Guide to Landfill Consent Conditions

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1 Introduction

1.1 Foreword

The 1998/99 National Landfill Census, undertaken by the Ministry for the Environment,[1] has indicated a lack of consistency between consent authorities (and even within some consent authorities) with regard to resource consent conditions that have been developed for landfills. The census has also indicated that a large number of regional councils are not using the available formal mechanisms to enforce consent conditions.

This *Guide to Landfill Consent Conditions* has been prepared to assist in the development and effective enforcement of appropriate and effective resource consent conditions during the consent application process and subsequent review processes for landfill sites.

1.2 Objectives

The objectives of this *Guide* are to:

- provide practical guidance to landfill owners/operators, consent authorities and others involved in landfill resource consent application and review processes on issues relating to developing, upgrading and reviewing resource consent conditions for proposed, operating and closed landfills
- achieve sustainable environmental outcomes by facilitating a consistent approach to the types of consent conditions imposed on proposed, operating and closed landfills throughout the country
- reflect industry best practice with respect to approaches to landfill resource consents and consent conditions in the light of:
  - developments in the practice of landfill siting, design, operation and monitoring and associated resource consent issues
  - experience in the implementation of the Resource Management Act 1991 by consent authorities throughout the country
  - case law
- provide guidance on the methods available to councils for enforcement of consent conditions.

[1] Ministry for the Environment. 2000. *1998/1999 National Landfill Census Report.* Ministry for the Environment, Wellington, New Zealand.

1.3 Scope

In achieving these objectives the *Guide* aims to:

- outline the key issues associated with different types of resource consent conditions
- provide guidance on approaches to developing resource consent conditions
- provide guidance on options for review and enforcement of resource consent conditions
- discuss ways of ensuring that landfill management plans are effective tools for preventing adverse effects on the environment
- provide practical examples and case studies, where appropriate.

This *Guide* does not eliminate the need for the detailed development of site-specific consent conditions. While examples of consent conditions are provided, these are not intended to be copied verbatim, or adopted without consideration of their suitability on a case-by-case basis.

This *Guide* addresses ways to deal with technical issues in landfill consent conditions. However, for guidance on consideration of technical issues and requirements with respect to the design, operation and monitoring of landfills, reference should be made to the Centre for Advanced Engineering (CAE) *Landfill Guidelines* (Centre for Advanced Engineering, 2000), referred to here as the CAE *Landfill Guidelines*,[2] and to the Ministry for the Environment *Guide for the Management of Closing and Closed Landfills in New Zealand* (2001).[3]

In considering technical issues it is also important for the consent authority to have an equivalent level of knowledge, or access to equivalent technical advice, as the applicant.

Examples used relate to municipal solid waste (MSW) landfills, as defined in the CAE *Landfill Guidelines*, although the principles are applicable to consents for any sites accepting material for disposal to land, including industrial waste landfills and construction and demolition (C&D) waste landfills. However, although the principles remain applicable, environmental expectations and standards may differ depending on the types of waste a site accepts.

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[2] Centre for Advanced Engineering. 2000. *Landfill Guidelines.* Centre for Advanced Engineering, Christchurch, New Zealand (funded by Ministry for the Environment).

[3] Ministry for the Environment. 2001. *A Guide for the Management of Closing and Closed Landfills in New Zealand.* Ministry for the Environment, Wellington, New Zealand.

1.4 Intended audience

This *Guide* is primarily designed to assist consent authorities and those applying for resource consents (or changes to resource conditions), for the development, operation or aftercare of landfill sites.

It is also intended as a resource for those with an interest in the resource consent application, submission and review process for any landfill site, including:

- tangata whenua
- site neighbours and the surrounding community
- environmental groups
- government agencies
- local health authorities.

1.5 Related guideline documents

This *Guide* addresses resource consent issues with respect to landfills. For further information and guidance on the design, operation, monitoring and aftercare of landfills, and on more general issues with respect to resource consents, the following guidelines and publications are available.

Landfills

Ministry for the Environment. 2001. *A Guide for the Management of Closing and Closed Landfills in New Zealand.* Ministry for the Environment, Wellington, New Zealand.

Centre for Advanced Engineering. 2000. *Landfill Guidelines.* Centre for Advanced Engineering, Christchurch, New Zealand (funded by Ministry for the Environment).

Resource consent issues

Loutit, B, Bull, A. 2001. *Effective and Enforceable Consent Conditions.* New Zealand Planning Institute, Ministry for the Environment, Simpson Grierson. Wellington, New Zealand**.**

Ministry for the Environment. 2000. *Resource Consent Durations and Reviews: A study of Regional Council and Unitary Authority practice under the Resource Management Act 1991.* Ministry for the Environment, Wellington, New Zealand.

1.6 Layout of the guide

This *Guide* is set out in the following sections:

- resource consents
- resource consent conditions
- development of consent conditions
- review and upgrading of consent conditions
- site-based management plans
- enforcement of consent conditions.

Appendices contain an outline table of contents for a landfill management plan, and a case study with examples of landfill resource consents for an existing, a closed and a new regional landfill.

2 Resource Consents

2.1 Introduction

A resource consent permits an activity that would otherwise not be allowed. Conditions can be imposed on resource consents to ensure that the actual or potential adverse effects on the environment of the activity are avoided, remedied or mitigated. In other words, resource consents are permissive, or make an opportunity available, and conditions within the consent provide restrictions on the activity.

The exercise of a resource consent is not mandatory. However, the conditions of the consent become mandatory if it is exercised.

This section provides a description of the legislative requirements under the Resource Management Act 1991 (RMA) with respect to landfill resource consents. Further details of the RMA, as it relates to landfills and the resource consent application process, are contained in the CAE *Landfill Guidelines*.

2.2 Types of resource consent

There are three different types of resource consent that relate to most landfills:

- discharge permit
- water permit
- land use consent.

In addition, in certain circumstances, the following types of resource consent may also be required:

- coastal permit
- subdivision consent.

2.2.1 Discharge permits

Discharge to land

Landfills require a discharge permit for any discharge of contaminants onto, or into, land unless expressly allowed for in a regional plan and any proposed regional plan, or by a resource consent or regulation (section 15(1)(d) of the RMA).

This consent is a fundamental requirement for an operating landfill.

A single generic discharge permit is usually used to cover all discharges of solid waste to land at the landfill.

Discharge permits for discharge of solid waste to land generally contain conditions relating to:

- location of solid waste discharges
- extent of landfill footprint
- quantity of solid waste to be discharged
- waste acceptance criteria
- liner and leachate collection systems
- acceptance of designs
- reporting requirements
- peer review (in some circumstances)
- bond or financial assurance (in some circumstances).

Discharge to water

Landfills require a discharge permit for any discharge of water and/or contaminants into water (section 15(1)(a) of the RMA), or onto, or into, land in circumstances where it may result in a contaminant entering water (section 15(1)(b) of the RMA), unless expressly allowed in a regional plan, any proposed regional plan, or by a resource consent or regulation.

Activities that may require a discharge permit under section 15(1)(a) of the RMA include:

- discharges of clean and/or contaminated surface stormwater
- discharge of groundwater from a groundwater control system to surface water.

Unless circumstances require otherwise, a single consent may be used for all surface water, or groundwater, discharges within a single defined catchment. Otherwise a separate permit will be required for each separate discharge.

The disposal of collected, uncontaminated water may require a discharge permit if this is directly to water.

Discharge permits for discharges of contaminants, or water, to water at landfills generally contain conditions relating to:

- location of discharges
- design and integrity of structures
- quantity of contaminants or water to be discharged
- quality of discharges
- timing of discharges (in rare circumstances where dilution is necessary)
- monitoring of discharges (groundwater and surface water monitoring)
- sediment control measures
- scour protection.

