purposes of maintaining and enhancing water quality (section 30(1)(c)(ii)) and aquatic ecosystems (section 30(1)(c)(iii)), and to control discharges of contaminants onto land or into water (section 30(1)(f) of the RMA).

Section 15 sets out Regional Council responsibilities for the discharge of contaminants to land. Section 15 is generally 'restrictive' when dealing with discharges to water or to land that may enter water – no person may discharge any contaminant to water or land where it may enter water unless this discharge is expressly permitted by a rule in a plan, an NES or a resource consent.

Under section 70 of the RMA, any discharge that is allowed in a plan as a permitted activity cannot result, after reasonable mixing, in:

- The production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials
- Any conspicuous change in the colour or visual clarity
- Any emission of objectionable odour
- The rendering of freshwater unsuitable for consumption by farm animals
- Any significant adverse effects on aquatic life

### 3.1.2 National Policy Statement for Freshwater Management (2014)

The National Policy Statement for Freshwater Management 2014 (NPS-FM) directs regional councils to establish objectives and set limits for fresh water in their regional plans. The NPS-FM does not need to be implemented immediately, rather it sets a timeframe of 31 December 2025 for regional councils to progressively implement it under Policy E1(b). The WRC's NPS-FM implementation programme (GWRC 2015) outlines how the NPS-FM will be progressively implemented in the region, principally through collaborative community processes known as whaitua processes.

Policy C1 of the NPS-FM requires regional councils to manage land use as one of the methods to improve and maintain water quality where limits are currently not being achieved. While the specific requirements around setting objectives and limits for water quality will be progressively implemented (GWRC 2015), the proposed Plan must still be consistent with the NPS-FM and give effect to Objectives A1 and A2, including in the management of discharges to fresh water. For further discussion of the proposed Plan and the NPS-FM, see the Section 32 report: Water quality, and Section 32 report: Discharges to water.

### 3.1.3 New Zealand Coastal Policy Statement 2010

The New Zealand Coastal Policy Statement 2010 (NZCPS) acknowledges that diffuse sources of contamination can result in poor and declining coastal water quality. The NZCPS is the only mandatory national policy statement under the RMA (section 56) and seeks to promote the sustainable management of natural and physical resources in relation to New Zealand's coastal environment

Relevant to the assessment in this report, the NZCPS acknowledges that diffuse sources of contamination can result in poor and declining coastal water quality. Policy 22 requires that sediment loadings in runoff be reduced by controls on land use activities.

### 3.1.4 Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007

Under section 44A(7) of the RMA, local authorities must observe national environmental standards, by incorporating them into relevant plans. National standards prescribe technical methods or other requirements for environmental matters and each regional, city or district council must enforce the same standard. In certain circumstances, councils can impose stricter standards.

The Resource Management (National Environmental Standards for Sources of Human Drinking Water) Regulations 2007 (NES-Drinking Water) require regional councils to consider the effects of discharges and land use activities on drinking water sources, including for their effects on the suitability and palatability of water for drinking. Section 10 of the NES-Drinking Water directs that permitted activities in regional plans cannot result in community and group drinking water supplies becoming unsafe for human consumption after treatment.

### 3.1.5 Resource Management (National Environmental Standards for Air Quality) Regulations 2004

The Resource Management (National Environmental Standard for Air Quality) Regulations 2004 (NESAQ) are also relevant to the provisions in this report. The discharge of contaminants to land from cleanfills is normally a permitted activity, however, discharges to air (dust) require resource consent. Landfills must comply with the regulations 25-27 of NESAQ when the capacity of the landfill is over 1 million tonnes.

### 3.1.6 Hazardous Substances and New Organisms Act 1996

The purpose of the Hazardous Substances and New Organisms Act 1996 (HSNO) is to protect the environment, and the health and safety of people and communities by preventing or managing the adverse effects of hazardous substances and new organisms. HSNO controls hazardous substances from the moment they are made or arrive in New Zealand to their end use, or disposal. These controls are designed to manage the risks of hazardous substances across their life cycle, irrespective of their location.

The RMA recognises that environmental effects from the discharges of hazardous substances differ depending on where an activity occurs, the aspirations of local communities, and the sensitivity of the receiving environment. The proposed Plan acknowledges the relationship between HSNO and the RMA. Provisions in the proposed Plan manage the adverse effects of hazardous substances on the environment on a case-by-case basis.

## 3.2 Regional policy

### 3.2.1 Regional Policy Statement for the Wellington Region

Section 67(3) of the RMA requires the proposed Plan to give effect to the relevant regional policy statement. The second generation Regional Policy Statement for the Wellington Region (RPS) became operative on 24 April 2013. The RPS contains a number of objectives and policies regarding the region's water quality and waste management that are particularly relevant to this report.

Objective 12 of the RPS states that the quantity and quality of fresh water must:

- (a) meet the range of uses and values for which water is required;
- (b) safeguard the life supporting capacity of water bodies; and

- (c) meet the reasonably foreseeable needs of future generations.

In order to achieve Objective 12, Policy 16 directs the regional plan to include policies, rules and/or other methods that promote discharges of human and/or animal waste to land rather than water, while maintaining groundwater quality and soil health. Well managed land-based discharges can avoid adverse effects on water bodies, including the degradation of mauri.

Policy 35 directs that the adverse effects of point source and non-point source discharges be minimised in order to preserve the natural character of the coastal environment.

Policy 64 directs non-regulatory actions to help achieve the objectives of the RPS. It supports a whole of catchment approach that recognises the inter-relationship between land and water. In relation to discharges, this whole of catchment approach considers the effects of activities and land uses within a receiving environment and beyond. Looking at how particular activities influence a catchment as a whole, is part of the big picture of managing discharges in our region and is reflected throughout the proposed Plan.

Policy 65 promotes conservation and efficient use of resources by reducing, reusing and recycling waste, conserving water and energy, and using them efficiently. The efficient use of resources reduces the amount of material disposed of at landfills and treatment plants, and consequently decreases the amount of leachate to land which could eventually enter water.

RPS Objective 30 states that soils maintain those desirable physical, chemical and biological characteristics that enable them to retain their ecosystem function and range of uses. Policy 69 implements Objective 30 by promoting and encouraging sustainable agricultural practices that do not cause soil contamination, compaction, or loss of minerals or nutrients.

### **3.3 Non-regulatory guidance and industry standards**

There are a number of guidance documents and industry standards that are relevant to this report, including:

- New Zealand Standard AS/NZS 1547:2012 – On-site Domestic Wastewater Management
- A Guide to the Management of Cleanfills (MfE 2002)
- A Guide for the Management of Closing and Closed Landfills in New Zealand (MfE 2001)
- User's Guide for the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (MfE 2012)
- Contaminated Land Management Guidelines No. 2 (MfE 2003, Revised 2011).
- Guidelines for the Safe Application of Biosolids to Land in New Zealand (NZWWA 2003)
- Waste management and minimisation planning: Guidance for territorial authorities (MfE 2009)

### **3.4 Operative regional plans**

#### **3.4.1 Regional Plan for Discharges to Land**

The operative Regional Plan for Discharges to Land for the Wellington Region (DLP) manages discharges onto or into land, including discharges to land that may enter water. The DLP contains 22 rules about discharges of contaminants to land, grouped broadly as “solid contaminants”, “liquid contaminants”, “agricultural contaminants”, “hazardous substances”, and “site contamination”.

Section 4 of the DLP contains objectives and policies for the discharge of contaminants to land, grouped under: reducing and recycling waste (4.2.1-4.2.4), landfill siting (4.2.5-4.2.11), and the discharge of human wastewater (4.2.12-4.2.19 and 4.2.22). These operative provisions are assessed in more detail in the report entitled, Section 32 report: Contaminated land and hazardous substances.

The DLP includes permitted rules for discharges that are deemed minimal risk. Other discharge activities require resource consent, including landfills and the discharge of hazardous substances to land. Section 6 of the DLP contains non-regulatory or “other” methods. Although specific guidance is provided, for many methods the timeline for the actions, responsibilities, and follow-up actions are unclear.

The Plan Effectiveness Monitoring Report (GWRC 2006) on the DLP describes the changing situation for waste management and hazardous substances. WRC has relied on the use of non-regulatory guidelines and a reactive approach of responding to complaints for managing the adverse effects of discharges to land. Because many of the discharge rules are permitted, targeted monitoring is needed to determine whether these permitted activities are effective. This kind of targeted monitoring has not been undertaken in a coordinated way to date but instead in response to complaints and subsequent incident investigations.

Feedback from WRC staff and plan users indicates that rules such as Rule 6 (aerobically treated sewage) and Rule 7 (on-site sewage onto or into land) are complicated and create uncertainty (internal WRC feedback and GWRC 2006). The Plan Effectiveness Monitoring Report concludes that the lack of specific provisions is ineffective at achieving the policies in the DLP and the requirements of section 15 of the RMA (GWRC 2006).

#### **3.4.2 Regional Freshwater Plan**

Policy 5.2.13 in the Regional Freshwater Plan for the Wellington Region (Freshwater Plan) encourages discharges to land as an alternative to surface water where:

- The provisions of the Regional Plan for Discharges to Land are satisfied, and
- Discharging to land has less adverse environmental effects than discharging to water, and
- There are no significant cultural, environmental, technical, or financial constraints associated with discharging to land

The Plan Effectiveness Monitoring Report of the Freshwater Plan (GWRC 2006) considers Policy 5.2.13 is appropriate and has been effective with respect to discharges of contaminants other than discharges of wastewater.

Policy 5.2.15 in the Freshwater Plan promotes the reduction of the levels of contaminants entering water bodies, including groundwater, from non-point sources. The Plan Effectiveness Monitoring Report (GWRC 2006) states that this is an appropriate policy but it has not been particularly effective. To be more effective, this policy needs to involve more guidance on specific land uses that are causing problems.

### 3.4.3 Regional Air Quality Management Plan

The operative Regional Air Quality Management Plan (Air Plan) controls discharges to air from activities such as industrial and trade premises and processes, rural areas, and agrichemicals.

Landfills can contribute to air quality problems in the Region. The open burning of wastes is undesirable if toxic substances are burned. Incomplete combustion can result in smoke and odour. The discharge of dust and landfill gases is a recognised concern. The Air Plan's overall objective is to protect people's amenity, health and well-being by ensuring discharges into air do not have adverse effects on people and the environment. The Air Plan was developed before the NESAQ, and prior to the development of industry's best practice guidelines for activities such as the use of agrichemicals. For more discussion on operative provisions related to discharges to air, please refer to the report entitled, Section 32 report: Air quality.

## 4. Appropriateness of the objectives

Section 32(1)(a) requires that an evaluation report must "examine the extent to which the objectives of the proposal being evaluated are the most appropriate way to achieve the purpose of the Act".

The appropriateness test applied consists of four standard criteria: relevance, usefulness, reasonableness and achievability. These criteria are summarised as follows:

- *Relevance* – is the objective related to addressing resource management issues? Will it achieve one or more aspects of the purpose and principles of the RMA?
- *Usefulness* – will the objective guide decision-making? Does it meet sound principles for writing objectives?
- *Reasonableness* – what is the extent of the regulatory impact imposed on individuals, businesses or the wider community?
- *Achievability* – can the objective be achieved with tools and resources available, or likely to be available, to the local authority?

There are four key objectives associated with discharges to land in the proposed Plan. These four objectives are proposed Objective O42 (Soil health and erosion), Objective O44 (Land use impacts on soil and water), Objective O46 (Discharges to land) and Objective O49 (Wastewater discharges to land).

A brief explanation of each of these objectives and an assessment of their appropriateness is provided below. Tables 1A to 4A in the Appendix provide a summary evaluation of the appropriateness of each proposed objectives against all four criteria identified above.

#### **4.1 Objective O42**

*Soils are healthy and productive, and accelerated soil erosion is reduced.*

Proposed Objective O42 contributes to the proposed Plan meeting the purpose of the RMA by safeguarding the life-supporting capacity of soil. Soil must remain healthy and productive, and not be eroded away, in order to enable people and communities to provide for their social, economic and cultural wellbeing. Contaminants discharged to land can change soil conditions which can consequently alter or prevent life-supporting ecosystem functions from occurring. This proposed objective is relevant to Issue 3.9 which recognises that discharges have the potential to contaminate soil.

This objective is also relevant to WRC's functions under section 30(1)(c) of the RMA and Policy 69 of the RPS, which seeks to retain healthy and functioning soil ecosystems.

The objective states a clear, long-term aim which is useful and achievable. The proposed objective is useful for decision making, as it acknowledges the value of soil which provides ecosystem services for the environment and underpins the agricultural economy.

Soil quality monitoring undertaken by WRC has indicated that soils are in a moderate to poor state in the region (GWRC 2014). For this reason, this objective is also related to Objective O44 (Land use impacts on soil and water) which is discussed below.

As summarised in Table A1 in the Appendix, proposed Objective O42 is appropriate to achieve the purpose of the RMA and the specific direction given in the RPS.

#### **4.2 Objective O44**

*The adverse effects on soil and water from land use activities are minimised.*

Proposed Objective O44 recognises the integrated management approach of the proposed Plan. It responds directly to section 30(1)(c) of the RMA which requires regional councils to control the use of land for the purpose of soil conservation and the maintenance and enhancement of water quality and ecosystems.

This objective also gives effect to the NPS-FM which requires regional councils to consider the sources of relevant contaminants and to implement methods, including those that regulate land use, to assist the improvement of water quality.



This objective is relevant to the regional issues discussed in Section 2 of this report, including Issue 3.6 (Cleanfills), Issue 3.7 (Landfills), Issue 3.9 (Discharges to land) and Issue 4.3 (Land uses and discharge of contaminants).

The objective seeks a clear response, the minimisation of adverse effects on soil and water from land use activities. As shown in Table A2 in the Appendix, proposed Objective O44 will be achieved over a longer timeframe than the life of the proposed Plan.

Proposed Objective O44 is a broad objective that will be implemented by provisions throughout the proposed Plan, not only the discharges to land discussed in this report.

#### **4.3 Objective O46**

*Discharges to land are managed to reduce the run-off or leaching of contaminants to water.*

Proposed Objective O46 aims to reduce the contamination of water by better managing discharges to land.

The provisions in the proposed Plan seek to implement this objective by managing discharges to land so that soils are healthy and productive, and water quality is maintained or improved. As such, this objective is integrated with the proposed Objectives O42 and O44 discussed above.

As summarised in Table A3 in the Appendix, the objective is relevant because it directly addresses Issue 3.9 (Discharges to land) and the other three regional issues discussed in section 2 of this report.

RMA section 30(1)(f) requires regional councils to control the discharge of contaminants to achieve the sustainable management of natural and physical resources. The NPS-FM requires regional councils to consider and account for the sources of relevant contaminants and to implement methods to assist the improvement of water quality. This objective is relevant to achieving these requirements.