Activities that require a discharge permit under section 15(1)(b) include:

- discharges of leachate from operating or closed landfills to groundwater and surface water
- spray irrigation of leachate onto land
- subsurface irrigation of leachate into land.

Discharge permits for discharges of contaminants onto, or into, land in circumstances that may result in contaminants entering water at landfills, generally contain conditions relating to:

- location of discharges
- liner and leachate collection systems
- maximum leachate head on the liner
- landfill cover system
- leachate monitoring
- groundwater monitoring
- surface water monitoring
- contingency measures to be implemented in the event of unacceptable levels of groundwater or surface water contamination
- reporting requirements
- peer review (in some circumstances)
- bond or financial assurance (in some circumstances).

Discharge to air

Landfills require a discharge permit for any discharge of contaminants into air unless expressly allowed in a regional plan and any proposed regional plan, or by a resource consent or regulation (section 15(1)(c) of the RMA).

Three types of discharges to air may occur at landfills:

- the emission of decomposition gases such as methane, or other greenhouse gases, and odorous compounds
- dust
- smoke resulting from burning refuse.

It is important to note that open burning in a landfill is illegal for most sites unless allowed by a regional plan. Open burning at landfills was prohibited under the Clean Air Act 1972, and therefore cannot be undertaken as an existing use under section 418 of the RMA.

Furthermore, a variety of hazards arise when burning occurs within a landfill site, and these may present significant risks to both the health and safety of site personnel and the public.

The Health and Safety in Employment Act 1992 (enforced by the Ministry of Labour) places specific requirements on employers and those in control of a place of work to prevent harm to employees (section 6) and others (sections 15 and 16) who may be affected by activities at the workplace. Fires at a landfill, whether planned or accidental, would be regarded as giving rise to a number of significant hazards, each of which may pose a risk to employees in the workplace. There is also potential for fires to continue burning within a landfill, possibly unnoticed, for long periods of time.

Discharge permits for discharges of contaminants into the air from landfills generally contain conditions relating to:

- odour limits
- dust limits
- a compliance point for effects of odour and dust discharges

- monitoring for landfill gas discharges and migration
- collection and flaring or utilisation of landfill gas
- operation, performance and monitoring of landfill gas flares
- odour monitoring provisions (for example, "sniff" panels) in some circumstances
- complaint response
- reporting requirements
- a bond, or financial assurance (in some circumstances).

2.2.2 Water permits

Landfills require a water permit pursuant to section 14 of the RMA from a regional council for the collection and control of stormwater unless it is expressly allowed by a rule in a regional plan and any proposed regional plan, or by a resource consent, or is an existing use under section 20 of the RMA.

In practice, regional councils generally require water permits for diversion or damming of natural streams on or around the landfill site and for taking of groundwater by a groundwater collection or control system. A water permit may also be required for the diversion of stormwater around a landfill site. Unless circumstances require otherwise, a single consent may be used to enable all diversions or takes within a single defined catchment. Otherwise a separate permit will be required for each separate diversion.

Water permits for the taking, use, damming or diversion of water at landfills generally contain conditions relating to:

- location of takes, dams or diversions
- design and integrity of structures
- scour protection
- peer review (in some circumstances)
- a bond or financial assurance (in some circumstances).

2.2.3 Land use consents

"Use of land" includes "any deposit of any substance in, on, or under the land" (section 9(4)(d) of the RMA). Under section 9, no person may use land in a manner that contravenes a rule in a district plan or proposed district plan, or a regional plan or proposed regional plan, unless allowed by a resource consent or unless the proposed activity has existing use rights under section 10, 10A or 20 of the RMA. Thus there is a presumption in the RMA that land use activities may occur as of right unless there is a rule in a district plan or a regional plan that says otherwise.

Since most district and regional plans do "say otherwise", under normal circumstances a landfill will require a land use consent from either a territorial authority or regional council, or both.

Land use consents issued by territorial authorities in respect of landfills generally contain conditions relating to:

- development plans
- hours of operation
- noise
- roading and traffic
- litter
- nuisance from birds, flies and vermin
- fencing
- access restrictions
- separation distances
- site rehabilitation
- landscaping and visual effects
- a bond or financial assurance (in some circumstances)
- amalgamation of titles (in some circumstances).

A land use consent may be necessary from the regional council, under section 9 of the RMA, if a landfill proposal involves excavation, filling, installation of bores, or is otherwise contrary to the provisions of a regional plan.

Regional council land use consents for excavation or filling generally contain conditions relating to:

- erosion control
- silt control
- dust control.

A land use consent may also be necessary from the regional council, under section 13 of the RMA, if a landfill proposal involves any work in, on, over or under the bed of any lake or river, or is otherwise contrary to the provisions of a regional plan.

2.2.4 Coastal permits

In the coastal marine area (that is, below mean high water springs), uses that involve and/or that would adversely affect the foreshore or seabed require a coastal permit unless the regional coastal plan provides otherwise. The regional council, or unitary authority, is responsible for assessing coastal permit applications. A coastal permit would be required for an existing landfill, and before a new landfill could be developed, in the coastal marine area (for example, in the intertidal area).

It is a matter of national importance under section 6 of the RMA that the natural character of the coastal environment should be protected from inappropriate use. The Environment Court has found that a refuse transfer station was an inappropriate use in the coastal environment (Harrison *v* Tasman DC [1994] NZRMA 193).

It is unlikely that any application to establish a landfill in the coastal marine area would be successful.

2.2.5 Existing use rights/transitional provisions

In some circumstances, landfills that have been established some years ago may be able to claim existing use rights with respect to territorial authority issues. Section 10 of the RMA sets out the requirements that must be met if land is to continue to be used in a manner that contravenes a rule in a district plan or a proposed district plan.

The first requirement is that the land use was lawfully established before the rule became operative. This can include a land use established by a designation that has subsequently been removed.

The second requirement is that the effects of the use are the same or similar in character, intensity and scale to those that existed before the rule became operative or the proposed plan was notified or the designation was removed.

The third is that the use must not have been discontinued for a continuous period of more than 12 months.

The existing use rights of activities covered by regional plans do not continue indefinitely. They may continue in contravention of a rule in a proposed regional plan only until the a plan with a rule requiring consent becomes operative, or until the final determination of a resource consent applied for within six months of the rule becoming operative.

The RMA also provides that:

- consents granted under the Town and Country Planning Act 1977 (or preceding Acts) become land use consents (section 383)
- water rights under the Water and Soil Conservation Act 1967 are deemed to be "existing rights and authorities" (section 386), and become either water permits or discharge permits. These permits expire on either 1 October 2001 or some other date until 2026, depending on their original duration, or on the earlier date specified in the water right.

It may also be necessary to refer to the transitional provisions of the RMA.

For the numerous landfills that did not have water rights and/or land use consents at the time of enactment of the RMA, no lawful consents exist.

2.2.6 The suite of typically necessary consents

The establishment of a landfill under the RMA may require a number of consents from a regional council and/or territorial authority. There are five unitary authorities in New Zealand (Chatham Islands Council, Gisborne District Council, Marlborough District Council, Nelson City Council and Tasman District Council), which have the functions of both a regional council and a territorial authority.

The number and type of consents required, and the detail of information required, may vary depending on the type of landfill and its siting and surrounding environment.

The types of consent that may be necessary for a landfill, and the authorities from which they must be sought, are set out in Table 2.1.

Consents required for the development and operation of a landfill, with the exception of consent to place waste under section 15(1)(d) of the RMA, are generally applicable following landfill closure. Therefore issues with respect to closure and aftercare should be addressed at the time of consent applications. If original consents expire following closure, additional consents will be required for continuing discharges and aftercare activities.

Table 2.1: Regulatory authority resource consent responsibilities

Authority	Consent type	Purpose
Regional council or unitary authority	Discharge permit	Discharge of contaminants to: • land • water • air.
	Water permit	The taking, use, damming or diverting of water.
	Land use consent	Excavation or filling of the land; installation of bores and culverts.
	Coastal permit	If the site is in a coastal marine area.
District or city council, or unitary authority	Land use consent	Use of land for purposes of a landfill.
	Subdivision consent	This may be necessary if the project involves any creation of new allotments, amalgamation of titles, vesting of roads or reserves, or partition of the land into different ownerships.

2.2.7 Designations

A designation is a provision in a district plan that provides for a particular public work or project of a requiring authority. Designations for landfills can only be required by a Minister of the Crown, or a district or city council or unitary authority. The designating authority must have financial responsibility for the landfill, but the landfill does not have to be within their district or city. The designation procedure is not available to private organisations wishing to establish a landfill, as a landfill is not a network utility operation.

A designation for a landfill authorises the use of the land as a landfill. However, resource consents from the regional council are still necessary for excavation/filling, discharges of contaminants and stormwater, and diversion and use of water.

A subdivision consent from the territorial authority may still be necessary but the presence of a designation does away with the need for a land use consent from the territorial authority.

A notice of requirement to designate land is publicly notified as if it were an application for a resource consent, and there is provision for public submission and appeal. Designations for landfills generally contain conditions similar to conditions in a land use consent.

A designation lapses after the expiry of five years from the date on which it was included in the district plan unless:

- it has been given effect to; or
- an application has been made to extend the period; or
- a different period is specified in the designation.

Once given effect, a designation has unlimited duration unless otherwise specified.

If a territorial authority intends to designate land for use as a landfill site it should carefully consider the appropriateness of including conditions relating to issues that may be addressed in regional council consents, to avoid the potential for incompatibility between conditions in the designation and future regional council resource consent conditions.

2.3 Consent issues

2.3.1 Duration of consent

The duration of a resource consent (section 123 of the RMA) varies according to the type of consent.

A subdivision consent, or a land use consent or coastal permit for a reclamation, is unlimited in duration unless otherwise specified in the consent. Similarly, other land use consents are unlimited in duration unless they are consents in relation to the use of the bed of a lake or river.

Other consents (for example, discharge consents, water permits and coastal permits) can specify a duration that is any time period up to a maximum of 35 years. If no time period is specified in the consent the default duration is taken to be five years.

2.3.2 Transfer of consents

Sections 134–137 of the RMA deal with the transfer of consents. The general rule is that resource consents attach and relate to a particular site or area of land.

Land use and subdivision consents (other than land use consents in relation to the use of lakes or rivers) attach to a particular site and cannot be transferred to other sites. Land use consents in relation to the beds of rivers and lakes may be transferred to any person unless the consent provides otherwise.

Water permits for damming or diverting water, and discharge permits, may be transferred to another party but only if that person is an owner or occupier of the particular site.

Discharge consents may not be transferred from one site to another.

Water permits for other than damming or diverting can be transferred to any other person on any site that is within the same catchment provided that the transfer is expressly allowed by a regional plan, or approved by the consent authority that granted the permit.

Written notice of any transfer must be given to the consent authority before the transfer can take place.

2.3.3 Lapsing of consents

Section 125 of the RMA deals with lapsing of consents. A resource consent lapses after the expiry of two years from its commencement unless:

- otherwise provided in the consent conditions; or
- the consent has been given effect to; or
- an application has been made to extend the period.

Careful consideration needs to be given to the time period required to implement a landfill after consents have been granted. It may well be appropriate to apply for an extended lapse period for some or all of the consents.

An application to extend the two-year consent period may be made to the consent authority at any time up to three months after the expiry of that consent period. Before approving an extension, the authority must be satisfied that substantial progress towards the exercise of the consent has been made in giving effect to the consent and is continuing to be made. It must also be satisfied that approval has been obtained from everyone who may be adversely affected by the granting of an extension, unless the authority considers that it is unreasonable to require all such approvals. Also, the effect of the extension on the objectives and policies of any plan must be minor. The consent holder has a right of objection (under section 357 of the RMA) to the decision of the consent authority in respect of an application to extend the duration of consent, and a right to appeal against the consent authority's decision on the objection (under section 358 of the RMA).

2.3.4 Best practicable option (BPO)

Section 108(1)(e) of the RMA refers to the use of the best practicable option (BPO) in respect of discharge consents (including coastal permits). This concept is defined in the RMA (section 2(1) as the best method for preventing or minimising the adverse effects on the environment having regard, among other things, to:

- the nature of the discharge or emission and the sensitivity of the receiving environment to adverse effects; and
- the financial implications, and the effects on the environment, of that option when compared with other options; and
- the current state of technical knowledge and the likelihood that the option can be successfully applied.

Note that the evaluation of the best method must take into account all of the matters bullet pointed above. Also, because the definition includes discretion and interpretation, it cannot be used as a basis for establishing strict liability.

Section 108(2)(e) of the RMA states that a discharge consent, or a coastal permit involving a discharge, may include a condition requiring the holder to adopt the best practicable option to prevent or minimise any actual or likely adverse effect of the discharge on the environment. However, this is qualified by sub-section 8, which states that before imposing a condition requiring BPO the consent authority must have regard to:

- the nature of the discharge and the receiving environment
- other alternatives, including any condition requiring the observance of minimum standards of quality of the receiving environment.

The consent authority must be satisfied that the inclusion of a condition requiring BPO is the most efficient and effective means of preventing or minimising any actual or likely adverse effects on the environment.

The use of BPO implies a balanced judgement, but the specific inclusion of the word "practicable" suggests a pragmatic approach. The option may not be best in terms of science or cost or effects on communities, but it is one that will be efficient and effective.

The BPO provisions of the RMA enable the consent authority to require that the best practicable means are used for the prevention and minimisation of effects in the particular circumstances of the site.

The justification for the BPO requirement should be set out in the consent authority's officers' report to the hearing and/or must be recorded in the hearing decision report.

3 Resource Consent Conditions

3.1 Introduction

Resource consent may be granted with or without conditions.

This section addresses:

- resource consent conditions and the circumstances in which they may be imposed
- enforceability of conditions
- agreed consent conditions
- different types of resource consent conditions.

3.2 Resource consent conditions

Resource consent may be granted with or without conditions.

Section 108 of the RMA authorises, but does not compel, the imposition of conditions on a resource consent, and sets out the types of condition that may be imposed. The consent authority has discretion as to whether any conditions should be imposed, and if so, which of the matters set out in section 108 are the subject of conditions. Not all of the issues in section 108 have to be addressed in conditions.

There are also other issues in section 108 that apply specifically to coastal permits and reclamations, which may be applicable to existing landfills in the coastal marine area. It is considered unlikely that new landfills would be approved in areas that require these types of consents, but if they are, the additional conditions may apply.

The reasons for the decision in which conditions are set must be included in the decision (section 113(1)(a) of the RMA).

The consent conditions that are actually applied will relate to the circumstances of the particular application. A consent authority may impose any condition that it considers appropriate, including any condition of the kind described below.

- Works or services may be required. These may include (but are not limited to) road upgrading, planting, or the protection, restoration, or enhancement of natural or physical resources.
- It may be required that the best practicable option (BPO) is used to prevent or minimise adverse effects of any discharges, provided that the consent authority is satisfied that the BPO is the most efficient and effective means of preventing or minimising actual or likely effects on the environment.