#### **4.4 Objective O49**

*Discharges of wastewater to land are promoted over discharges to fresh water and coastal water.*

Promoting discharges to land is an efficient way of significantly reducing adverse effects on water quality and achieving water quality outcomes. Provided that discharges are appropriately managed, they can also result in the beneficial reuse of nutrients.

This objective is relevant as it recognises the importance of the life-supporting values of water which is central to the purpose of the RMA. It also recognises the importance of water in the culture and traditions of Māori. The means of cleansing water from a Māori perspective requires some form of passage through Papatuanuku (the earth).

Limited land passage of contaminants through land instead of water it is not ideal, but some land passage is believed to be better than water passage, especially as other alternatives may not be affordable to the community. Options for land passage may include irrigation systems, infiltration fields, overland flow systems, rock filters and constructed wetlands. This matter is addressed in Policy 16 of the RPS. The proposed Objective gives effect to this policy.

As summarised in Table A4 of the Appendix, proposed Objective 49 is useful as it deals with the impacts of domestic wastewater discharges to land, or to water, and guides decision-making around matters that can affect people and communities who have a relationship with these resources. The use of 'promote' acknowledges the high financial costs associated with upgrading existing wastewater treatment systems, securing land, and implementing discharges to land.

## **5. Efficiency and effectiveness of the proposed policies, rules and methods**

The discussion which follows relates to the proposed policies, rules and other methods for discharges to land in the proposed Plan.

Section 32(1)(b) requires that the proposed provisions (policies, rules and other methods) to achieve the objectives be examined by:

- Identifying other reasonably practicable options for achieving the objectives, and
- Assessing the efficiency and effectiveness of the provisions in achieving the objectives, and
- Summarising the reasons for deciding on the provisions

Section 32(1)(b)(i) of the RMA requires an evaluation to identify practicable options for achieving the proposed objectives. For this assessment, the proposed provisions have been assessed against the operative provision (the status quo).

Discharges to land provisions are grouped in this report to address the following activities:

- Cleanfills and landfills
- Rural waste:
  - Farm refuse dumps
  - Offal pits
- Manufacture and storage of silage and compost
- Application of compost
- Animal effluent and other fertilisers:
  - Collected animal effluent
  - Use of compost
  - Fertiliser application
- Wastewater treatment systems:
  - Pit latrines

- Composting toilets
- Greywater
- Existing on-site wastewater systems
- New or upgraded on-site wastewater systems
- Community reticulated wastewater systems
- Application of biosolids and treated wastewater
- Drinking water treatment plant waste
- Vertebrate toxic agents
- Hydraulic fracturing.

The cost and benefits, efficiency and effectiveness including the option of acting or not-acting, for each of these groups of discharges are discussed in the sections below and are then summarised in Tables 5A – 9A in the Appendix.

### 5.1 Managing effects on drinking water supplies

The NES-Drinking Water requires WRC to consider the effects of discharges and land use activities on drinking water sources, including for their effects on the suitability and palatability of water for drinking. Section 10 of the NES-Drinking Water directs that permitted activities in regional plans cannot result in community and group drinking water supplies becoming unsafe for human consumption after treatment.

Drinking water is an important issue for the region with feedback from community consultation showing that access to safe water quality is highly valued by the public. If the quality of the source water declines, communities will incur direct costs for treatment or through the installation of more advanced reticulated systems and indirect costs through the loss of water quality.

The proposed provisions relevant to the management of adverse effects on water quality for human drinking water supply purposes are identified in Table 1 and the overall policy approach discussed below.

**Table 1: Proposed provisions relating to managing effects of discharges to land on drinking water supplies**

Objectives	O5: Fresh and coastal water O23: Maintain or improve water quality O44: Land use impacts on soil and water O46: Discharges to land
Policies	P67: Minimising effects of discharges P69: Human drinking-water supplies

Rules	R71: Pit latrines R75: New or upgraded on-site wastewater systems R76: New or upgraded on-site wastewater systems within community drinking water supply protection areas R77: Application of Aa biosolids to land R78: Application of biosolids (Ab, Ba or Bb) to land R79: Discharge of treated wastewater R80: Discharge of treated wastewater R83: Discharge of collected animal effluent to land R84: Discharge of collected animal effluent to water R92: All discharges to land within community drinking water protection areas
Maps	26 Surface water community drinking water supply protection areas 27a Groundwater community drinking water supply protection areas – Wairarapa 27b Groundwater community drinking water supply protection areas – Hutt Valley 27c Groundwater community drinking water supply protection areas – Kāpiti Coast
Schedules	M1 Surface water community drinking water supply abstraction points M2 Groundwater community drinking water supply abstraction points

Without policy setting clear limits on activities within drinking water supply areas, the cumulative effects of decision making by different authorities could have serious consequences for water quality and human health. Policy P69 has been proposed specifically for this purpose in order to manage or avoid potential adverse effects from discharges to land and water on the quality of drinking-water supplies.

The NES-Drinking Water provides direction to councils to manage the effects of activities on ‘group’ and ‘community’ drinking water supplies. ‘Community drinking water supplies’ are defined in the NES-Drinking Water as those that provide for no fewer than 501 people with drinking water, for no less than 60 days per calendar year. Smaller ‘group drinking water supplies’ are those that provide for no fewer than 25 people with drinking water, for no less than 60 days each calendar year. The NES-Drinking Water requires a condition on relevant resource consents for the notification of drinking water suppliers if significant unintended events occur (e.g., spills) that may adversely affect sources of human drinking water.

Through the plan development process a number of detailed scientific and policy investigations were taken by WRC in order to comply with the requirements of the NES-Drinking Water. This included identifying all registered drinking water supplies in the region, verifying their abstraction locations and influence zones and subsequently delineating ‘drinking water supply protection areas’ for both surface water and groundwater supplies.

While detailed technical guidance on defining groundwater protection zones is available (Moreau et al 2014), there is no comparatively detailed information to guide the development of surface water protection zones. However, when the NES-Drinking Water was in development in 2005, a Methodology for Delineating Drinking Water Catchments (PDP and ESR 2005) was prepared for the Ministry for the Environment. Notwithstanding the more recent

guidance developed for groundwater protection zones, the PDP and ESR report still represents the best general literature review and NZ-specific advice available. As such this report provided the basis to the approach taken by the WRC to delineating surface water protection areas (detailed in Thompson 2015). To summarise the approach, it is based on estimating contaminant travel time from source to water supply abstraction point, with a critical travel time of 8 hours at median stream flow. This distance is used to define the upper extent of the protection area, with the lateral extent determined by applying a 100m wide buffer strip.

Following the Moreau et al (2014) guidance, protection areas for groundwater community supply takes in the Wellington Region were identified through modelling undertaken by GNS Science (Toews and Donath 2015). This report delineates groundwater capture zones (the total source area that contributes groundwater to a hydrological feature, such as well, lake, spring or wetland) within the region's three major groundwater areas (Hutt, Kāpiti and Wairarapa). This involved the development of models incorporating contaminant travel time, individual water supply bore pumping rates, and the hydrogeological properties of the aquifer. Contaminant travel time is dependent on the contaminant properties, soil properties, and depth to the saturated zone, and is more contingent on attenuation rather than distance travelled. For example, a contaminant can be totally immobilised within a couple of metres of clay material while the same contaminant could pollute several hundred metres through sand. Groundwater moves relatively slowly and the flow varies depending on factors including soil type, level of saturation and hydraulic gradients.

Taking a precautionary approach (in accordance with Policy P3 of the proposed Plan) in protecting sources of community drinking water is generally more effective and less costly than trying to counteract the impacts of contamination after the occurrence. Uncertainty about how well the mapped zones reflect actual contaminant pathways and channel characteristics (and therefore risk), will always be present, and especially so in the vicinity of minor tributaries. However, the extent of the protection zones should be reviewed and refined over time as knowledge and methodologies improve. An external peer review has confirmed that the approach to identifying zones around the drinking water supplies as protection areas, was appropriate and defensible (Potts 2015).

Guided by the NES-Drinking Water requirements, the proposed Policy P69 provides direction on managing effects on human drinking water supplies. Where appropriate, conditions have been included on rules for specific discharges to land activities including farm refuse dumps, offal pits, biosolids and treated wastewater discharges in order to safeguard against a potential risk for drinking water contamination. A default protection zone as an 'alert' or 'filtering' mechanism has been identified. This can be seen in proposed Rules R71-R73 and Rule R89, which include a provision that restricts otherwise permitted activities to occur within a community drinking water supply protection area as identified in Maps 26-27. These maps identify the location of the abstraction point for the community drinking water supply and the extent of the protection area. All abstraction points for surface water and groundwater

community drinking water supply protection areas in the Wellington Region are identified in Schedules M1 and M2 of the proposed Plan.

Depending on the type of discharge, activities that are not permitted within community drinking water supply protection areas become controlled, restricted discretionary or discretionary activities and resource consent would be required (see Table 1 above). Policy P69 then guides any such applications to ensure that the potential adverse effects on the quality of drinking water supplies are avoided to the extent practicable and managed appropriately where avoidance is not possible.

Policy P69 enables people to undertake activities involving discharges of contaminants to land while providing the necessary level of protection needed for human health. Policy P69 sets out matters to be considered in applications for discharges of contaminants that would enter ground or surface water upstream or within a group or community water supply protection areas, so that adverse effects on water quality can be avoided or managed where avoidance is not practicable. Proposed Policy P69 is followed by a note explaining that sections 7 and 8 of the NES-Drinking Water limit the ability of a regional council to grant consent to activities within community supply protection areas.

A discussion on the provisions in the proposed Plan that further implement the requirements of the NES-Drinking Water in regard to discharges directly to water, is contained in the report, Section 32 report: Discharges to water.

The proposed provisions relating to managing the effects on drinking water supplies from activities that discharge contaminants to land discussed above and further discussed in relation to specific discharge activities in sections 5.3, 5.5 and 5.6 below are an efficient and effective option to implement the objectives of the proposed Plan and to give effect to the requirements of the NES-Drinking Water.

## **5.2 Cleanfills and landfills**

The surplus materials and waste generated by a community are disposed of in landfills and cleanfills in a managed and controlled manner. Community cleanfills and landfills reduce the adverse environmental effects of uncontrolled dumping on soil and water quality. A common factor of the management of cleanfills and landfills is the need to ensure that the permanent disposal sites avoid contaminating groundwater and surface water resources.

Table 2 lists the proposed Plan objectives and the policies, rules and other methods in the proposed Plan to achieve these objectives related to the management of discharges to land from cleanfills and landfills.

**Table 2: Proposed Plan provisions related to cleanfills and landfills**

Objectives	O42: Soil health and erosion O43: Contaminated land O44: Land use impacts on soil and water O46: Discharges to land
Policies	P4: Minimising adverse effects P67: Minimising effects of discharges P69: Human drinking-water supplies P89: Discharges from contaminated land P90: Discharges of hazardous substances P91: Landfills P95: Discharges to land
Rules	R70: Cleanfill material R92: All discharges to land within community drinking water protection areas R93: All other discharges to land
Other methods	M1: Regional Plan implementation and integration M16: Contaminated land M17: Reduce waste and use water and energy efficiently

### 5.2.1 Cleanfills

Cleanfills comprise clean, non-polluting or inert waste, free from any contamination. Materials such as clay, soil, rock, concrete and brick that are free of combustible or putrescible components, hazardous substances and materials likely to create hazardous leachate, are acceptable cleanfill materials. These materials will not result in leachate that has the potential to pollute waterways, or produce landfill gas or offensive or objectionable odour.

As discussed in section 3.3.1 of this report, the direction in the operative DLP in respect of cleanfills is not explicit. There are no specific objectives, issues, policies or other methods for the management of cleanfill materials, or provisions to manage or limit the quantity of material which can be accepted at cleanfill sites. The placement of cleanfill materials into or onto land is a permitted activity (Rule 1) subject to conditions governing the disposal of stormwater from the site, and requiring that contaminants must not enter any water body. Where cleanfill activities do not meet the permitted activity in the operative plan, the activity requires resource consent as a discretionary activity. Under the operative Air Plan consent is needed for the discharge of dust from cleanfills that are on any industrial or trade premises.

There are currently 32 consented cleanfills in the region. WRC does not have a record of the number of cleanfills operating under the permitted activity rule, nor the current volume of the cleanfills. Under the existing permitted activity regime there is no requirement for records on location, volume or materials deposited.

There have been recorded instances (see the WRC incident database) of inappropriate dumping of non-cleanfill waste at cleanfill sites under the DLP, which in some cases, has led to the discharge of sediments and other

contaminants entering waterways. These instances bring costs to the environment as well as to social and cultural health and well-being. The lack of transparency and clear definition of cleanfill in the operative rules has acted as a barrier to compliance for both cleanfill operators and users of cleanfill facilities, increasing the risk of contaminants leaching into groundwater and surface waterways.

The WRC and the wider public acknowledge cleanfills as an important facility and resource for waste management in the region. However, the above incidents are examples why continuing the status quo is not the preferred option. The cost of remedying contaminated land far outweighs the immediate benefits of discharging any substance.

The proposed Plan contains a policy that provides direction for consented cleanfills (Policy P95) and a permitted rule (Rule R70) specific to cleanfills.

Proposed Policy P95 states that the discharge of contaminants to land shall be managed by:

- (a) ensuring the discharge does not result in any more than minor adverse effects to soil health, and
- (b) ensuring the discharge does not create contaminated land, and
- (c) not exceeding the natural capacity of the soil to treat, use or remove the contaminant, and
- (d) not exceeding the available capacity of the soil to absorb and infiltrate the discharge, and
- (e) minimising effects on public health and amenity, and
- (f) minimising adverse effects on surface and groundwater quality.

In addition to proposed Policy P95, other relevant policies include proposed Policy P4 (Minimising adverse effects) and Policy P67 (Minimising effects of discharges).

Proposed Rule R70 was developed so the discharge to land of cleanfill material can continue as a permitted activity under appropriate conditions. In order to meet the requirements of this rule, the material to be placed within the site must be inert and meet the acceptable materials criteria outlined in Table 4.1 of A Guide to the Management of Cleanfills (MfE 2002) (the cleanfill guidelines). The definition of acceptable cleanfill material in the proposed Plan is consistent with the cleanfill guidelines.

The location of cleanfill sites on steep or erosion prone land can adversely affect soil quality or induce or exacerbate soil erosion. Accelerated erosion can deposit sediments in water bodies resulting in adverse effects on aquatic ecosystems and in-stream values. Therefore conditions (a) and (b) of proposed Rule R70 restrict the location of cleanfill sites with respect to surface water bodies, water supply bores and seek to avoid the site being undermined or



eroded by natural processes or inundated from flooding. Condition (d) requires that the discharged material must be above the water table also in order to protect water quality.

Condition (e) of proposed Rule R70 requires that the cleanfill material is managed in accordance with Sections 5-8 of the cleanfill guidelines, which provides for the design, location and operation of cleanfills.