- The consent holder may be required to collect, at its own expense, information relating to the exercise of the resource consent, and relevant to the effects of the activity, and provide it to the consent authority. This includes:
  - the making and recording of measurements
  - the taking and supplying of samples
  - carrying out analyses, surveys, investigations, inspections, or other specified tests
  - carrying out and analysing measurements, samples, analyses, surveys, investigations, inspections, or other specified tests in a specified manner
  - provision of information to the consent authority at a specified time, or times
  - provision of information to the consent authority in a specified manner
  - compliance with the condition at the consent holder's expense.
- Financial contributions (that is, either money or land, or both) in respect of the proposed landfill may be required by a territorial authority. The amount and purpose of the contribution must be specified, but the consent authority cannot impose a financial contribution unless the manner in which it is to be calculated and the purpose for which it is required are set out in the district plan.
- Bonds may be required to be given by the consent holder in order to provide surety that the conditions of consent will be given effect to. Bonds create an interest in the land in terms of the Land Transfer Act 1952 and may be registered as a covenant running with the land. Bonds may have to be posted before the resource consent can be exercised. When a bond is provided, the consent holder still remains liable for any breach of the conditions of consent. The commonly adopted bond conditions require the consent holder to provide security for the performance of any condition of the consent. This can include the provision of a guarantor. The bond may be varied, cancelled or renewed by agreement between the consent holder and the consent authority. Special provisions with respect to the administration of bonds and covenants are set out in section 109 of the RMA.
- It may be a requirement that covenants are entered into, in favour of the consent authority, in relation to the performance of any condition involving the use of land. The covenant may be varied, cancelled or renewed by agreement between the consent holder and the consent authority. Special provisions with respect to administration of covenants are set out in section 109 of the RMA.

3.3 Enforceability

A test of the efficacy of any resource consent condition is the ability of a consent authority or the Environment Court to enforce it.

In order to reduce the potential for dispute during the term of consent, applicants and consent authorities need to ensure that conditions are practicable and enforceable. In preparing consent conditions the consent authority should:

- follow general legal principles with respect to conditions
- ensure that appropriate delegation exists to approve management plans, etc., in terms of the conditions
- ensure that conditions are easily interpreted
- ensure that conditions are certain

- not restrict other legislation or statutory procedures
- not restrict future processes or approve conditions outside of the consent process
- not attempt to bind third parties
- not commit the consent authority to any action.

3.3.1 General legal principles

For resource consent conditions to be valid in law there are some general legal principles with which they must comply. In this respect a condition must:

- be for a resource management purpose, not an ulterior one
- fairly and reasonably relate to the activity authorised by the consent to which the condition is attached
- not be so unreasonable that a reasonable consent authority duly appreciating its statutory duties could not have approved it.

Resource management purpose

When drafting a condition, consideration should be given to the purpose of the condition and, in particular, the avoidance, remedy, or mitigation of adverse effects on the environment of the activity and the matters set out in Part 2 of the RMA.

For example, a condition requiring the consent holder to undertake works on a neighbouring property (such as improving farm roads) which are unrelated to the activity proposed on the consent holder's property could be considered *ultra vires* (legally invalid) in the particular circumstances.

It should be noted that a resource management purpose is wider than avoiding, remedying, or mitigating adverse effects on the environment. For example, it may include the gathering of information concerning the operating of a consent.

Fairly and reasonably relate to the activity authorised by the consent

The condition must relate to the activity for which consent has been applied and be able to be justified in terms of the environmental effects of that activity.

For example, a condition on a discharge consent cannot require a consent holder to undertake monitoring that does not relate to the actual or potential effects of discharges associated with the landfill.

Not unreasonable

The Environment Court could consider whether a reasonable consent authority would have imposed a condition of this type. This test is an objective one and will involve the Court exercising judgement as to the appropriateness or otherwise of the condition.

However, the threshold for the Court overturning such conditions is high and it is rare that a condition would be overturned on this basis.

An example of an unreasonable condition would be a condition banning the dropping of litter onto public roads from vehicles travelling to a landfill, as this is beyond the control of the consent holder.

3.3.2 Interpretation

It is essential that conditions can be interpreted according to their plain meaning, or by resort to documents expressly incorporated into the condition.

Conditions should be straightforward and easily interpreted, using plain language so that a layperson can understand them.

3.3.3 Certainty

Conditions should be written with specificity, clarity and accuracy of expression leading to certainty.

It is necessary for the consent holder to be able to determine what its obligations are under the consent. Vagueness, uncertainty or lack of finality may render a condition invalid or unenforceable. The consent authority must be able to determine unequivocally whether or not a condition is being complied with.

If a condition is clear and measurable it is possible to determine readily whether or not a condition is being complied with.

3.3.4 Other legislation

A condition that imposes a restriction on a specific statutory procedure or provision is inappropriate. Where a procedure is specifically provided for in other legislation, a consent authority cannot overrule that procedure with a consent condition.

3.3.5 Future processes

Future consent applications

A consent authority cannot impose a condition that prevents a future consent application for an activity. A condition cannot override the statutory ability to apply for a resource consent.

For example, a consent authority cannot impose a condition preventing a consent holder from applying for new consents to continue landfilling at a site when the existing consents expire.

Future management plans

It is helpful if the applicant has a draft management plan. The management plan should detail the operational procedures to be used by the consent holder to achieve desired environmental outcomes at the site.

However, there are situations where drafting a management plan prior to the hearing is difficult. In that situation the Environment Court has determined that the preparation of a future management plan could be a condition of a consent where the management plan is a mechanism providing information on how the consent holder will comply with other conditions of the consent. As held by the Court of Appeal in Turner *v* Allison [1971] NZLR 833, approval by the consent authority is then a certification process and not an arbitration process.

Management plans are addressed further in Section 6.3, Status of Management Plans.

3.3.6 Third parties

A condition is enforceable only against the consent holder. A condition would be invalid if it requires compliance by third parties, or their agreement to a specified action.

3.4 Agreed consent conditions

It is recognised as best practice for the consent authority to pre-circulate draft consent conditions to the parties involved before completion of the hearing report. However, where there are large numbers of submitters it may not be practicable to have this additional input from all parties prior to distribution of the hearing report.

Conditions are commonly agreed to between the parties at, or prior to, the hearing of a consent application. Such conditions must be embodied in the consent authority's decision in order to be binding. However, a consent authority is under no obligation to impose conditions that are agreed to between the applicant and submitters.

As with any part of a consent authority's decision, where one party opposes the inclusion of a condition agreed by the other parties, that party has the opportunity to appeal the decision to the Environment Court.

Where a consent authority grants a consent in reliance of an undertaking given by an applicant, and the consent is subject to a condition broad enough to encompass the undertaking, the applicant is obliged to comply with that undertaking.

The doctrine known as "Augier estoppel" enables a consent authority to impose a condition that may be *ultra vires* at the specific request of the applicant and in reliance on the binding undertaking of the applicant not to challenge the validity of that condition in any court of competent jurisdiction. A consent authority considering the possible use of this doctrine should obtain legal advice.

Some matters agreed between the applicant and submitters will not be appropriate for inclusion in the consent as conditions, but may be the subject of a separate agreement between the applicant and the submitters. Such a "side agreement" is not enforceable by the consent authority or through the Environment Court. It is a private contract enforceable under civil law through the District or High Court.

3.5 Types of consent conditions

The types of consent conditions allowed by section 108 of the RMA are generally broken down into the following:

- compliance, or limit, conditions
- design conditions
- operational, or process, conditions
- monitoring conditions
- contingency conditions
- reporting conditions
- bond/financial assurance conditions
- mitigation conditions
- review conditions
- general conditions
- standard conditions

3.5.1 Compliance, or limit, conditions

Compliance, or limit, conditions set a limit on the maximum time, quantity, concentration, rate or effect of an activity or physical parameter. They may also specify an environmental standard to be met. Examples include:

- maximum tonnage that a landfill can accept over a set time period
- maximum concentration of suspended sediment in a site's stormwater discharge
- maximum contaminant concentration in, or effect, on the receiving environment.

3.5.2 Design conditions

Design conditions specify design requirements to be met. Examples include:

- thickness and permeability of a landfill liner
- design parameters for a landfill gas flare.

3.5.3 Operational, or process, conditions

Operational, or process conditions, specify operational procedures to be carried out or operational parameters to be met. Examples include:

- hours of operation
- requirement to use daily cover
- minimum operating temperature for a landfill gas flare.

3.5.4 Monitoring conditions

Monitoring conditions specify monitoring requirements for landfill operations, discharges and the receiving environment(s). Examples include:

- monitoring locations, frequency of sampling and parameters to be analysed for groundwater, surface water and gas monitoring
- sampling protocols and analytical methods.

3.5.5 Contingency conditions

Contingency conditions require additional monitoring or investigations to be undertaken, or remedial measures to be instituted, in the event of the failure of a system or structure, or identification of a significant adverse effect through monitoring. Examples include:

- requirement to cease stormwater discharges if leachate is detected
- requirement to increase groundwater monitoring parameters and frequency if trigger levels are exceeded.

3.5.6 Reporting conditions

Reporting conditions specify information to be reported to the consent authority and the timing or frequency of reporting. Examples include:

- requirement to report annual refuse tonnages
- timing for and format of reports on monitoring results.

3.5.7 Bond/financial assurance conditions

Bond (or financial assurance) conditions can impose the provision of a bond on private companies to meet the costs associated with an environmental incident or site closure and aftercare, in case the company does not have sufficient financial resources or ceases to exist. Bond conditions should specify the amount of an environmental bond, or the procedure for setting a bond, and the circumstances under which it may be used to ensure compliance with the conditions of consent.

3.5.8 Mitigation conditions

Mitigation conditions require the consent holder to undertake activities which, while not specifically avoiding or remedying actual or potential adverse effects associated with the operation of the site, provide some mitigation of the effects through environmental enhancement. An example is a requirement for riparian planting.

3.5.9 Review conditions

Review conditions specify the timing, or triggers for, various types of reviews of consents and consent conditions, the reasons for the review and the aspects that may be reviewed. Examples include:

- review of monitoring parameters and frequency following a period of baseline monitoring
- review of conditions following transfer of consents.

3.5.10 General conditions

General conditions are those conditions that are common to a number of different consents. Examples include:

- requirements for suitably qualified personnel to operate the landfill
- the requirement for a peer review panel.

In order to reduce repetition, general conditions are sometimes incorporated into a single schedule that is attached to each of the relevant consents.

3.5.11 Standard conditions

Standard conditions are those imposed by the consent authority on all consents. Examples include:

- the requirement to pay administrative charges in accordance with section 36 or regulations made under section 360 of the RMA
- access to the site for consent authority staff and agents
- expiration date for the consent, if not given effect, pursuant to section 125 of the RMA.

3.6 Use of schedules to consents

Schedules can be used and attached to consents for the following reasons:

- to incorporate information lists referenced in one or more consent conditions; for example, monitoring wells, monitoring parameters or waste acceptance criteria limits
- to incorporate general conditions, relevant to a number of consents; for example, conditions that address:
  - landfill management plans
  - requirements for detailed designs
  - supervision of landfill operations
  - peer review
  - bonds
  - review conditions.

Where schedules relate to more than one consent they must be attached to each consent, but will be identical in each case.

4 Development of Consent Conditions

4.1 Introduction

Most consent conditions are developed in the following ways:

- in accordance with a consent authority's policies on specific technical issues
- in response to specific proposals by an applicant
- by adapting conditions proposed by an applicant
- as a result of concerns raised by submitters
- at the direction of the Environment Court.

This section addresses enforceability of consent conditions, *ultra vires* conditions and the issues that should be addressed in developing resource consent conditions for:

- land use consents
- discharge consents
- water permits.

4.2 Issues and conditions to be addressed

4.2.1 Land use consents and designations

Territorial authority land use consents and designations should generally contain conditions relating to the following:

- site activities and separation distances
- hours of operation
- development plans
- management plans
- prevention of nuisances (dust, litter, vermin and vectors)
- visual effects and landscaping
- roading and traffic
- noise
- site rehabilitation.

Site activities and separation distances

Land use consents should contain conditions specifying the activities that are able to be undertaken on the site. These will be landfilling and related activities such as:

- construction
- stockpiling of materials
- onsite transfer station
- composting
- recycling
- liner material and/or cover material quarrying
- general mitigation measures (for example riparian planting).

The consent may also contain conditions specifying minimum separation distances, or buffer zones, between an activity and the site boundary, or site neighbours, for the purpose of minimising the effects of activities allowed, or controlled, by the consent.

Hours of operation

Land use consents should contain a condition specifying the hours and days of operation of the landfill. Times, or days, may need to be specified differently for the following activities:

- acceptance of refuse
- working face preparation at the start of the day and cover of refuse at the end of the day
- construction activities.

Development plans

Land use consents should contain a condition (or conditions) specifying the development plan(s) to be adhered to in developing the landfill site. Development plans should be to scale and on an accurate topographical and cadastral base drawing. They should have been prepared as part of the application process and show the following:

- areas of the site to be used for specific activities
- site roads and buildings, and infrastructure such as weigh bridges and wheel-wash facilities
- the footprint and sequence of landfill development
- borrow and stockpile areas
- stormwater management structures
- site fencing
- final landform and vegetation proposals.

Management plans

Land use consents should contain a condition either specifying use of an existing landfill management plan (following amendment to incorporate any specific conditions of consent) or specifying the preparation of a landfill management plan detailing the methods to be used in managing the site to comply with conditions of the consent.

Landfill management plans are addressed in more detail in Section 6.

Nuisances

Landfills can give rise to the following nuisances, which may be controlled by land use consents:

- dust
- litter
- vermin and vectors (rats, flies and birds).

Potential effects due to nuisances are generally controlled by specific conditions with respect to the following, with the means of compliance detailed in the landfill management plan, or through a proposed landfill management plan accepted as a condition of consent:

- limits on the effects due to specific nuisances
- requiring the consent holder to take all practicable steps to minimise specific nuisances
- specifying working-face size, the use of specialised compaction equipment, and daily cover requirements to control litter, vermin and vectors
- specifying nuisance control measures such as site-speed limits and water cart usage to control dust, litter fences and litter collections, bird control devices, and vermin baiting
- specifying maximum dust deposition limits beyond the site boundary or at a compliance point (which would require monitoring to check compliance).

In respect of dust, issues to be addressed in the land use consent and air discharge consent respectively should be clarified between the territorial local authority and regional council. Consents granted by the different authorities need to be in alignment with each other.

Care needs to be taken in using only conditions that are prescriptive in respect of operational procedures as consent holder compliance with conditions may not necessarily result in control of the effect. For example, specifying the height and location of litter fences may not stop litter nuisance on surrounding properties. Often a mix of prescriptive and limit conditions is necessary.

Control of litter

It is difficult to prepare conditions with respect to control of litter nuisance offsite as a landfill operator has no legal jurisdiction beyond the boundaries of the landfill site.

A consent can require the consent holder to "take all practicable steps" or install litter fences and other litter control measures to limit the potential for litter to escape beyond the site boundary. However, the consent holder cannot be required to remove litter from land that it does not own, otherwise than at the request of the landowner.