Condition (f) of proposed Rule R70 limits the maximum volume for cleanfill materials which may be deposited at any single property to 100m<sup>3</sup>. A cleanfill of greater volume requires resource consent. This volume is consistent with permitted volumes in city and district plans of the region, addressing cross-boundary matters by aligning regulatory requirements as much as possible, in accordance with proposed Policy P2.

Proposed Rule R70 condition (g) requires the volume and origin of the cleanfill material to be recorded, along with the location of the cleanfill site, with this information being provided to WRC upon request. Condition (h) requires stabilisation of the cleanfill material to ensure there is no ongoing sediment laden discharges or discharges of dust from the site.

Table A5 in the Appendix summarises the costs associated with meeting the permitted conditions and costs associated with securing a resource consent if someone cannot comply with the permitted activity standards. Benefits of the proposed approach include the achievement of sustainable land management and greater clarity to the resource user. Proposed Rule R70 will assist in achieving the proposed objectives, and giving effect to the RMA and the RPS. The risks of not acting (maintaining the status quo) have been shown to be unacceptable. The proposed provisions to manage cleanfills are the preferred option for the Wellington Region.

## 5.2.2 Landfills

Landfills are disposal sites for a variety of waste materials. Landfills differ from cleanfills as the nature of the materials disposed in landfills have the potential to result in the discharge of contaminants onto or into land that may be hazardous, and/or result in that contaminant entering water. These potential adverse effects are the reason landfills are not a permitted activity and require resource consent.

In the operative DLP, Rule 10 makes landfills a discretionary activity. Applications for resource consents for activities covered by this rule are assessed against Policies 4.2.8-4.2.10, 4.2.32-4.2.34, for the management of adverse effects of non-recyclable solid contaminant discharges and hazardous discharges to landfills. Matters to be considered for all applications are in section 5.3 of the DLP.

Discharges from landfills can have a significant adverse effect on the surrounding environment if not managed properly. For example, leachate from the breakdown of material in landfills can lead to the possible contamination of groundwater and surface water, which can be harmful to life-supporting capacity and restrict other uses and values of water. Operating landfills now

include leachate collection systems to intercept landfill leachate which forms when rainfall percolates down through the landfill and collects contaminants as it travels through. Collected leachate is treated at wastewater treatment plants prior to discharge.

Global and national efforts encouraging waste reduction, reuse and recycling have resulted in the exploration of by-product value from landfills. The NESAQ (regulations 25-27) requires large New Zealand landfills to collect landfill gases (methane and carbon dioxide) produced by the landfill. Collected gases can be used for generating electricity or burnt in a flare. The NESAQ has imposed costs on some landfills by requiring improvements to infrastructure. Of the three Wellington landfills with gas collection systems, the Wellington City Council owned Southern Landfill uses the collected gas for its own energy.

Odours are produced by the breakdown of various materials in a landfill. Odour becoming offensive and objectionable beyond the boundary of the landfill site can be an environmental concern and is restricted under section 15 of the RMA. Odours and gas discharges associated with landfill are assessed in more detail in the report entitled, Section 32 report: Air quality.

In addition to the need to manage existing and new landfill facilities in order to minimise their adverse effects on the environment, the environmental legacy of closed and decommissioned landfill sites must also be managed. This is discussed in the report entitled, Section 32 Report: Contaminated land and hazardous substances. It is believed that there are over 100 closed landfill sites in the Wellington Region. In some cases, the difficulty in managing environmental problems experienced following the closure of a landfill provide examples of the benefits of careful and considerate siting and design in the first instance. Other associated problems with older landfills can include:

- Poor surface water quality from sediment runoff
- Risks from land instability
- Illegal dumping of hazardous waste.

The proposed Plan provides a strengthened and more integrated approach to the management of new and existing landfills than the operative plans through proposed Objective O46 (Discharge to land), Policy P89 (Discharges from contaminated land), Policy P90 (Discharges of hazardous substances), Policy P91 (Landfills) and Rule R93 (Other discharges to land).

Proposed Policy P91 addresses the matters discussed above and will assist in implementing the proposed Objectives O42, O44 and O46. The proposed provisions provide an integrated approach to the management of disposal sites, and are useful in ensuring that the well-being, health, safety and values of people and communities are provided for. The policies are efficient through provided greater clarity and certainty and are a proactive way of avoiding adverse effects, and reducing the potential costs associated with ineffective discharge practices. Benefits in properly managing waste will outweigh the costs to the environment or costs in the management, as this can include

product stewardship and recycling, both of which use products more efficiently.

The methods: M1 (Regional Plan implementation and integration), M16 (Contaminated land) and M17 (Reduce waste and use water and energy efficiently) will all support WRC's aim to achieve a better approach toward waste minimisation in this region. The proposed provisions for the management of discharges of contaminants from landfills to land are the most appropriate to address the issues and achieve the proposed objectives.

### 5.3 Rural waste

Agriculture plays a role in the economic and social well-being in the Wellington Region, primarily in the Wairarapa but also in the rest of the region. Farming practices produce a variety of waste streams from construction waste (timber and metal) and hazardous wastes (agricultural chemicals and paints), to household organic food scrap waste and dead animals. It is important to ensure that waste management options are available to enable rural landowners not only to minimise their waste, but also to divert or dispose of it in a sustainable manner.

Farm refuse dumps, offal pits, compost and the application of animal effluent to land are some of the methods used to dispose of rural waste. Similar to other regional councils, WRC has categorised the different types of waste disposal in the proposed Plan to enable proper management of waste and avoid uncontrolled disposal which has the potential to result in adverse environmental effects on soil and water quality. A common thread between the different types of waste is the need to ensure that the location and design of permanent disposal sites avoid contaminating groundwater and surface water resources.

In the operative DLP, Rule 9 (Domestic and farm waste disposal and composting), and Rule 11 (Offal pits and silage), manage discharges specific to rural activities. These permitted activity rules were considered appropriate as the environmental effects were considered to be *de minimis*. No compliance regime is in place to monitor the effectiveness and efficiency of these discharges to land rules specifically (other than state of the environment monitoring).

A single rural property may have multiple disposal sites (a farm refuse dump, offal pit, silage storage, and the domestic wastewater treatment system) that collectively may have more than minor effects on soil and water quality. The effects of cumulative contamination can be exacerbated by poor land use practices, excessive use of fertilisers and agricultural chemicals to land, grazing of river and stream margins, direct entry of stock to water, inappropriate land use on erosion prone land and the loss or modification of riparian vegetation along the banks of waterways. The cumulative effects of these discharges can impact water quality including at a catchment scale.

In respect of cumulative discharges to land and water, non-regulatory methods such as advice and information (Method M1) and sustainable land management practices (Method M12), are considered advantageous and appropriate. These

programmes are successful in terms of public acceptance, the adoption of sustainable land management practices and the achievement of desired environmental outcomes.

Farm dumps and offal pits provide rural landowners with immediate and cheap way to dispose of farm waste. However, discharges from inappropriately managed farm refuse dumps or offal pits can contaminate soil and water sources, becoming a cost to the environment, to the property owner and the community. Removal or remediation of farm dumps or offal pits found to be in breach of permitted activity conditions can be costly to landowners.

Table 3 shows how Objectives O44 and O46 will be implemented through the proposed policies, rules and other methods for rural waste.

**Table 3: Primary provisions related to rural waste**

Objectives	O44: Land use impacts on soil and water O46: Discharges to land
Policies	P62: Promoting discharges to land P67: Minimising effects of discharges P69: Human drinking-water supplies P95: Discharges to land to land P96: Managing land use
Rules	R89: Farm refuse dumps R91: Offal pit R93: All other discharges to land
Other methods	M1: Regional Plan implementation and integration M12: Sustainable land management practices

### 5.3.1 Farm refuse dumps

The discharge of contaminants from farm dumps to land falls under section 15 of the RMA, which either has to be expressly allowed by a regional plan, a NES, or by a resource consent. Matthews (2014) found that the average volume of waste disposed in farm dumps in the Waikato and Bay of Plenty regions was 37 tonnes per rural property per year. The volume of waste ending up in farm dumps in the Wellington Region is not known, however using this finding, WRC estimates that 65,453 tonnes of rural waste is disposed annually in our region on rural properties.

The environmental impact of farm refuse dumps is not generally well understood. Farm dumps can contain material contaminated with petroleum products and pesticides which may be especially persistent (long-lived) and highly mobile when they reach ground or surface water. Waste in farm refuse dumps is sometimes burned to reduce volume and to extend the lifespan of the dump site. Burning waste can concentrate contaminants in ashes and mobilise contaminants as vapours and particulates, potentially leading to more harmful exposure pathways. Contaminated ash can pose a risk to human health and the environment whether it remains in the soil onsite, or is blown or washed beyond property boundaries.

Many rural properties are still not well served by a domestic refuse collection system, or are located a reasonable distance from a refuse collection or transfer station. However, WRC and the community are becoming increasingly aware of the potential and actual environmental effects associated with the practice. WRC incident reporting shows that inappropriate contents and location of farm refuse dumps has led to environmental contamination in a number of cases.

Continuing the operative DLP's assumption that a farm refuse dump's discharge is minimal is not an option for the proposed Plan if the purpose of the RMA is to be met over the long term. The operative rules have led to confusion as they have proved difficult for land owners and others managing contaminated land to understand the specific requirements. Ensuring that farm dumps do not contain materials which can contaminate water and are appropriately sited from the start is more effective and less costly than trying to remediate the impacts of contamination through enforcement.

Objectives in the proposed Plan which relate to farm refuse dumps are: Objective O44 (the adverse effects on soil and water from land use activities are minimised), and Objective O46 (Discharges to land are managed to reduce the run-off or leaching of contaminants to water). While there is no specific policy for farm refuse dumps in the proposed Plan, Policies P96 (Managing land use), P62 (Promoting discharges to land), P67 (Minimising effects of discharges), and P69 (Human drinking-water supplies), provide an appropriate policy framework.

Under the proposed Plan, farm refuse dumps remain a permitted activity (proposed Rule R89) as they are in the operative DLP. Conditions on this rule are comprehensive to better address the potential for adverse effects from the inappropriate placement and management of farm refuse dumps. In particular, to be permitted activities farm dumps must not be located within areas prone to flooding or ponding, or within a community drink water supply protection area. They cannot be burned, and there shall be no offensive or objectionable odour beyond the property boundary.

Proposed Rule R89 contains condition (b) limiting the size of the farm dump to 50m<sup>3</sup>, and condition (c) which allows farm refuse dumps on properties greater than 20ha. 20ha is the minimum property size associated with an economically viable farming operation, and is intended to prevent farm dumps on smaller lifestyle blocks. The proposed rule also encourages rural residential property owners who are in close proximity (within 20km) of transfer sites to bring their farm refuse to be recycled instead of using farm dumps. Other thresholds include (f) limits on the contents of the refuse dump in that it must not contain hazardous substances or agricultural containers. The nature of potential contaminants in farm dumps being persistent and highly mobile provides the rationale for a 50 metre setback from surface water bodies and the coastal marine area (condition (d)). Fifty metres is regarded as a sufficient distance to cover most situations and avoid more than minor effects, and is consistent with the standard setback distance accepted by other regional councils (Taranaki Regional Council and Southland Regional Council).

Method M17 directs WRC to undertake an investigation to understand the scope and impacts of rural waste disposal within the Wellington Region. Methods M1 (Regional Plan implementation and integration) and M17 (Reduce waste and use water and energy efficiently) will facilitate the transition to the new permitted activity rule, through education, information and guidance on suitable farm refuse dump placement and management.

The proposed policies and rules appropriately recognise the benefits of farm dumps to rural land owners as well seeking to manage the potential adverse effects on the environment, water quality and human health.

### 5.3.2 Offal pits

The disposal of dead animals is a standard part of agricultural practice. Typically this disposal is to covered pits, known as offal pits, where the carcasses decompose. The discharge to land of contaminants from offal pits is a permitted activity under the operative DLP.

Offal pits have often been historically located in close proximity to waterways or groundwater and can leach contaminants which adversely affect the water quality. If placed in a sensitive area, the decomposition process can result in contaminants, including nitrogen, microorganisms and compounds that affect the odour, taste and colour of water, entering groundwater or surface water. Locating offal pits close to property boundaries and poor management practices can create odour nuisance and human health effects.

In the proposed plan, Objectives O44 (Adverse effects on soil and water from land use activities are minimised) and O46 (Discharges to land are managed to reduce the run-off or leaching of contaminants to water) provide direction on the management of discharges to land from offal pits. These will be achieved through the proposed Policies P96 (Managing land use), P67 (Minimising effects of discharges), P69 (Human drinking-water supplies) and P95 (Discharges to land) as well as a specific permitted activity rule for offal pits (Rule R91).

Proposed Rule R91 has a number of conditions to manage the potential adverse effects of offal pits many of which replicate the conditions in the farm refuse dump rule discussed above (Rule R89). These more detailed conditions provide greater clarity and certainty than the operative plan. Rule R91 and Method M1, are useful as they provide protocols and guidance for offal pits (and farm dumps) through such means as user-guides. This helps to achieve the proposed Plan objectives in allowing for the use of offal pits on rural properties where the effects on the environment can be avoided, remedied or mitigated. Farm refuse dumps and offal pits that cannot meet the permitted activity conditions of Rule R91 require consent under the proposed discretionary activity Rule R93.

Rule R91 presents a low cost for the user and low regulatory burden for the Council. The proposed provisions are appropriate in providing clarity for the user, and will be effective in achieving the objectives of the proposed Plan. The provisions are effective, as any adverse effects on the environment are quite easily managed within appropriate parameters. The proposed provisions for the

management of discharges to land from offal pits are the most appropriate to address the identified issues and achieve the proposed Plan objectives.

#### 5.4 Manufacture and storage of silage and compost

The policies, rules and methods which will achieve the objectives related to discharges to land from the manufacture and storage of silage and compost, are shown in Table 4 and are further discussed below.

**Table 4: Proposed provisions related to the manufacture and storage of silage and compost**

Objectives	O44: Land use impacts on soil and water O46: Discharges to land
Policies	P67: Minimising effects of discharges P95: Discharges to land P96: Managing land use
Rules	R90: Manufacture and storage of silage and compost
Other methods	M1: Regional Plan implementation and integration M12: Sustainable land management practices M17: Reduce waste and use water and energy efficiently

Silage and compost play a key role in nutrient management on farms. Silage is a valuable nutrient source for ruminants and compost as a fertiliser and soil conditioner. The production of silage and compost involve the decomposition, compacting and fermentation of vegetative material. Silage leachate can be a significant source of nutrients and is very acidic (Environment Canterbury 2009). If it reaches water, silage leachate can prove lethal to fish and other aquatic life or cause algal blooms.