A consent can require the consent holder to reject loads that are not adequately covered to prevent refuse dropping onto roads. However, this may exacerbate the litter nuisance.

If the consent holder does not control litter, from sources within its control, to an adequate degree, enforcement action may be initiated by the consent authority or any other person.

Visual effects and landscaping

Where there is a potential visual impact of site operations on the landfill site, neighbours or the general public consent conditions should specify measures to be undertaken to reduce adverse visual effects. Screening by planting trees and other vegetation or by developing bunds are the most commonly used ways of reducing visual effects.

Conditions for visual effects should reference a landscape plan prepared as part of the consent application process, or require such a plan to be prepared to the satisfaction of the consent authority. The landscape plan should provide details of:

- physical landscaping features such as contouring or bunding
- plant types
- plant locations
- the sequence of landscape developments
- maintenance of plantings.

It is preferable that a landscape plan is part of the application and not required to be produced as a condition of consent. A landscape plan produced to meet a consent condition cannot then be subject to submission and appeal by the community.

Roading and traffic

If there are potential adverse effects due to vehicle movements to and from the landfill site, land use consents should specify measures to reduce traffic effects. Conditions for traffic and roading that may be appropriate to reduce traffic effects include:

- specifying maximum daily vehicle movements into the site
- excluding public access and only allowing access to commercial refuse vehicles
- requiring modifications to road alignments, surfaces, carriageway widths or intersections to improve traffic safety
- specifying internal road construction
- specifying access times.

Conditions should not attempt to specify approach routes as this issue is beyond the jurisdiction of the consent authority, although a condition could require the consent holder to promote the use of certain roads.

Noise

If noise from the landfill has the potential to adversely affect site neighbours conditions should be set to limit noise effects. Conditions in respect of noise should distinguish between operational noise and construction noise.

Operational noise is the noise associated with day-to-day landfilling activities onsite; that is, noise from the operation of trucks, bulldozers and landfill compactors. Other activities that contribute to noise could include composting and its associated shredding, windrow turning and screening machinery, or an onsite transfer station.

Construction noise is the noise resulting from periodic construction activities at the site; for example, construction of roads, bunds, liners and stormwater ponds. Construction noise, because of its periodic and temporary nature, is usually subject to less stringent noise level limits. This can create problems if construction extends over a significant time period and creates a nuisance to site neighbours over that time.

Noise conditions are generally limit conditions, which specify maximum allowable noise levels. Consent conditions should specify:

- maximum noise levels
- days of the week and times of the day that the maximum levels apply
- location for measurement of noise
- the New Zealand standard(s) to be used in measuring and assessing noise.

In addition, consents can have conditions stating that the landfill operator shall take all practicable steps to limit or control noise at the site. Prescriptive conditions requiring machines to be fitted with silencers may be used.

Site rehabilitation

Land use consents should specify rehabilitation requirements to enable an end use appropriate for a landfill, which will not compromise environmental protection measures or endanger site users following closure.

Rehabilitation conditions generally refer to landscape and/or rehabilitation plans, which should address:

- final landform
- revegetation
- fencing
- riparian strips (if applicable).

4.2.2 Discharge to land

Consents to discharge solid waste onto or into land should generally contain conditions with respect to:

- location of discharges
- quantity of solid waste to be discharged
- waste acceptance criteria
- liner and leachate collection systems
- monitoring and reporting.

Location of discharges

Limit conditions prescribing the areas of the site on which waste can be placed and the extent of the landfill footprint are normally set. These conditions should refer to a site development plan.

Conditions may also specify the sequence of development on different areas of a site, separation distances from other activities, areas where certain types of waste may be deposited (for example, green waste prior to composting), or the use of an onsite transfer station to reduce the tipping face area.

Quantity of solid waste

An applicant must specify the quantity of solid waste it is applying to discharge. The consent authority can grant consent to discharge a lesser quantity than applied for, but not a greater quantity.

Limit conditions can specify maximum quantities of waste to be accepted at a landfill in a number of ways, by setting:

- an annual tonnage limit
- a total tonnage limit for the life of the site (with no annual limitation)
- a total volume limit (with no annual limitation)
- an annual volume limit.

If an annual volume limit is used, then it should specify whether volume is to be measured *in situ* by an annual survey (taking into account cover volumes), or by the loose volume of incoming refuse (using truck volume and standard trailer and car volume figures). The former will provide a more accurate measurement and basis for comparison over time.

Use of monthly tonnage or volume limits is not recommended due to the seasonal variation in refuse quantities going to most landfills.

Waste acceptance criteria

Limit conditions should specify the types of waste that can and cannot be accepted at a landfill, or concentrations of contaminants that are permissible in wastes, such that the consent holder, landfill users and the community are provided with certainty as to which wastes will be accepted.

Where terms such as “hazardous waste” or “special waste” are used, these should be clearly defined and unambiguous, so that potential landfill users know whether or not a particular waste will be accepted. In addition, the condition should refer to a schedule of waste properties, types and constituents that are prohibited, and to maximum concentration and/or TCLP (toxicity characteristic leaching procedure) limits for contaminants, if appropriate.

Where TCLP limits are used, the condition should specify the way to calculate TCLP limits for those contaminants for which there are no existing TCLP criteria; for example, the lesser of NZS 9201 Model Trade Waste Bylaw limits, 100 times the New Zealand Drinking Water Standard or 1000 times the guidelines for protection of aquatic species.

Conditions should not be general or qualified statements that are open to different interpretations or methods of assessment. Similarly, conditions that state that a specific person, or position holder, shall decide on the acceptability of waste do not provide sufficient certainty to the community as to which wastes will be accepted.

Waste acceptance criteria, or environmental standards and calculations to be used to calculate them, should be set in consent conditions and not on an *ad hoc* basis during the operation of the landfill site.

Waste acceptance conditions should be based only on waste type, chemical constituents and chemical, physical or biological properties, as they relate to the landfill's effects on the environment. They should not attempt to specify or limit the geographical source of the waste (for example, restricting out-of-district or out-of-region waste, or specifying which local authorities areas can use a landfill), as waste source, unlike type, is not related to the site's effects on the environment. The potential effects on the environment due to placing specific waste types in a specific landfill are the same irrespective of the location of the waste source.

However, a landfill owner/operator, for operational, economic or political reasons, is entitled to restrict waste to specific source areas if it so wishes, although this will not be part of any resource consent.

Waste acceptance conditions should also specify the use of waste-acceptance procedures and documentation, including:

- disposal request procedures
- waste manifest systems
- records of locations of specific waste types
- landfill signage
- load checking and random load inspections
- procedures to be followed if wastes are turned away from the landfill.

It is usual for waste acceptance conditions to include a statement that allows the disposal of waste products normally found within the municipal solid waste stream containing small quantities of potentially hazardous components and which the landfill operator would be unable to screen for at the landfill. This allows for the acceptance of small quantities of hazardous wastes mixed with other wastes in domestic rubbish bags or from domestic rubbish bins and for which it would be unreasonable, or impossible, to expect the landfill operator to screen.

Uncertain waste acceptance criteria

The following examples of waste acceptance conditions are not appropriate as they do not provide an appropriate level of certainty to the community.

- "No waste that would pose a significant threat to human health or the environment during landfill operation, or following closure, shall be accepted."
- "Potentially hazardous waste shall only be accepted following a risk assessment."
- "The decision on an application for waste disposal shall be made by a suitably qualified chemist."
- "Waste shall only be accepted following the written approval of the Regulatory Manager."

Note: At the time of publication the Ministry for the Environment were considering the implementation of a nationally consistent approach to waste acceptance criteria for wastes with hazardous properties. An Issues and Options Paper was released in April 2001. It is recommended that waste acceptance conditions allow for a review upon the release of any national regulations or guidelines on waste acceptance criteria.

Liner and leachate collection systems

Conditions relating to liner and leachate collection systems should be incorporated into either the consent to discharge waste onto or into land, a consent to discharge waste onto or into land in circumstances that may result in contaminants (that is, leachate) entering water, or a schedule applying only to those two consents.

Design conditions should specify liner components, materials, thickness and permeability (where appropriate). In addition they should specify thickness and performance (for example, maximum leachate head) of leachate collection and liner protection systems.

A liner condition should normally be based on a concept design prepared for the consent application process. Therefore a consent condition should also require subsequent consent authority acceptance of final detailed designs.

In some cases it may be appropriate for a liner condition to allow for equivalent designs to be used, subject to acceptance by the consent authority. If this is the case, then conditions should specify the performance parameters by which equivalence will be judged; for example, hydraulic conductivity, attenuation capacity, diffusion, leachate dispersion, and resistance to puncturing.

Construction QA/QC should also be addressed in consent conditions. This usually takes the form of requiring adherence to manufacturer's recommendations, CAE *Landfill Guidelines*, engineering standards or recommendations/requirements of overseas consent authorities.

Black box approach

It has at times been suggested that landfill consents could be granted on a "black box" type of approach with respect to landfill design. This would involve a consent authority setting limits on groundwater contamination at compliance monitoring locations, and then leaving it up to the consent holder to design the liner, leachate collection and cover systems it considers appropriate, or relying on the natural materials underlying the site to keep contamination below those limits. This approach is not considered appropriate for landfills for the following reasons.

- It does not provide the community with any certainty of the environmental protection measures to be employed.
- It may be some considerable time before adverse effects on the environment become evident if inadequate environmental protection measures are used.
- The landfill operator may have ceased to exist before adverse effects are evident.
- It may be difficult and expensive to mitigate adverse effects if they occur.

Monitoring and reporting

Monitoring and reporting conditions should address:

- waste quantities
- waste types accepted
- leachate levels
- construction QA/QC.

4.2.3 Discharge to water (waste to ground in circumstances which may result in contaminants reaching groundwater)

Consents for discharge of waste to ground in circumstances that may result in contaminants reaching groundwater are required for leachate discharges to ground through the base of a landfill, leachate discharges to ground through the base of any leachate storage or treatment ponds, and spray irrigation of leachate to ground. They should generally contain conditions with respect to:

- location of discharges
- quantity of discharges/maximum leachate head on liner
- liner and leachate collection systems
- cover systems
- monitoring and reporting
- contingencies.

Location of discharges

Limit conditions prescribing the areas of the site on which leachate may discharge through the liner may be set through the consent to discharge waste to land, as detailed in Section 4.2.2.

Limit conditions prescribing the areas of the site on which leachate storage or treatment ponds are located should be set. These conditions normally refer to a site development plan.

Conditions prescribing the areas of a site that may be used for spray, or sub-surface, irrigation of leachate, should be set taking into account the:

- quantity of leachate to be irrigated
- soil characteristics
- depth to groundwater
- effects of weather
- proximity to surface water bodies and site neighbours
- maximum concentrations of nutrients/contaminants.

Quantity of discharges/maximum leachate head on liner

Conditions setting limits on the quantity of leachate to be discharged through a landfill's liner, or the liner of a leachate storage or treatment pond, are not recommended as the quantity of discharge would be an estimation only and not readily able to be measured. This is the reason for specifying maximum liner permeability in consent conditions.

However, because the quantity of leakage through a landfill liner is also a function of the leachate head on the liner, a condition specifying the maximum head of leachate on the liner is appropriate. This can be demonstrated through design calculations and/or leachate depth measurements.

A limit condition should be used to specify the maximum quantity of leachate to be discharged by spray, or sub-surface, irrigation. It should be based on the:

- soil characteristics
- depth to groundwater
- proximity to surface water bodies and site neighbours.

Liner and leachate collection systems

Conditions associated with liner and leachate collection systems are addressed in Section 4.2.2.

Cover systems

Requirements for cover placement and maintenance continue beyond the timeframe for refuse deposition. Also, a consent to place waste may be granted for a shorter term than a consent for leachate discharges, particularly at existing landfills. Therefore, conditions relating to cover systems should be incorporated into a consent to discharge waste onto or into land in circumstances which may result in contaminants (that is, leachate) entering water, or a schedule applying only to that consent and a consent to discharge waste onto or into land.

Conditions should specify final cover requirements and may also specify the maximum working face area and/or daily and intermediate cover requirements, if appropriate.

Design conditions for landfill cover systems should specify cover components, materials, thickness and permeability (where appropriate). In addition, they may specify those types of vegetation that may or may not be planted on the completed surface.

As with liners, in some cases it may be appropriate for cover conditions to allow for equivalent designs to be used, subject to acceptance by the consent authority. If this is the case, then conditions should specify the performance parameters by which equivalence will be judged; for example, hydraulic conductivity and resistance to cracking.

Monitoring and reporting

Monitoring and reporting conditions with respect to leachate should address the:

- leachate quantity (location for and frequency of measurement)
- leachate quality (parameters, sampling locations and frequency)
- groundwater levels
- groundwater contamination by leachate (monitoring locations, parameters, frequency/ timing and trigger levels for non-compliance)
- surface water contamination by leachate (monitoring locations, flow, parameters, frequency/ timing and trigger levels)
- sediment contamination by leachate (monitoring locations, sampling method, parameters and frequency/timing).

Conditions should specify any requirements in terms of parameters and the number of sampling rounds required to collect baseline groundwater and/or surface water quality information.

Conditions should address any requirements for new or additional groundwater wells; for example, borehole logs, well design, and pump or draw-down tests.

A condition should also be included stating requirements for replacement of groundwater wells in case they are destroyed or otherwise become incapable of providing monitoring samples.

Standard sampling and analytical methods and any requirements for analysis QA/QC should be specified in conditions.

Monitoring and reporting conditions with respect to spray or sub-surface irrigation of leachate should address the:

- leachate quantity (location for and frequency of measurement)
- leachate quality (parameters, sampling locations and frequency)
- groundwater contamination by leachate (monitoring locations, parameters and frequency)
- surface water contamination by leachate (monitoring locations parameters and frequency)
- soil sampling method, parameters and frequency.

Contingency conditions

Contingency conditions may be used to specify actions that must be taken if unacceptable leachate contamination becomes evident. Contingency conditions normally refer to a contingency plan which sets out the procedures to be followed to confirm and/or monitor contamination, and mitigation methods or options.

Issues that need to be addressed in contingency conditions are:

- trigger levels or a method to develop trigger levels
- additional monitoring to be undertaken to confirm previous results
- a review of trigger levels

- reporting to the consent authority
- the procedure for determining the mitigation methods.

4.2.4 Discharge to water (contaminants, or water, to water)

Consents for discharge of contaminants, or water, to water are required for any discharge to water that may contain contaminants resulting from the landfill operation. These include discharge of treated site stormwater, groundwater from a liner under-drainage system or treated leachate. Consents should generally contain conditions with respect to the:

- location of discharges
- quantity of discharges
- quality of discharges
- design, integrity and maintenance of structures
- monitoring and reporting.

Separate conditions may be used to address potential effects of construction during the construction phase(s) of a landfill.

Location of discharges

The location of any outlet structures should be defined in conditions. These would normally refer to a site plan.

Quantity of discharges

Limit conditions should be used to specify the maximum quantity of discharges over a specific time period or maximum flow of a discharge.

Quality of discharges

The quality of discharges should be dealt with by design conditions, limit conditions, or a combination of the two.