Discharges from the manufacture and storage of silage and compost are guided by the proposed Objectives O44 and O46 which relate to the adverse effects on soil and water from discharges to land. Through setting conditions such as the siting and construction (including lining) of a silage storage facility, silage leachate can be contained and consequently the effects of the activity can be appropriately managed as a permitted activity under proposed Rule R90. Where permitted activity conditions cannot be met, resource consent would be required as a discretionary activity.

An alternative approach considered by the WRC was to require the discharge of contaminants from compost and silage storage areas to obtain resource consent. A consented approach would be effective at ensuring the appropriate level of environmental protection is in place but it would not be efficient as it would impose costs through a consent application which are not necessary. The proposed permitted activity conditions of Rule R90 provide for appropriate management of adverse effects. Further, it is anticipated that most compost and silage pits will comply with the proposed permitted activity rule conditions now required. The suite of provisions provided in the proposed Plan is appropriate and effective at managing potential adverse effects on water quality from the manufacture and storage of compost and silage.

The proposed Plan also contains other methods applicable to the management and storage of compost, including proposed Methods M1 (Regional Plan implementation and integration) and Method M12 (Sustainable land management practices). Information fact sheets will assist users to carry-out these activities effectively, and good management practices will be continuously encouraged by the WRC. Further, proposed Method M17 (Reduce waste and use water and energy efficiently) will assist the community to adopt sustainable practices such as the use of compost. The production and management of compost is a sustainable practice that reduces, reuses and recycles organic matter that could otherwise be seen as a waste product.

The use of a permitted rule such as Rule R90 with clear and reasonable conditions is an effective and efficient way to manage silage and compost so that potential and actual adverse effects are minimised and sustainable land use practices are encouraged.

## **5.5 Collected animal effluent and other fertilisers**

### **5.5.1 Collected animal effluent**

Effluent from animals is collected in the dairy shed, on feed pads and underpasses, and from piggeries, stockyards and stock trucks. On a dairy farm, collected effluent typically represents only about 10% of the animal waste produced (Houlbrooke et al. 2004). The other 90% is deposited directly onto the paddock as dung and urine.

Collected effluent is increasingly regarded as a resource rather than a waste product. When irrigated to pasture, collected effluent can provide nutrients, trace elements, organic matter and water. However, if collected effluent is allowed to seep untreated into groundwater or enter surface water through overland flow or via tile and mole drains, then it is not only wasted but is also an environmental contaminant. Contaminants associated with collected effluent are the nitrogen, phosphorus and pathogens, including bacteria and viruses harmful to animal and human health.

The main factor that determines whether collected effluent is a resource or a wasteful contaminant is if the collection system has adequate storage capacity so irrigation of effluent can be delayed while soils are saturated. Without adequate storage, collected effluent goes to a sump where it must be discharged on a daily basis regardless of the infiltration capacity of the soil and with no contingency for equipment malfunction.

Since 2004 all resource consents for the discharge of collected effluent in the Wellington Region have been to land (not to water). Discharge of collected effluent to land is a Controlled activity under Rule 13 in the operative DLP. If an applicant were to discharge to water it would need consent as a Discretionary Activity. There are currently no resource consents for the discharge of animal effluent direct to water in the Wellington Region.

The operative Rule 13 requires no contaminants from collected effluent to enter water from leaking storage, nor application to waterlogged soils. Until recently WRC has not required storage ponds to be lined, or to be of sufficient



volume to avoid irrigation during prolonged periods of wet weather. Determining the appropriate volume requires information on soil type, slope, infiltration rates and climatic conditions which has not been available.

WRC has supported the development of the Dairy Effluent Storage Calculator (commonly referred to as the pond calculator) in conjunction with Massey University, DairyNZ, and other regional councils. The pond calculator is a tool to assist farmers in determining their effluent storage requirements. The Institution of Professional Engineers has a revised Practice Note on the design and construction of ponds (IPENZ 2013), and DairyNZ offers guidance documents (2013a, 2013b) and an accreditation programme for companies to design and build dairy effluent ponds.

Following the development of the pond calculator WRC contacted all consent holders in November 2012 strongly encouraging them to undertake a farm dairy effluent storage assessment and to implement any recommended changes to ensure that they could satisfactorily meet the standards and terms on their consent (Thawley 2012). In addition, WRC published a two-page question and answer brochure for dairy effluent consent holders (GWRC 2012a) and a guide on how dairy effluent storage assessments will be rolled out in the Wellington Region (GWRC 2012b), both of which are available on the WRC website.

The relationships between the Policy P94 and the relevant objectives are shown in Table 5, as are the relationships with the proposed rules and methods intended to implement the policy.

**Table 5: Proposed provisions related to collected animal effluent**

Objectives	O42: Soil health and erosion O44: Land use impacts on soil and water O46: Discharges to land
Policies	P65: Minimising effects of nutrient discharges P94: Discharge of collected animal effluent
Rules	R83: Discharge of collected animal effluent onto or into land R84: Discharge of collected animal effluent to water R93 All other discharges to land
Other methods	M12: Sustainable land management practices M17: Reduce waste and use water and energy efficiently

Proposed Policy P94 is specific to the discharge of collected animal effluent. It clarifies the matters to be considered when assessing an application for the discharge of collected animal effluent. Policy P65 (minimising effects of nutrient discharges) is also relevant and provides guidance on the use of good management practices.

Rule R83 (discharge of collected animal effluent) manages discharges to land as a controlled activity. Discharges that cannot meet the matters of control are discretionary under Rule R93 (all other discharges to land). Rule R84 manages the discharge of collected animal effluent to water as a non-complying activity.

Proposed Rule R83 specifically addresses the need to store, treat and dispose of collected animal effluent using a system that is appropriately designed, constructed and maintained. Now that the pond calculator is available for our region and an accreditation programme for effluent system design and build is in place, the rule has been clarified to ensure that the storage facilities are adequately sealed and the capacity of the storage is sufficient to provide for deferred or deficit irrigation. In addition, the proposed rule is in accordance with the NES-Drinking Water as it considers the effects on community drinking water supply protection areas.

The proposed rule is for a controlled activity, which is consistent with the operative rule. Conditions and matters of control ensure that a precautionary approach is used to minimise the risk of potential runoff and preferential flow of contaminants to water, and to minimise risks to adjacent properties.

Most of the comments and feedback received on the draft Natural Resource Plan provisions were supportive of the approach to managing collected animal effluent. One request was received to make the discharge of collected animal effluent to land a permitted activity, with conditions rather than a controlled activity. The request also sought to manage the discharge of collected animal effluent to water as a discretionary activity rather than a non-complying activity. The use of the pond calculator and design of appropriate storage facilities requires specialist knowledge, experience and qualifications. This reflects the complexity of matching farm specific operations and soil and landscape risk to application rate, depth, timing and loading. Although section 87A(1) of the RMA allows detailed plans, such as results of the pond calculator and engineering designs, to be required as a condition of a permitted activity, the WRC cannot reserve discretion to approve the detail within such plans under a permitted activity rule. Therefore it is not efficient or effective to incorporate such detailed conditions into a permitted rule.

Proposed Rule R84 makes discharging collected effluent directly to water a non-complying activity, which is a change from the discretionary status in the operative plan.

As mentioned, there are no consented discharges of animal effluent to water in the Wellington Region. At a meeting of key stakeholders in July 2012 there was general agreement that discharges to water should be non-complying. In addition, the discharge of collected effluent directly to water is not considered good practice by any New Zealand industry, and some industry representatives have suggested this activity should be prohibited. It is also recognised as one of the largest losses of nitrogen and phosphorus from dairy farms and therefore an area of nutrient loss to target (Longhurst et al. 2013).

It is important to acknowledge that WRC's implementation guideline for use of the pond calculator requires a minimum storage capacity so that all effluent can be stored to enable deferred irrigation in nine out of every 10-year period with respect to expected rainfall and relative soil moisture conditions (Thawley 2012). This implies that consent for a controlled activity will be granted for systems that will, on occasion not be sufficient to provide for deferred or deficit irrigation. On these occasions, animal effluent may discharge indirectly

to water through surface run-off or preferred flow paths to groundwater whilst still complying with the conditions of consent.

This report also acknowledges that in areas of extreme high rainfall, such as parts of the South Island's west coast, it may be impractical to build a pond sufficiently large enough to allow for deferred irrigation (Laurenson et al. 2012). This is not, however, an issue for the Wellington Region.

The cost of installing a lined storage system can be as low as \$20,000 and upwards of \$100,000. Although this is a significant investment, the appropriate irrigation of collected animal effluent returns nutrients to the land and eventually pays for the investment. Dairy and piggery effluent produced in New Zealand has been previously estimated to have a comparative fertiliser value of \$21 million per annum (Bolan 2001). This recovered waste product can be useful fertiliser for pasture production as well as arable cropping (Wallace and Johnson 2010).

Collected animal effluent is a valuable resource and if managed well the benefits to the environment and the farming operation can outweigh the costs of system management. Using the pond calculator as part of a controlled rule is an effective and efficient means of addressing the potential environmental effects of discharging animal effluent.

#### 5.5.2 Use of compost

The use of compost as a fertiliser and soil conditioner is managed separately in the proposed Plan from the manufacturing or stockpiling of compost, which is discussed in section 5.3 'Management and storage of silage and compost' above. Compost is applied to agricultural and garden soils to provide nutrients and to increase the organic matter levels to improve soil structure, fertility, and the water-holding capacity of the soils. Concerns about the use of compost are generally in relation to the application rate of nitrogen in the compost, contaminants that may be present, and associated odours.

Leaching or surface run-off of nitrogen can result where compost is applied at rates above the ability of plant growth to uptake the nitrogen. The other contaminants of most concern for agricultural compost are animal carcasses or human waste due to the pathogen load that could result from the compost not being fully matured or pasteurised. To avoid risk to humans, livestock and the environment, the proposed Plan defines compost as not containing human sewage, dead animals or animal parts.

In the Operative DLP, Policy 4.1.6 (Agricultural contaminants) and Policy 4.2.4 (Reducing the amount of residual solid waste discharged to land) are most relevant to the use of compost as a fertiliser and soil conditioner, although these policies are more directed at the manufacture rather than the use of compost. The explanation to Rule 13 in the DLP (agricultural effluent) specifically states that composted effluent is not regulated by Rule 13.

The proposed Plan relies on Policy P95 (Discharges to land) to manage the use of compost and Rules R85 (application of compost to land) and R86

(application of compost to land). In addition, Policy P65 (minimising effects of nutrient discharges) is relevant to the provisions managing the use of compost.

The relationships between Policy P95 and the proposed Plan objectives are shown in Table 6 below, as are the relationships with the proposed rules and methods intended to implement the policy.

**Table 6: Proposed provisions related to the use of compost**

Objectives	O44: Land use impacts on soil and water O46: Discharges to land
Policies	P65 Minimising effects of nutrient discharges P95: Discharges to land P96: Managing land use
Rules	R85: Application of compost to land R86: Application of compost to land
Other methods	M12 Sustainable land management practices M17: Reduce waste and use water and energy efficiently

In the proposed Plan, Rule R85 permits the application of compost onto or into land and the associated discharge of odour, subject to four conditions. The conditions require the use of a setback from surface water bodies, bores and the coastal marine area; that the compost is not applied to water-logged or flooded land; that the nitrogen loading on the site is less than 150kgN/ha/yr; and that the associated odour is not offensive or objectionable beyond the boundary. These conditions are similar to those discussed above in relation to farm dumps and offal pits, and have the same underpinning rationale: to prevent contaminants reaching water.

The first two conditions (set back distances from water bodies and water supply bores, and the requirement to ensure there is no ponding) are a precautionary approach to reduce the risk of the potential discharge of contaminants to water through surface runoff and preferential flow. Preferential flow typically takes place down large continuous cracks or a series of intermittent and somewhat connected soil cracks or channels with large pore space. The condition restricting the application rate of nitrogen is also a precautionary condition to ensure that compost is applied as a fertiliser or soil conditioner under this rule and is not stockpiled. The stockpiling and manufacturing of compost is regulated under Rule R90.

Method M12, Sustainable land management practices, is designed to offer advice, guidance, and assistance for the development of farm environment plans including nutrient management. This method helps implement Policy P65 which provides guidance on minimising the effects of nutrient discharges.

Method M17 is also relevant as it will assist the community to adopt sustainable practices such as the use of compost.

The proposed provisions, including the definition of compost, will more effectively communicate to resource users the requirements and conditions

relating to the use of compost. The use of a permitted rule with clear and reasonable conditions is an effective and efficient way to manage the discharge of compost so that potential and actual adverse effects are minimised.

### 5.5.3 Fertiliser application

The use of fertiliser is necessary for many agricultural operations. If incorrectly applied, fertiliser can enter surface water bodies through direct application, wind drift, or run off. Some fertilisers can leach to groundwater through soils or mole and tile drains if they are applied at the incorrect rate, or wrong time of year. Fertiliser use that results in nitrogen and phosphorus entering surface water bodies can cause excessive aquatic plant growth, resulting in significant adverse effects on water quality, aquatic ecosystems, recreation and other values.

The Fertiliser Association of New Zealand maintains a Code of Practice for fertiliser use (Fertiliser Association 2013). The code considers fertiliser use within the broader context of nutrient management, and aims to ensure that fertilisers are used safely, responsibly and effectively, while avoiding or mitigating adverse environmental effects.

The proposed Plan manages fertiliser use to ensure it does not have effects beyond the property boundary and on surface water bodies. The fertiliser rules in the proposed plan are not designed to manage the use of fertilisers on a region-wide basis within the broader context of nutrient management. Nutrient management will be managed on a catchment-scale basis through the whitua committee process, which will be implemented through whitua specific plan changes in the future.

The operative DLP (Rule 12) manages the discharge of fertilisers as a permitted activity with only one condition: that the discharge does not cause noxious or objectionable effects on water.

The proposed Plan relies on Policy P95 (Discharges to land) to manage the use of fertiliser and Rule R82 (application of fertiliser to land from ground-based or aerial applications).

The proposed Plan also contains a definition of fertiliser, which clarifies that it does not include compost. Compost is defined and managed separately as discussed in the section 5.3.

The relationships between Policy P95 and the proposed Plan objectives are shown in Table 7 below, as are the relationships with the proposed rules and methods intended to implement the policy.

**Table 7: Proposed provisions related to rural waste**

Objectives	O42: Soil health and erosion O44: Land use impacts on soil and water O46: Discharges to land
Policies	P65 Minimising effects of nutrient discharges P95: Discharges to land P96: Managing land use
Rules	R82: Application of fertiliser from ground-based or aerial applications R93: All other discharges to land
Other methods	Method M12: Sustainable land management practices

Rule R82 in the proposed Plan is a permitted activity for the application of fertilisers to land from ground-based or aerial applications. Conditions on the rule include that the discharge is not to a surface water body, or beyond the property boundary, including as a result of wind drift. Odour from the discharge shall not be offensive or objectionable beyond the property boundary, and the details of aerial applications are to be recorded and made available to WRC on request. Applications of fertiliser that cannot meet the permitted activity conditions require consent as a discretionary activity.

Method M12, Sustainable land management practices, is designed to offer advice, guidance, and assistance for the development of farm environment plans including nutrient management. This method helps implement Policy P65 which provides guidance on minimising the effects of nutrient discharges.

It is anticipated that the whitua committees will focus, in part, on identifying which catchments in the region are over allocated in respect of nutrient inputs to surface water bodies and groundwater (see the reports, Section 32 Report: Water quality and Section 32 Report: Ki uta ki tai. This may change the policy and rule framework in future in these priority catchments.

## 5.6 Wastewater treatment systems

The general composition of raw onsite domestic or municipal wastewater can include microorganisms, biodegradable organic matter, detergents, pesticides, fat, oil, grease, colouring, solvents, phenols, nutrients, metals, inorganic matter and acids. Some constituents in wastewater are not the direct target of wastewater treatment systems but contribute to the toxicity of the wastewater, either in relation to the biological processes or to the receiving environment. Many of the components can cause adverse effects on the environment. Therefore, discharging treated or untreated wastewater into any environment is addressed by s15(1) of the RMA and needs to be either authorised by a rule, an NES or by a resource consent.

There are overlapping responsibilities with respect to managing the effects of discharges of wastewater to the environment. Territorial authorities are responsible for issuing building consents for new onsite domestic wastewater treatment systems to ensure that they are installed, sited and function correctly for the property. WRC is responsible for managing the effects of discharges from domestic treatments systems to the environment. These overlapping

responsibilities can result in resource consent requirements and costs from both regional and territorial councils. Through the development of the policies and rules for onsite domestic wastewater systems there has been a specific focus on reducing duplication of regulation.

One specific policy in the proposed Plan, Policy P84 (onsite domestic wastewater management) requires ‘more than minor adverse effects on surface water bodies and groundwater from discharges from on-site domestic wastewater systems’ to be avoided.

Various systems are briefly discussed below including; pit latrines, composting toilets, onsite (septic tank) systems and reticulated systems. Rules regarding the application of treated wastewater and biosolids are also discussed in this section of the report.

The relationships between the proposed objectives, policies, rules and methods which relate to wastewater discharges are shown in the Table 8 below.

**Table 8: Proposed provisions related to wastewater treatment systems**

Objectives	O42: Soil health and erosion O49: Promoting discharges to land
Policies	P62: Promoting discharges to land P67: Minimising effects of discharges P69: Human drinking-water supplies P80: Replacing wastewater discharge consents P84: Onsite domestic wastewater management P85: Biosolids and treated wastewater to land P95: Discharges to land
Rules	R71: Pit latrines R72: Composting toilets R73: Greywater R74: Existing on-site wastewater systems R75: New or upgraded on-site wastewater systems R76: New or upgraded on-site wastewater systems within community drinking water supply protection areas R77: Application of Aa biosolids to land R78: Application of biosolids (Ab, Ba, or Bb) to land R79: Discharge of treated municipal wastewater R80: Discharge of treated municipal wastewater
Other methods	M1: Regional Plan implementation and integration M16: Contaminated land M17: Reduce waste and use water and energy efficiently

### 5.6.1 Pit latrines

The discharge of human waste into a long drop, dug pit or pit latrine, in rural and remote locations is permitted in the operative DLP (Rule 5). Proposed Rule R71 also permits the activity, with additional conditions in line with other

wastewater rules in the proposed Plan, including setback distances from water bodies and water supply bores.

In order to meet the requirements of the NES-Drinking Water, proposed Rule R71 has conditions that exclude pit latrines from community drinking water supply protection areas. New pit latrines within these areas are restricted discretionary activities, with matters of discretion restricted to effects on the quality of drinking water as guided by proposed Policy P69.

Pit latrines as permitted activities present a low cost for the user and low regulatory burden for the Council. They are effective, as any adverse effects on the environment are quite easily managed within appropriate parameters. The proposed Rule R71 has conditions similar to other proposed discharges to land rules, and this consistency effectively conveys the WRC's intent in achieving the objectives of the plan.

### 5.6.2 Composting toilets

Composting toilets, sometimes known as 'waterless toilet systems', have been seen as a good way to reduce water use and wastewater output from household activities, while at the same time converting human waste into nutrient rich humus. Composting toilets are eco-friendly, sustainable, and can be installed quickly and in most locations. However, inappropriately located and managed composting toilets can have adverse effects on water quality, and produce objectionable odours.

Proposed Rule R72 makes composting toilets a permitted activity with conditions similar to other discharges to land and wastewater rules such as being set back from surface water bodies and bores, and that there must not be offensive or objectionable odour beyond the property boundary. Proposed Rule R72 includes a condition that collected human waste from a composting toilet is to be stored for a minimum of 12 months in dedicated composting bins before being buried in the ground within the boundaries of the property. These conditions ensure that the material is well composted and contaminants are removed.

The conditions in this rule are reasonable, carry a low regulatory burden and there will be few costs in complying with the permitted activity conditions. The adverse effects of composting toilets can be effectively managed within appropriate parameters, and will help achieve Objective O42, in actively enriching the soil environment. The benefits to the environment will outweigh the minor costs to the user.

### 5.6.3 Greywater

Greywater is untreated wastewater from a household sourced from showers, baths and sinks. Greywater can contain organic matter such as food scraps, hair, fats and oils, and chemicals from common household products such as cleaning products and laundry waste. Greywater does not contain any toilet, faecal matter or urinal wastes. The operative DLP Rule 4 makes the disposal of greywater to land a permitted activity.



Greywater can be reused for toilet flushing and watering gardens and lawns. The use of environmentally friendly household products can make the reuse of greywater safer and reduces the potential for adverse effects. Diverting greywater from septic systems and wastewater treatment plants for reuse also reduces the volume to be treated and improves the longevity of the infrastructure.

Proposed Rule R73 makes the discharge of greywater a permitted activity provided specific conditions can be met. These conditions include that the discharge shall occur within the property boundary, shall not pond, or produce offensive or objectionable odours beyond the property boundary, no more than 2000L can be discharged per day, and not within 20m of a surface water body.

This rule is appropriate for promoting efficient use of water resources, and is supported by Method M17, in the proposed Plan. An advisory note has been added to this rule, that permission may be required from the relevant city or district council in respect of the Building Act 1992 or other legislation or bylaws.

#### 5.6.4 Existing on-site wastewater systems

The collection, treatment and disposal of wastewater from a domestic septic tank or on-site sewage treatment and discharge system is a permitted activity under Rule 6 (aerobically treated sewage) and Rule 7 (on-site sewage onto or into land) in the operative DLP. These small scale treatment systems, when located and managed appropriately, are unlikely to result in more than minor adverse effects on the receiving environment. Rural areas are commonly not connected to a reticulated wastewater network and therefore rely on on-site sewage treatment and discharge. Placement and continued management of septic tanks are critical parts of managing the adverse effects of on-site wastewater discharges, as once wastewater is discharged into or onto land, it can move laterally and vertically becoming a potential source of contamination.

The RPS promotes the discharge of treated human sewage to land instead of to water. Policy 16 of the RPS, recognises that well managed land based discharges can avoid adverse effects on water bodies, including the degradation of the mauri of water bodies, which result from waste being put into surface water instead of being returned to land. Policy 35 of the RPS supports this, in seeking to minimise any adverse effects from point source and non-point source discharges.

The operative rules relating to onsite wastewater discharges have at times led to confusion in the interpretation and usage for plan users and for WRC officers. The rules are not easy to follow, in particular determining which rules apply in which circumstances.

Anecdotal evidence suggests that many of the existing onsite wastewater treatment systems in the Wellington Region consist of historic systems (Hamish Lowe pers com). Older systems require relatively high levels of maintenance to ensure that they continue to operate to performance specifications and to prevent total system failure. This same anecdotal evidence

suggests these systems are generally not well maintained. Older wastewater treatment systems can, if not properly and regularly maintained, result in leakage which can have a significant impact on water quality, particularly in areas where there are a high number of properties with poorly operating systems close to waterbodies (such as coastal holiday settlements). Contamination from wastewater systems has been suspected to be a factor in water quality incidences of poor water quality in the past at a number of locations in the region such as at Riversdale Beach and Te Horo.

The lack of clarity in the operative rules has acted as a barrier to compliance for users due to a lack of understanding of the regulatory requirements. As a result the risk that existing systems are not operating effectively is increased which in turn increases the risks of adverse effects on the receiving environment. Wastewater provisions in the operative Discharge to Land Plan do not give effect to the wastewater policy in the RPS. Therefore, allowing the status quo to continue is not an option available in the proposed Plan.

The proposed Plan requires consideration of mana whenua values with respect to the discharge of wastewater and encourages discharges of wastewater to land rather than to water. Besides the potential for adverse effects on water quality and/or public health, discharges of wastewater into water bodies are of particular concern to mana whenua because these degrade the mauri (life force) of the water body and associated cultural values.

Discharging to land does not in itself mitigate potential adverse effects on the environment. Inappropriately treated wastewater which enters groundwater or surface water can still contain a level of disease-causing organisms (listed above) which can make a river unsafe for recreational use, or water unsafe for drinking, as well as containing nutrients that can promote nuisance aquatic weed and algal growth.

Provided that the existing wastewater system has not been altered or modified from that established at the time the system was constructed (other than through routine maintenance) and the volume of the wastewater discharge has not been increased, it is proposed to remain a permitted activity with fewer and clearer conditions in the proposed Plan. An additional condition that is proposed requires the system to be operated and maintained in accordance with the original system's design specification for maintenance or, if there is no design specification, users and the WRC are to be guided by the NZ Standard AS/NZS 1547:2012.

Further in the proposed Plan, specific location provisions are proposed for a minimum setback distance to water bodies (condition b(i)) drinking water supplies and condition b(iii)) property boundaries) and for specified soil types. When a new wastewater treatment system is installed within a Drinking Water Supply Protection area, the effects of the discharge on the groundwater quality, and particularly those effects on the quality of the source water for the community supply, need to be assessed on a case-by-case basis. Therefore in these instances, resource consent is required.

### 5.6.5 New or upgraded onsite wastewater systems

Since the DLP became operative, recognition of the potential impacts of on-site systems on ground water and surface water quality such as nitrate and bacterial contamination and nutrient inputs to surface waters, has driven the need for improving design and appropriate installation of on-site systems and ensuring the systems' ongoing performance. This has resulted in significant improvements in the performance of wastewater treatment systems and therefore the quality of the resulting discharges. A new rule (Rule R75) is proposed for the collection, treatment and disposal of wastewater in connection with any new or upgraded domestic septic tank or on-site sewage treatment and discharge system as a permitted activity.

As indicated above, a comprehensive standard (AS/NZS 1547:2012) has been developed for the installation, design and management of on-site wastewater treatment systems and adopted by WRC as the basis for managing on-site wastewater treatment systems. In order to manage the effects of on-site systems, the proposed Plan provisions include requirements for correct operation and maintenance to ensure that the system continues to perform effectively throughout its lifetime. This is a valuable addition in the review of the operative plan.

Another proposed requirement for new treatment systems is for site-specific investigations to take place, which will lead to better environmental outcomes.

The volume of the discharge from any new single system authorised under this rule is limited to 2m<sup>3</sup> per day (Rule R75(d)). This volume could be expected to be produced from a large household (10+ persons) and is consistent with the AS/NZS 1547:2012 standard for the design, construction, operation and maintenance of on-site domestic wastewater systems.

The effects of the discharge from on-site treatment systems on the environment are dependent both on the volume of wastewater being discharged and the distribution of the discharge. This is addressed by condition (e) of proposed Rule R75 which specifies a requirement for the discharge to stay below the soil surface in order to prevent human contact and unpleasant odours. Condition (e)(ii) stipulates a minimum distance to a property boundary to minimise any effects beyond the boundary of the property the discharge occurs on.

Overall, the proposed provisions for effective wastewater treatment systems are effective and appropriate to provide for the social, cultural, environmental and economic well-being of communities. The use of permitted rules, such as proposed Rules R74 and R75, with clear and reasonable conditions is an effective and efficient way to promote the discharge of wastewater to land whilst at the same time ensuring the actual and potential adverse effects on the environment are minimised.

If new wastewater systems cannot meet the permitted requirements, they are considered either as a controlled or restricted discretionary activity depending on the nature of the discharge. New on-site systems built within a community drinking water supply protection area are not permitted by proposed Rule R75 and instead are a controlled activity under proposed Rule R76. As a controlled

activity, resource consent must be granted, with matters of control limited to impacts on drinking water quality, and monitoring and maintenance of the wastewater treatment system.

The key risk to public health from onsite wastewater systems being located within community drinking water supply protection areas is from pathogens. The most important pathogens in terms of human health risk assessments are those spread by the faecal-oral route such as *Campylobacter* spp., *Salmonella* spp., *Cryptosporidium*, *Giardia* and enteric viruses.

Failure of an on-site wastewater treatment and disposal system can mean inadequately treated wastewater enters ground or surface water, or rise to the ground surface creating a potential human health risk. Failing systems can create human health risks from the overflow or ponding of effluent which can contribute to lakes, rivers, estuaries and beaches becoming unfit for swimming, gathering seafood, marine farming; or in the case of a drinking water supply catchment can lead to contamination of groundwater and surface water, which can affect the quality of drinking-water supplies.

While adequately designed and efficiently operated systems can pose a minimal risk to impacts on water quality, suitable separation distances are needed. Suitable separation distances are dependent on a number of factors, including effluent quality, application method, soils, geology, topography and system management. Design consideration can appropriately address all these factors with the exception of system management.

While intended that management will be an essential part of the ongoing operation of onsite wastewater systems, the reality is that currently regular management and maintenance is not employed and there is a potential for systems to fail. The rate of failure, or compromised performance, is potentially increasing as systems are becoming more complex. This highlights the urgency and need for management systems to be essential components and requirements in the operation of on-site wastewater systems.

In the case of on-site wastewater systems located in Community Drinking Water Supply Protection Areas, failure to attend to management (assuming appropriate design has been employed in the first place) creates a risk not only to the environment but more critically for public health. This risk needs to be managed and steps should be taken to at least ensure management and maintenance is compulsorily and is actually undertaken. This is most appropriately achieved through a requirement for systems to be regulated and resource consents obtained (Hamish Lowe, Lowe Environmental Impact, pers com).

Method 1 addresses the intent that WRC will, in conjunction with territorial authorities, industry groups and individuals, provide guidance in the development and use of guidelines and codes of practice promoting environmental practices and new technology designed to avoid, remedy or mitigate the adverse effects of on-site sewage disposal systems.

### 5.6.6 Community wastewater treatment systems

Community treatment systems transfer wastewater from households, businesses and factories to a treatment plant where the wastewater is treated and subsequently discharged. Historically, it was common practice to discharge domestic wastewater directly into waterways, often without any treatment. As the health risks have been better understood, a progressively higher degree of treatment has been required to improve the discharge quality and consequently that of the receiving environment.

There are currently eight major discharges of treated wastewater to fresh water in the region – one from the treatment plant at Paraparaumu, one from Rathkeale College in Masterton, with the rest from the Wairarapa towns of Masterton, Castlepoint, Carterton, Greytown, Featherston and Martinborough. Communities in the region are at different stages of addressing wastewater discharges to water. Each community responds to very different sets of social, economic and environmental issues.

The primary drivers for the direction in the proposed Plan are RPS Policy 16 to promote discharges of wastewater to land, and mana whenua and community concerns regarding water quality and the ability to use water safely. The Proposed plan promotes discharges of wastewater to land by dealing with the potential for those discharges to have adverse effects on soil health and water quality through a relatively permissive rule framework.

However, the adverse effects on natural resources of discharging wastewater to land can in some cases, be as great as discharging to water. This is because, the suitability of soils to receive and assimilate wastewater discharges is critical to the successful application of discharges to land. Discharges to land in unsuitable soils where groundwater is directly connected to surface water, can result in wastewater contaminants being discharged directly to surface water when the soil becomes saturated in wet weather conditions.

Recycling wastewater is an underused way of achieving water quality outcomes and sustainable water resource management. Treated wastewater and biosolids can be reused for irrigation and other beneficial purposes (e.g. as a soil conditioner). Using treated wastewater as a resource provides for more efficient disposal and decreases the volume of wastewater otherwise disposed of as waste at landfill. Reusing wastewater can help conserve valuable water sources by reserving drinking water supplies for human consumption.

The following sections outline the direction of the proposed Plan in relation to the discharge of biosolids and treated wastewater to land.

#### (a) Biosolids

Sewage sludge can be treated to destroy pathogens and reduce odour, producing a product known as 'biosolids'. The conversion of sewage sludge into biosolids and its controlled application to land provides an opportunity to take advantage of the high organic composition of the resource for use as a beneficial soil conditioner and fertiliser, improving soil moisture retention and plant growth. Further, biosolids can be used as a fuel source through a direct

waste-to-energy incineration process. The operative DLP does not have specific objectives, policies or rules addressing the use of biosolids.

Treated biosolids can be produced in various forms. 'Aa' graded biosolids (MfE 2003) are pathogen free and have low levels of other residual contaminants. As such, Aa graded biosolids can be readily incorporated into soil. The application of Aa graded biosolids to land is a permitted activity in the proposed Plan under Rule R77. Conditions of this permitted rule control nitrogen loading rates, soil pH, setbacks from water bodies and water supply bores and the discharge of odour.

There are three other grades of biosolids: Ab, Ba, and Bb. The grades indicate relative levels of residual contaminants in the biosolids material meaning there are higher levels of contaminants in these grades than in Aa graded biosolids. There are higher risks associated with the application of biosolids of lesser grades to land which means they are not appropriate as permitted activities in the proposed Plan. A restricted discretionary rule (Rule R78) is proposed for the application of lower graded biosolids to land.

The application of Aa biosolids to land is a permitted activity to encourage the reuse of this treated waste product. For the application of biosolids which do not meet the conditions of the permitted rule, Rule R78 applies. Matters of discretion are restricted to application rate, effects on soil health, measures to avoid application to water logged soils, effects on groundwater quality, set back distances from water bodies and water supply bores, the discharge of odour, methods for incorporating the biosolids into the soil, effects on soil pH and nitrogen loading rates. Proposed policies P80 (replacing wastewater discharge consents), P85 (biosolids and treated wastewater to land) and P95 (discharges to land) provide direction to resource consent applications to help achieve the proposed Plan Objectives O42 and O49.

To meet the requirements of the NES-Drinking Water, conditions on both the permitted activity Rule R77 and restricted discretionary activity Rule R78 do not allow the application of biosolids within community drinking water supply protection areas. Any application of biosolids within these areas would be a restricted discretionary activity under Rule R92 guided by proposed Policy P69.

The provisions in the proposed Plan reflect the minimum requirements in the *Guidelines for the safe application of biosolids to land* (NZWWA 2003) which contains information and recommendations to assist producers, dischargers and regulators to manage the discharge of biosolids to land. The proposed Method M17 to reduce waste and to use water and energy efficiently assists in achieving the proposed Objectives.

#### (b) Treated wastewater

The key issues related to land application of treated wastewater are similar to those for other forms of liquid wastes such as dairy farm effluent. The type of soil and underlying geology will determine the sustainability of the relevant land application. The effect of the discharge from treated wastewater on the environment will depend on the level of treatment, the amount of domestic

wastewater from any point source discharge and the spatial distribution of these discharges.

Some local authorities are working towards discharging treated wastewater from their communities to land instead of to water, recognising a change in the social acceptability of continued discharges of wastewater particularly to fresh water. Carterton District Council is in a transitional phase of moving their wastewater discharges from freshwater to land (by centre pivot irrigation); recently gaining resource consent for the first stage of this transition.

The operative DLP does not have a specific objective, policy or rule addressing the discharge of treated wastewater to land. Rule 8 in the operative DLP applies to discharges that contain human sewage generally but does not provide specific direction for the management of *treated* wastewater. The operative plan contains policy promoting discharges to land over water. However, the operative plan has not been effective in promoting this shift.

The proposed Plan provides a clear direction in Policy P62 to promote discharges to land where there are adverse effects on water quality impacting on the health of people and ecosystems. The efficient use of water is recognised by Objective O52 in the proposed Plan. For a further discussion of water use efficiency see the Section 32 report: Water quantity.

The options available to implement proposed Policy P62 with regard to treated wastewater include making discharges of wastewater to land more permissive relative to discharging the same waste to water. However, before discharges of treated wastewater to land can be considered in a more permissive regulatory framework, WRC must be satisfied the actual and potential effects of this activity can still be managed appropriately by the proposed rule framework.

In investigating options to promote of the discharge of treated wastewater to land, WRC sought technical assistance to look into the constraints of discharging treated wastewater to land as a controlled activity. Through this work (see Lowe Environmental Impact 2015), it became evident that there is currently insufficient information on the long term effects of treated wastewater to land application to warrant it as permitted activity. Following the conclusions of the Low Environmental Impact (2015) report, the proposed policies and rules facilitate the application and use of treated wastewater to land whilst providing the necessary controls to ensure the adverse effects on the environment are no more than minor.

The primary mechanism for promoting land based discharges is through the controlled activity status of proposed Rule R73. The conditions in Rule R73 address the source of the material to be discharged, loading limits for key contaminants, limits to be imposed on the actual land application activity and the other mitigation measures to be undertaken. The conditions include requirements for a Site Investigation Report and an Operation and Management Plan. These conditions are designed to respond to the nature of wastewater from predominantly residential communities. Residential wastewater has been well studied and its characteristics are well known, so conditions to enable its discharge to land are able to be established with confidence. Where a discharge

cannot meet the conditions of proposed Rule R73, for example because of the inclusion of trade wastes or the unsuitability of land to receive the discharge, then that proposal would be a restricted discretionary activity under Rule R80 or a discretionary activity under Rule R93.

In order to ensure any adverse effects of odour or dispersal of pathogens are minimised, condition (q) of Rule R73 requires the control of droplet size in order to minimise the generation of aerosols and reduce the potential for spray drift. In addition, condition (p) requires that irrigation cease during moderate wind to ensure the adverse effects of odour are appropriately managed.

The impact of ‘emerging contaminants’ in wastewater are somewhat uncertain, as their effects on the environment are not yet fully understood. Emerging contaminants are defined in the proposed Plan as:

*any synthetic or naturally occurring chemical, substance or microbial contaminant whose presence and significance were not previously detected (or were found in far lesser concentrations) in the environment but have the potential to cause adverse ecological and (or) human health effects. Includes; pharmaceutical products, disinfectants, antibiotics, antibiotic resistant genes, some viruses, hormones and endocrine disruptors.*

As a precautionary approach, a review clause has been included in proposed Rule R79 to enable the impact of emerging contaminants to be assessed in the future, should it be required.

There is a risk that despite the comprehensive list of specified matters of control, the social, cultural and economic concerns related to the discharge of treated wastewater to land may not be fully addressed. The technical review by Lowe Environmental Impact (2015) gives WRC sufficient confidence that these conditions are appropriate.

If the conditions of proposed Rule R73 cannot be met, a restricted discretionary resource consent would be required under proposed Rule R80. Matters of discretion are restricted to impacts on drinking water supplies, the quality of the discharge, the rate of application to land and associated contaminant loading rates, specific matters related to the nature of the receiving environment, and monitoring and reporting requirements. In all there are 19 specific matters of discretion.

#### (c) Efficiency and effectiveness

By enabling the discharge of treated wastewater to land as a controlled activity, provides the user certainty that resource consent will be granted. This is an efficient approach as it will substantially reduce costs, delays and uncertainty for applicants compared to the operative DLP.

The provisions of the proposed Plan for the application of biosolids and treated wastewater to land will encourage efficient waste management, resource recycling and waste minimisation. This helps to give effect to the RPS Policy



16 to promote discharges to land and Policy 65 to recycle waste. The proposed policies and methods include regulatory methods which are simple, efficient and effective ways of managing adverse effects of these discharges. These provisions are further complemented by a mix of non-regulatory methods. Discharging treated wastewater to land as opposed to directly to water is more acceptable to mana whenua. The approach in the proposed Plan implements proposed Objectives O42 and O49 to seek healthy and productive soils and to promote wastewater discharges to land.

As discussed in section 5.1, proposed Policy P69 provides an efficient and effective direction to control or avoid potential adverse effects from discharges to land and water on the quality of drinking-water supplies. The proposed policies and the conditions on rules R77 – R80 ensure drinking water supplies are protected, thereby helping to avoid expensive water treatment costs.

WRC considers the available information sufficient to support the proposed approach such that the risks associated with this approach outweigh those of retaining the status quo.

Having regard to this information, and taking into account the efficiency and effectiveness of the proposed provisions relating to the discharge of biosolids and treated wastewater from community systems to land, the proposed provisions are the most appropriate to achieve the proposed Objectives and sustainable management.

## **5.7 Drinking water treatment plant waste**

Drinking water treatment plants provide water for human consumption by treating raw water to meet the national drinking water standards (Ministry of Health 2008). Currently all raw water must undergo treatment intended to remove actual or potential contaminants from water before it is considered safe for human consumption. This treatment process results in several waste streams which require subsequent disposal. Some specific provisions are proposed to guide the appropriate management and discharge of these wastes, as discussed further below.

The relationships between the proposed objectives, policies, rules and methods which relate to drinking water treatment plant waste are shown in the Table 9 below.

**Table 9: Proposed provisions related to drinking water treatment plant waste**

Objectives	O42: Soil health and erosion O44: Land use impacts on soil and water O46: Discharges to land
Policies	P67: Minimising effects of discharges P95: Discharges to land
Rules	R69: Discharge of any minor contaminants onto or into land R81: Drinking water treatment plant supernatant waste R92: All discharges to land within drinking water protection areas R93: All other discharges to land
Other methods	M1: Regional Plan implementation and integration M17: Reduce waste and use water and energy efficiently

Part of the water treatment process is filtration whereby liquids and solids are separated. Some contaminants in raw water are not easily removed by filtration and require further treatment. A common practice consists of the use of coagulants, often in the form of polyaluminium chloride, with the use of hydrochloric acid to adjust pH. This water treatment practice results in a coagulant sludge laden with iron and aluminium which is typically disposed of to landfill.

In the operative plan, Rule 19 covers discharges from water treatment plants into or onto land, including the supernatant, other wastewater and coagulant wastes (sludge) as a controlled activity.

Due to the composition and chemistry of residuals, the coagulant sludge is considered in the proposed Plan to be a hazardous substance and therefore is managed under the catch-all proposed Rule R93 as a discretionary activity.

While the preference from the drinking water treatment companies would be to have the discharge of supernatant to land as a permitted activity, the composition and chemistry of this discharge, has not been clearly defined by the industry. Therefore, the discharge of the supernatant in the proposed Plan remains as a controlled activity (proposed Rule R81) with conditions and matters for control similar to those in the operative plan. Conditions of proposed Rule R81 include that the supernatant is not discharged within 20m of a surface water body or the coastal marine area, a gully or a bore used for drinking water. Matters of control include effects on groundwater and surface water bodies and the rate of discharge.

## 5.8 Vertebrate toxic agents

Vertebrate toxic agents are excluded from the definition of agrichemicals in the proposed Plan. The definition for vertebrate toxic agents in the proposed Plan is:

*Any substance, whether inorganic, human made or naturally occurring, modified or in its original state, that is used to eradicate, modify or control vertebrate animals including possums, rats and mustelids. Vertebrate toxic agents are regulated under the Hazardous Substances and New*

*Organisms Act 1996 and includes vertebrate pest control products as identified (but not defined) in NZS 8409:2004 Management of Agrichemicals.*

This definition includes all substances containing sodium fluoroacetate (1080), as well as other compounds used for controlling possum, stoat, ferret, rat, mice and other vertebrate populations.

The use of vertebrate toxic agents, including 1080, are controlled in part by the Hazardous Substances and New Organisms Act 1996 (HSNO) as well as the Agricultural Compounds and Veterinary Medicines Act 1996. The use of many, but not all, vertebrate toxic agents requires public health permission under HSNO. The operative DLP has two rules that manage the discharge of vertebrate toxic agents. Rule 16 allows the discharge of vertebrate toxic agents to land as a permitted activity provided there is no discharge to a water body either directly or indirectly, among other conditions.

For aerial applications, Rule 17 requires resource consent as a controlled activity. The rule requires several conditions be met, including that applications are not discharged into surface water bodies or within 10m of a waterbody, a navigational guidance system is used during the application, flights paths avoid properties of people who object to the application, approval of all landowners is obtained before release, there is no dust drift beyond the application properties, WRC is notified of any accidental discharge in a surface water body and bait buckets are covered when flying. If the standards and terms cannot be met, it is a discretionary activity under Rule 2.

Since the adoption of the operative DLP, regulations specific to 1080 and formulated substances containing 1080 were gazetted under section 77A of HSNO (ERMA 2008). For the use of 1080, section 77A of HSNO requires specific controls to be used, and which are found in Appendix A, Tables A1 and A2 of the decision (ERMA 2008). Additional guidance specific to 1080 includes a guidance document for public health permissions (Ministry of Health 2013), communication guidance for community consultation (ERMA 2009), and industry standards for aerial applications (National Pest Control Agencies 2011). The proposed rules acknowledge that all vertebrate toxic agents must be approved for use under HSNO.

The following Table 10 shows Objective O46 (discharges to land) in respect of vertebrate toxic agents and how it will be implemented through relevant policies and rules.

**Table 10: Proposed provisions related to vertebrate toxic agents**

Objective	O46: Discharges to land
Policies	P90: Discharge of hazardous substances P95: Discharges to land
Rules	R87: Land based discharge of vertebrate toxic agents R88: Aerial application of vertebrate toxic agents
Other methods	N/A

Proposed Policy P90 directs that discharges of hazardous substances shall be managed by the use of good management practices.

Proposed Policy P95 is a general policy for all discharges to land. Of relevance to discharges of vertebrate toxins, the policy directs that discharges are managed to minimise effects on public health and adverse effects on surface and groundwater quality.

Discharges of vertebrate toxic agents are managed with two rules in the proposed Plan. Rule R83 is a permitted activity for land based applications and Rule R84 is a controlled activity for aerial applications. Therefore the proposed rule structure for vertebrate toxic agents, including 1080, follows a rule structure based on the permitted and controlled activity status used in the operative DLP.

During the development of the proposed Plan, feedback was received that aerial use of vertebrate toxic agents should be a permitted activity. This feedback noted the controls already in place under HSNO, and specifically for the use of 1080. Although the proposed Plan needs to address the relevant provisions of HSNO, it also needs to meet the requirements of the RMA (see section 2.1.2 of this report) and other regulations, such as the NES-Drinking Water. In particular, the proposed Plan needs to manage the adverse effects of hazardous substances on the environment on a site-specific basis, whereas HSNO regulations focus on specific substances, regardless of location.

Under HSNO an approval process exists whereby Regional Public Health must approve the use of 1080 and notify any water supply authority. It was agreed with the relevant parties during the development of the proposed Plan that a duplicate approval process for the use of 1080 within community drinking water supply protection areas was not necessary. As such, conditions on the use of 1080 within these protection areas are not proposed to be included on Rules R87 and R88. In regards to rules for permitted activities, under the RMA, permitted activity thresholds are usually set at a level where any resulting effect is considered to be *de minimis*, whereas HSNO minimum performance standards are set at a level where there is a low risk of an adverse environmental effect.

For land-based applications, the proposed rule is a permitted activity, provided the discharge is in accordance with HSNO controls, and two additional conditions that address site-specific risks. These conditions are a restriction on use within 20m of a bore used for drinking water abstraction and a requirement to use warning signs where the vertebrate toxins are used on public land. Table A8 in the Appendix provides a summary assessment of the efficiency and effectiveness of this permitted activity rule.

For aerial applications of vertebrate toxic agents, including but not limited to 1080, the proposed rule is a controlled activity. This rule also requires that the discharge is in accordance with HSNO controls and one additional requirement that the discharge is not onto a roof or other structure used to collect drinking water. The proposed matters of control include three matters, which focus on record-keeping.

The use of a controlled activity places a cost on the applicant whereas the costs for permitted activities are borne by WRC and ultimately the wider community in the form of rates (see Table A8 in the Appendix). For land-based applications of vertebrate toxic agents the costs of monitoring and compliance are low, as the risk of vertebrate toxic agents being placed incorrectly is small and therefore the risk to the environment and public health is also small. For aerial discharges, the risks are greater and therefore if the activity were permitted, the costs to WRC and the community would also be higher.

A controlled activity places the cost on the applicant, while at the same time provides the applicant with certainty that the activity can occur, and allows WRC to manage for site-specific effects. WRC is satisfied that the benefits of a controlled activity resource consent for aerial discharges of vertebrate toxic agents outweighs the costs.

## 5.9 Hydraulic fracturing

The following Table 11 shows Objectives O46 (discharges to land), O49 (promoting discharges to land) and O51 (hazardous substances) in respect of hydraulic fracturing and how they will be implemented through relevant policies and rules.

**Table 11: Proposed provisions related to hydraulic fracturing**

Objectives	O46: Discharges to land O49: Promoting discharges to land O51: Hazardous substances
Policies	P59: Industrial point source discharges P92: Discharges from hydraulic fracturing P93: Disposal of hydraulic fracturing chemicals and materials
Rules:	R93: All other discharges to land R41: All other discharges to air
Other methods	N/A

Hydraulic fracturing is addressed by proposed Policies P92 and P93 and will help achieve proposed Objective O46, Objective O49, and Objective O51. This is where the discharge of hazardous substances is managed to protect the environment, property and people’s health. Further discussion on provisions to achieve Objective O51 can be found in Section 32 Report: Contaminated land and hazardous substances.

Hydraulic fracturing or ‘fracking’ has the potential to discharge toxic substances into the air, and to land. The discharge is a combination of fracking fluids that are injected into the fracking well, and the subsurface fluids that are expelled as part of the underlying geology. This combination of fluids can be difficult to treat and will require a high level of processing to render the discharge neutral to be discharged to land, and to ensure there is no further contamination of the soil or nearby water bodies.

The discharge into air from flaring of fracking gases also has the potential to be toxic to people’s health and the environment. Proposed Policy P59 requires that

hazardous air pollutants found in fracking gases are discharged into the air in such a way that there are no adverse effects beyond the boundary of the fracking site. This discharge will require either emission control devices to ensure the discharge is not hazardous or the site is in such a location that the discharge is diluted to remove any level of contamination to human health or the environment. The proposed policies for the management of fracking are sufficient to help meet the objectives of the proposed Plan (as mentioned above) and ensure the environment and people's health do not have adverse effects from this activity. Both the discharge to land and to air associated with hydraulic fracturing are discretionary activities under proposed Rule R93 and R41 respectively.

The main benefit of these policies is to protect the environment and human health. This is important as the cost of not providing for this discharge may lead to contamination of the land or a water body that may be very costly to clean-up in the future. This is not desirable and the proposed Plan has provisions to prevent further contamination of the environment. There is a considerable cost for the management of this type of discharge. This cost is not unexpected given the nature of the discharge and the potential long term damage that may occur from poor management and controls. The proposed Plan has provided for the development of fracking to occur in the region on the proviso that the discharges from this activity are treated and managed to protect the environment and human health.

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## Appendix

**Table A1: Appropriateness of Objective O42**

<b>Objective O42</b>	
Soils are healthy and productive, and accelerated soil erosion is reduced.	
<b>Relevance</b>	
Directly related to resource management issue?	Yes, this objective addresses Issue 3.6 (Cleanfills), Issue 3.7 (Landfills), Issue 3.9 (Discharges to land) and Issue 4.3 (Land use and discharge of contaminants)
Will achieve one or more aspects of the purpose and principles of the RMA?	Directly related to section 5 of the RMA.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	Yes
Relevant to statutory functions or to give effect to another plan or policy (i.e., NPS, RPS)?	Relevant to WRC's functions under s30 of the RMA and Policies 15 and 69 of the RPS.
<b>Usefulness</b>	
Will effectively guide decision-making?	Yes, this is a key objective for discharges to land, guides resource consenting processes, and will also guides the whitua committee recommendations.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	The objective is clearly written and understandable.
Consistent with other objectives?	Yes, consistent with Objective O44, Objective 46 and Objective O49.
<b>Achievability</b>	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	The objective is not time-bound. The objective is measureable. Soil quality across the Wellington Region is measured and reported on by WRC. Aspects of soil health, productivity and erosion are also the subject of several industry and nationwide projects.
Is it expected that the objective will be achieved within the life of the proposed Plan or is it an aspirational objective that will be achieved sometime in the future?	This is a long term objective.
Does WRC have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	The objective is achievable under WRC's functions and powers in sections 15 and 30 of the RMA.
What other parties can WRC realistically expect to influence to contribute to this outcome?	The main parties to assist with this objective include territorial authorities, farmers and natural resource users and land developers.

What risks have been identified in respect of outcomes?	If the objective is not met the well-being, profitability and sustainability of the region's agricultural sector is at risk.
<b>Reasonableness</b>	
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	Soil is a non-renewable resource and therefore this objective seeks benefits that far outweigh the costs.
Who is likely to be most affected by achieving the objective and what are the implications for them?	Other than for accelerated soil erosion, there are no proposed rules directly related to soil health and productivity. Non-regulatory programmes are aimed at providing advice and guidance to the agricultural and forestry sectors.
<b>Existing objectives</b>	
Are the operative objectives still relevant or useful?	The existing objective 4.1.3 in the operative Soil Plan is similar to this proposed objective. However, the use of an integrated plan means that this one objective will guide a wider range of decision-making for activities that could impact soil health, productivity and soil erosion.

**Table A2: Appropriateness of Objective O44**

<b>Objective O44</b>	
The adverse effects on soil and water from land use activities are minimised.	
<b>Relevance</b>	
Directly related to resource management issue?	Yes, this objective addresses Issue 3.6 (Cleanfills), Issue 3.7 (Landfills), Issue 3.9 (Discharges to land) and Issue 4.3 (Land use and discharge of contaminants)
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, Part 2, sustainable management.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	Yes, specifically sections 6(e), 6(g) and 7(aa).
Relevant to statutory functions or to give effect to another plan or policy (e.g., s30, and any relevant NPS, NES, NZCPS, RPS)?	Section 30(1)(c) of the RMA gives WRC the statutory function of controlling land use for the quality of soil and water and section 30(1)(f) the control of discharges of contaminants. The NPS-FM requires regional councils to consider and account for the sources of relevant contaminants and to implement methods to assist the improvement of water quality

<b>Usefulness</b>	
Will effectively guide decision-making?	Yes, the objective guides resource consenting processes, and will also guides the whitua committee recommendations.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
<b>Achievability</b>	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, the achievement of this objective will become clear in the future through <ul style="list-style-type: none"> <li>• Implementation of the NPS-FM through the whitua committee process resulting in variations and plan changes to implement accounting and allocation of contaminants.</li> <li>• State of the Environment monitoring</li> <li>• Monitoring / reporting the effectiveness and efficiency of this plan</li> </ul>
Is it expected that the objective will be achieved within the life of the proposed Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective will be achieved over a longer timeframe than the life of the proposed Plan.
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	Section 30(1)(c) of the RMA , This objective will be achieved through the policies, rules, and other methods in the proposed Plan.
What other parties can the Council realistically expect to influence to contribute to this outcome?	All resource-users
What risks have been identified in respect of outcomes?	The risk to water quality will be reduced through the achievement of this objective. There is a risk to WRC if they were not to implement the NPS-FM in full.
<b>Reasonableness</b>	
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it.
Who is likely to be most affected by achieving the objective and what are the implications for them?	The management of discharges to land that have the potential to result in adverse effects on water will most likely affect all resource users.

Existing objectives	
Are the existing objectives still relevant or useful?	The objectives in the operative plans do not specifically address the use of land .

**Table A3: Appropriateness of Objective O46**

Objective O46	
Discharges to land are managed to reduce the run-off or leaching of contaminants to water.	
Relevance	
Directly related to resource management issue?	Yes, this objective addresses Issue 3.6 (Cleanfills), Issue 3.7 (Landfills), Issue 3.9 (Discharges to land) and Issue 4.3 (Land use and discharge of contaminants)
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, Part 2, sustainable management.
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	Yes, specifically sections 6(e), 6(g) and 7(a).
Relevant to statutory functions or to give effect to another plan or policy (e.g. s30, and any relevant NPS, NES, NZCPS, RPS)?	Sections 15 and 30(1)(f) the RMA requires WRC to control of discharges of contaminants. The NPS-FM requires regional councils to consider and account for the sources of relevant contaminants and to implement methods to assist the improvement of water quality.
Usefulness	
Will effectively guide decision-making?	Yes, the objective guides resource consenting processes, and will also guide the whitua committee recommendations.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.

<b>Achievability</b>	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, the achievement of this objective will become clear in the future through <ul style="list-style-type: none"> <li>• Implementation of the NPS-FM through the whitua committee process resulting in plan changes to implement accounting and allocation of contaminants.</li> <li>• State of the Environment monitoring</li> <li>• Monitoring / reporting the effectiveness and efficiency of this plan</li> </ul>
Is it expected that the objective will be achieved within the life of the proposed Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective will be achieved over a longer timeframe than the life of the proposed Plan.
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes, s15 and s30(1)(f) This objective will be achieved through the policies, rules, and other methods in the proposed Plan.
What other parties can the Council realistically expect to influence to contribute to this outcome?	All resource-users
What risks have been identified in respect of outcomes?	The risk to water quality will be reduced through the achievement of this objective. There is a risk to WRC if they were not to implement the NPS-FM in full.
<b>Reasonableness</b>	
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	Yes – this objective will have greater environmental benefits than the costs necessary to achieve it.
Who is likely to be most affected by achieving the objective and what are the implications for them?	The management of discharges to land that have the potential to result in adverse effects on water will most likely affect all resource users.
<b>Existing objectives</b>	
Are the existing objectives still relevant or useful?	The operative objectives are still relevant and useful. The proposed Plan is better integrated however and the proposed objective reflects this integration.

**Table A4: Appropriateness of Objective O49**

<b>Objective O49</b>	
Discharges of wastewater to land are promoted over discharges to fresh water and coastal water.	
<b>Relevance</b>	
Directly related to resource management issue?	Yes Issue 5.3 (Discharge of sewage)
Will achieve one or more aspects of the purpose and principles of the RMA?	Yes, Part 2, sustainable management
Relevant to Māori environmental issues? (sections 6(e),6(g),7(a),8)	Yes, specifically sections 6(e), 6(g) and 7(a).
Relevant to statutory functions or to give effect to another plan or policy (e.g. s30, and any relevant NPS, NES, NZCPS, RPS)?	This objective is directly relevant to Policy 16 in the RPS.
<b>Usefulness</b>	
Will effectively guide decision-making?	Yes, the objective guides resource consent applications and decision making.
Meets sound principles for writing objectives? (specific; state what is to be achieved where and when; relate to the issue; able to be assessed)	This objective is a clear and complete sentence related to an issue. This objective is not time-bound as it aims to deliver benefits over time.
Consistent with other objectives?	Yes, all the objectives have been assessed, and work together to achieve the sustainable management of natural resources in the Wellington Region.
<b>Achievability</b>	
Will it be clear when the objective has been achieved in the future? Is the objective measureable and how would its achievement be measured?	Yes, the achievement of this objective will become clear in the future when municipal wastewater is discharged to land.
Is it expected that the objective will be achieved within the life of the proposed Plan or is it an aspirational objective that will be achieved sometime in the future?	This objective seeks promotion and therefore will be achieved immediately.
Does the council have the functions, powers, and policy tools to ensure that they can be achieved? Can you describe them?	Yes, s15.
What other parties can the Council realistically expect to influence to contribute to this outcome?	Territorial authorities and urban rate-payers
What risks have been identified in respect of outcomes?	The risk to water quality will be reduced through the achievement of this objective.



Reasonableness	
Does the objective seek an outcome that would have greater benefits either environmentally or economically/socially compared with the costs necessary to achieve it?	The objective uses the term “promote”, in part, in recognition of the large costs associated with upgrading wastewater treatment plants, securing land and implementing land disposal.
Who is likely to be most affected by achieving the objective and what are the implications for them?	The management of discharges to land that have the potential to result in adverse effects on water will most likely affect all resource users.
Existing objectives	
Are the existing objectives still relevant or useful?	There are no objectives in the operative plans which specifically address the disposal of wastewater to land over disposal to water.

**Table A5: Efficiency and effectiveness of proposed provisions for cleanfills, rural waste, silage and compost, fertilisers, onsite wastewater treatment systems, biosolids and land based vertebrate toxic agents**

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend provisions to be more directive and reflect strategic outcomes in proposed Plan (preferred option)
Costs	WRC	<p>The lack of specific provisions in the Plan results in uncertainty about what is permitted.</p> <p>Council responds to complaints of breaches and then can refer only to high level requirements under the RMA.</p> <p>The environmental costs of these activities if not managed correctly can be high.</p> <p>Low costs associated with producing education materials and providing advice</p>	<p>Increased costs may result from additional guidance and advice provided by WRC on complying with conditions for permitted activities and the use of good management practices.</p> <p>Some additional costs can be expected if enforcement levels are increased, but this should be mitigated by permitted activity conditions that require information and records be provided to WRC on request.</p>
	Resource user	<p>The lack of specific provisions in the Plan results in uncertainty about what is permitted.</p> <p>This results in confrontation with Council and the public.</p> <p>The lack of specific provisions can result in adverse effects to environment &amp; water users.</p>	<p>Costs are low as these are permitted activities.</p> <p>Some additional costs can be expected for permitted activity conditions that require records and information to be supplied to WRC on request.</p>

		<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend provisions to be more directive and reflect strategic outcomes in proposed Plan (preferred option)</b>
	Community costs	Costs to the environment could be high if not managed correctly.	Costs to the environment could be high if not managed correctly.
Benefits	WRC	The current approach is straight-forward to administer and staff are familiar with it.	The proposed provisions provide more certainty about what is permitted. Other methods that result in the provision of advice and guidance can result in increased partnerships and improved relationships. Some additional costs can be expected if enforcement levels are increased, but this should be mitigated by permitted activity conditions that require information and records be provided to WRC on request.
	Resource user	No new benefits	Improved use of good management practices will result in achieving desired farm performance.
	Community benefits	No new benefits	Increased use of good management practices will result in better environmental outcomes.
Efficiency and effectiveness		The operative plan encourages good management practices but provide little clarity on how they should be carried out resulting in reduced efficiency and effectiveness.	The proposed provisions provide more clarity and certainty on what is permitted, which will result in increased efficiency and enhanced effectiveness.
Risks of acting or not acting		There is sufficient information to provide clear direction for the management of permitted discharges to land. There is a greater risk of using the status quo (not acting)	There is sufficient information to provide clear direction for the management of permitted discharges to land. There is a greater risk of using the status quo (not acting)
Appropriateness		Not appropriate because a better alternative is available	The proposed conditions for permitted activities will assist in implementing the objectives in the proposed Plan.
Conclusions		The existing provisions are less efficient due to their lack of integration and they are not as effective as desired.	The new permitted activity provisions are the most efficient and effective for meeting the purpose of the NPS-FM, the RPS and the objectives of the proposed Plan.

**Table A6: Efficiency and effectiveness of proposed provisions for landfills**

		<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend provisions to be more directive and reflect strategic outcomes in proposed Plan (preferred option)</b>
<b>Costs</b>	WRC	The lack of specific policies in the operative plan results in uncertainty about what is required. Low costs associated with producing education materials and providing advice.	Similar cost to WRC as under the status quo.
	Resource user	The lack of specific policy direction in the operative plans results in uncertainty about what is required for consent application and management.	Costs associated with resource consent applications may be similar, but increased clarity in the provisions may remove some unanticipated costs.
	Community costs	Lack of clarity in the operative plans can result in confrontation between WRC and the public. Costs to the environment could be high if not managed correctly.	Costs to the environment could be high if not managed correctly.
<b>Benefits</b>	WRC	WRC staff have the benefit of familiarity with the provisions in the operative plans.	Improved clarity in the proposed Plan will reduce confrontation between WRC and the public. Integrated provisions will provide clarity and certainty for WRC staff processing resource consent applications. More clarity in provisions will reduce unanticipated costs associated with enforcement.
	Resource user	Currently there is no specific rule or policy guidance for landfills.	Resource consent applicants will have clarity and certainty about key elements that need to be addressed in resource consent applications.
	Community benefits	No new benefits	The community will have clarity and certainty about key elements of waste disposal that will be addressed in resource consent applications.

	<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend provisions to be more directive and reflect strategic outcomes in proposed Plan (preferred option)</b>
<b>Efficiency and effectiveness</b>	The operative plan is effective in that all landfills need consent. The lack of integration amongst the plans reduces their efficiency.	Having specific provisions for landfill activities will enhance effectiveness and efficiency.
<b>Risks of acting or not acting</b>	There is sufficient information to provide clear direction for the management of landfills. There is a greater risk of using the status quo (not acting)	There is sufficient information to provide clear direction for the management of landfills. There is a greater risk of using the status quo (not acting)
<b>Appropriateness</b>	Not appropriate because a better alternative is available	The proposed provisions assist in decision-making for resource consent applications and the policies will assist in implementing the objectives in the proposed Plan.
<b>Conclusions</b>	The lack of specific provisions to manage landfill activities is not preferred.	Specific provisions for the management of landfill activities are the preferred approach.

**Table A7: Efficiency and effectiveness of proposed provisions for collected animal effluent to land**

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend the provisions as in the proposed Plan. (preferred option)
Costs	WRC	Most costs associated with consenting and compliance are recovered from the consent holder. The lack of clarity for the requirements for storage can result in conflict between WRC staff and the resource user and the community.	Most costs associated with consenting and compliance are recovered from the consent holder.
	Resource user	The operative provisions were adopted prior to the development of the pond calculator which has resulted in the use of short-term consents. This leads to additional costs at the time of each consent renewal.	The proposed provisions require the use of deferred irrigation and therefore the use of adequate storage. Lined storage ponds can cost upwards of \$100,000.
	Community	Short-term consents that do not require lined storage can result in adverse effects to surface and groundwater.	No anticipated costs to the community.
Benefits	WRC	No anticipated benefits.	More clarity in provisions benefits WRC consenting and compliance officers.
	Resource user	The lack of clarity has been used to delay the need to pay for costly storage facilities.	The use of collected animal effluent can save money that would otherwise be spent on fertiliser.
	Community	Storage and deferred irrigation can help achieve environmental outcomes.	Storage and deferred irrigation can help achieve environmental outcomes. Increased spend on storage facilities can result in local employment and business opportunities.
Efficiency and effectiveness		The operative rules have not resulted in the universal use of lined storage ponds and deferred irrigation in the Wellington Region.	The proposed provisions are in line with industry good practice and are anticipated to be efficient and effective.
Risks of acting or not acting		Enough information, industry standards and region-specific tools are available to make the risk of not acting (the status quo) a greater risk than acting (the proposed provisions).	Enough information, industry standards and region-specific tools are available to make the risk of not acting (the status quo) a greater risk than acting (the proposed provisions).

	<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend the provisions as in the proposed Plan. (preferred option)</b>
Appropriateness	The operative provisions are still appropriate but not as appropriate as the proposed provisions.	The proposed provisions are the more appropriate option to achieve the objectives in the proposed Plan.
Conclusions	The status quo is not the preferred option	The proposed provisions are more efficient and effective for meeting the purpose of the RMA and the objectives of the proposed Plan.

**Table A8: Efficiency and effectiveness of proposed provisions for aerial application of vertebrate toxic agents**

		<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend the provisions as in the proposed Plan. (preferred option)</b>
<b>Costs</b>	WRC	There are costs in the administration of a discharge consent for aerial applications of vertebrate toxic agents. Further costs are in information campaigns for the community about discharges.	Not expected to be substantively different from option 1.
	Resource user	Cost associated in applying for resource consent and meeting the conditions of consent can be relatively high.	The proposed provisions retain fewer matters of control than in the operative plan and therefore compliance costs should be less.
	Community	High social costs for communities who are opposed to the discharge of 1080.	Similar costs to the community from the provisions as described in option 1.
<b>Benefits</b>	WRC	The large number of “matters of control” under the operative rule provides WRC with greater control and information.	The proposed provisions acknowledge the role of other agencies in enforcing vertebrate toxic agents under the HSNO Act.
	Resource user	The large number of “matters of control” under the operative rule reduces the risk of the application coming into conflict with communities who are opposed to the aerial discharge of vertebrate toxic agents.	The smaller number of “matters of control” under the proposed rule reduces the cost of compliance.

	<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend the provisions as in the proposed Plan. (preferred option)</b>
Community	The regulation of aerial discharges of vertebrate toxic agents results in improved predator control and improved biodiversity.	Same benefits to the community as described in Option 1.
<b>Efficiency and effectiveness</b>	The operative provisions are relatively efficient and effective. However, there are several requirements for the resource user that are redundant with requirements that they must provide to other agencies who are also implementing the HSNO Act.	The proposed provisions will improve efficiency and effectiveness by providing a clear definition of vertebrate toxic agents and by focusing on “matters of control” that are relevant to WRC’s need to  In addition the proposed provisions acknowledge that all vertebrate toxic agents must be approved for use under HSNO and the role of Regional Public Health, which will improve the efficiency of the rule.
<b>Risks of acting or not acting</b>	Additional legislation and information on the aerial discharge of vertebrate toxic agents since the adoption of the operative provisions make the risk of relying the operative provisions (not acting) a greater risk than using the proposed provisions (acting).	Additional legislation and information on the aerial discharge of vertebrate toxic agents since the adoption of the operative provisions make the risk of relying the operative provisions (not acting) a greater risk than using the proposed provisions (acting).
<b>Appropriateness</b>	Not appropriate because a better alternative is available	The proposed provisions assist in decision-making for resource consent applications and the policies will assist in implementing the objectives in the proposed Plan.
<b>Conclusions</b>	The existing provisions are less efficient due to their lack of acknowledgement of new legislation and information.	The proposed provisions are more efficient and effective for meeting the purpose of the RMA and the objectives of the proposed Plan.

**Table A9: Efficiency and effectiveness of proposed provisions for consented on-site wastewater systems within discharging treated wastewater to land**

		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend the provisions as in the proposed Plan. (preferred option)
<b>Costs</b>	WRC	The policies related to discharges of wastewater to land are not integrated in the operative plan resulting in increased effort and cost for WRC staff to process consent applications.	Integrated objectives and policies are used in the proposed Plan for discharges of treated wastewater (discharges from municipal wastewater treatment plants) and for consented on-site (domestic) wastewater treatment systems. This integration should reduce the effort and costs associated with processing consents. In addition the activity status is either controlled or restricted discretionary rather than discretionary, which should provide more clarity and ease for processing.
	Resource user	The lack of specific rules for the discharge of sewage from municipal wastewater treatment plants to land results in uncertainty and high costs to territorial authorities for their resource consent applications.	General costs associated with consent applications and those associated with meeting the matters of control.
	Community	The costs of consent applications for territorial authorities are passed on to urban ratepayers. The lack of integrated provisions and specific provisions can result in undesired environmental outcomes.	The use of controlled activity rules precludes the community, individuals, organisations, agencies, groups and iwi from submitting on consent applications, with the resultant risk that environmental, social, cultural and economic costs are not considered and managed. The comprehensive list of specified matters of control may not fully address social, cultural and economic desires.



		Option 1 – Status quo (no change from operative plans)	Option 2 – Amend the provisions as in the proposed Plan. (preferred option)
<b>Benefits</b>	WRC	No obvious benefits.	Integrated objectives and policies are used in the proposed Plan for discharges of treated wastewater (discharges from municipal wastewater treatment plants) and for consented on-site (domestic) wastewater treatment systems. This integration should reduce the effort and costs associated with processing consents. In addition the activity status is either controlled or restricted discretionary rather than discretionary, which should provide more clarity and ease for processing and assist in promoting the discharge of treated wastewater to land rather than to water.
	Resource user	No obvious benefits.	Controlled activity status with specified matters of control should reduce costs of consent applications, and provide certainty that consent will be granted.
	Community benefits	The use of discretionary activity rules allows the community, individuals, organisations, agencies, groups and iwi to submit on consent applications, to raise environmental, social, cultural and economic matters that should be considered and managed.	Controlled activity status with a comprehensive list of specified matters of control should reduce costs of consent applications and therefore costs to ratepayers. The comprehensive list of specified matters of control should help achieve the environmental objectives in the proposed Plan, including promoting discharges to land rather than to water.
<b>Efficiency and effectiveness</b>		The operative provisions lack the integration needed to provide efficiency although implementation may be effective in achieving environmental protection.	The proposed provisions improve the efficiency and effectiveness of achieving the objectives in the proposed Plan. The provisions effectively implement the requirements of the NES-Drinking Water.
<b>Risks of acting or not acting</b>		The risk of not acting is to not give adequate effect to the proposed policy promoting discharges to land over water.	Enough technical guidance and information exists to provide clear direction for the discharge of treated wastewater to land as a controlled activity. The risk of not acting is to not give effect to the policies promoting discharges to land over water.

	<b>Option 1 – Status quo (no change from operative plans)</b>	<b>Option 2 – Amend the provisions as in the proposed Plan. (preferred option)</b>
<b>Appropriateness</b>	The operative provisions are not adequate to achieve the objectives of the proposed plan with respect to promoting discharges to land over water.	The proposed provisions will assist in giving effect to the objectives in the proposed plan, specifically in enabling discharges of treated wastewater to land over water.
<b>Conclusions</b>	The operative provisions are less effective and efficient as they do not provide a mechanism to enable discharges to land over water and therefore do not give effect to the objectives of the proposed plan.	The proposed provisions, and in particular the controlled activity status is the most efficient and effective for giving effect to the proposed objectives of the plan.

The Greater Wellington Regional Council's purpose is to enrich life in the Wellington Region by building resilient, connected and prosperous communities, protecting and enhancing our natural assets, and inspiring pride in what makes us unique

For more information contact the Greater Wellington Regional Council:

Wellington office  
PO Box 11646  
Manners Street  
Wellington 6142

T 04 384 5708  
F 04 385 6960  
[www.gw.govt.nz/rps](http://www.gw.govt.nz/rps)

Upper Hutt office  
PO Box 40847  
Upper Hutt 5018

T 04 526 4133  
F 04 526 4171

Wairarapa office  
PO Box 41  
Masterton 5840

T 06 378 2484  
F 06 378 2146



[info@gw.govt.nz](mailto:info@gw.govt.nz)  
[www.gw.govt.nz](http://www.gw.govt.nz)  
[regionalplan@gw.govt.nz](mailto:regionalplan@gw.govt.nz)

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