Design conditions may be used to specify the capacity or design of treatment structures; for example, stormwater ponds. Limit conditions may be used to specify maximum contaminant levels or effects of discharges. This can be done in a number of ways, including:

- setting a numerical limit on contaminant concentrations (for example, 100 grams per cubic metre suspended solids)
- requiring the removal of a certain percentage of the contaminant load (for example, 80 percent of the suspended solids concentration)
- limiting the increase in contaminant concentration in the receiving water (for example, limiting the downstream increase in suspended solids concentration to 10 percent over the upstream concentration).

Consents also generally have conditions stating that:

- there shall be no discharge of oil or grease, or production of a persistent surface foam, as a result of any discharge
- water coming in contact with refuse shall be considered and dealt with as leachate.

Design, integrity and maintenance of structures

Conditions relating to stormwater collection and discharge structures generally refer to a site stormwater plan or management document, which shows the layout of site stormwater drains, retention and outlet structures. In addition, reference is often made to the applicable consent authority guidelines relating to stormwater treatment, erosion and sediment control.

Conditions should specify the minimum volume of stormwater ponds with respect to the catchment area and/or the design flood event which the system must accommodate. In some cases conditions specify that the system must be able to pass a more severe flood event without damage, and specify secondary stormwater pathways.

Conditions precluding excessive channel erosion and requiring the consent holder to be responsible for the structural integrity and maintenance of all discharge structures are also normally set.

In some cases conditions may specify that sludges from sedimentation ponds and leachate treatment systems shall be disposed of within the landfill.

Monitoring and reporting

Monitoring and reporting conditions with respect to discharges of contaminants to water should include:

- location of monitoring sites
- parameters to be monitored
- frequency of monitoring.

Standard sampling and analytical methods and any requirements for analysis QA/QC should be specified in conditions.

Contingency conditions

Contingency conditions may be used to specify actions that must be taken if sediment or leachate contamination of discharges exceeds compliance levels. Contingency conditions normally refer to a contingency plan that sets out the procedures to be followed to confirm and/or monitor contamination and mitigation methods or options.

Issues that need to be addressed in contingency conditions are:

- trigger levels for non-compliance, or a method to develop trigger levels
- review of trigger levels

- reporting to the consent authority
- procedures to be carried out in the event of a trigger level exceedance (for example, stopping discharge until additional monitoring has been undertaken).

4.2.5 Discharge to air

Consent for discharge of contaminants into the air is needed for discharges of landfill gas, emission gases from landfill gas combustion, odour and dust. Consents should generally contain conditions with respect to:

- buffer distances to neighbouring site uses
- operational practices
- limits and a compliance point for effects of odour and dust discharges
- collection and flaring or utilisation of landfill gas
- complaints procedures
- monitoring and reporting.

Buffer distances

Where landfills are situated close to dwellings, or other sensitive land uses, conditions may require minimum buffer distances between the working face and neighbours.

Operational practices

Consents generally have a condition that requires the consent holder to operate the landfill in such a manner as to keep odour and dust emissions to a practicable minimum. In addition, consent conditions should require specific operational practices to reduce the potential for dust and odour, such as:

- water cart use to control dust
- speed restrictions to control dust
- acceptance restrictions on, or operational practices for, odorous wastes
- restrictions on the working face size to control odour
- use of alternative working faces
- use of odour-reducing chemical sprays
- landfill gas collection.

Compliance point

Consents should have conditions specifying the compliance points for effects due to odour and dust. The compliance point is usually either:

- the boundary of the landfill site; or
- the boundary of the nearest dwelling in separate ownership.

A limit condition relating to the effects of discharges to air generally has a statement like "there shall be no objectionable or offensive effect as a result of odour or particulate matter beyond the boundary". Such a condition should specify the mechanism to determine non-compliance; for example, if an appropriately experienced officer of the consent authority deems an effect to be objectionable or offensive, having regard to the frequency, intensity, duration, amount and location of the effect, the nature of the receiving environment and the consequences.

At some sites it may be appropriate to set limits for the surface emissions of landfill gas (expressed as a maximum concentration of methane by volume in air) as measured at the landfill surface. However, this will not necessarily limit odour from an operating landfill as refuse at the working face can create a significant odour.

At some sites a limit condition specifying maximum dust levels at a compliance point (or points) may also be appropriate.

Collection, flaring and utilisation of landfill gas

Based on site-specific factors, landfill gas may be collected for flaring or utilisation (for example, electricity generation using internal combustion engines, or direct use as an energy source). Utilisation may also involve use of a back-up flare or biofilter in case of system breakdown.

At some sites, conditions require the collection of landfill gas. These normally refer to concept designs and landfill gas management plans. Conditions should address:

- design of collection wells or trenches
- progressive installation of collection wells or pipes
- associated landfill cover design or maintenance requirements.

Conditions should specify design and operational requirements for landfill gas flares and/or biofilters, where they are to be used. While there is normally a limit condition with respect to objectionable or offensive odours, odour has a very subjective effect to which people have differing sensitivity. Therefore, this type of condition does not ensure that site neighbours will not be affected by emissions from these devices.

Where candle flares are used, a condition will generally require the flare to be designed, operated and monitored in accordance with an appropriate standard. Currently the US EPA Code of Federal Regulations are normally used, as these have design and operational requirements that are considered to result in a high destruction efficiency. It should be noted that use of such a condition may not necessarily result in elimination of potential odour effects.

Where ground flares are used, conditions generally specify a minimum flare temperature and residence time to ensure an appropriate destruction efficiency. For all flares, conditions should also address flame arrestors, backflow prevention devices and reliability of flare ignition, in case of cut out.

Complaints procedures

Consents should include a condition requiring the landfill operator to maintain a complaints register, which details complaints about odour or dust nuisance and the operator's response. The register should be available to officers of the consent authority upon request, or submitted on a regular basis.

Monitoring

Monitoring conditions for consents to discharge contaminants into the air generally refer to a landfill management plan and sometimes to a landfill gas management plan.

Because potential effects due to odour or dust on the receptor environment are weather dependent, a condition requiring daily monitoring of at least wind direction and barometric pressure should be imposed. The inclusion of average wind speed, rainfall and temperature is also recommended.

Monitoring of odour is usually undertaken by means of complaints procedures. Alternatively, the potential for odour can be monitored through monitoring surface emissions of landfill gas (by measuring methane concentrations at the surface). A condition usually states that in determining whether or not an odour is offensive or objectionable, the consent authority will have regard to its frequency, intensity, duration and location.

Another option that may be used in conjunction with an enforcement officer is a "sniff committee". This can include a number of people with an interest in the consent or particular expertise; for example:

- a consent authority enforcement officer
- a representative of the consent holder
- local resident(s)
- a local health service representative.

The committee can convene at such times and places as stipulated in consent conditions to consider whether or not an odour is offensive or objectionable and make recommendations to the consent authority.

Monitoring of dust can be undertaken by means of complaints procedures or dust monitoring devices, if limits on dust deposition are set.

Landfill gas emission monitoring conditions should specify the location (either physical location(s) or distance from the landfill surface), frequency, methodology and weather conditions for emissions monitoring.

Monitoring for gas migration involves monitoring for landfill gas in the ground (using monitoring probes, which are usually fixed in place), or in buildings or enclosed structures on or neighbouring the site. Conditions should specify monitoring locations, probe design (if applicable), parameters and weather conditions.

Monitoring conditions of the landfill gas collection system and flares are used to check compliance with design and operating conditions and assist in tuning the system for optimum gas extraction to reduce potential hazards. Conditions should specify monitoring locations (wells and flares), parameters, frequency and weather conditions.

4.2.6 Water permits

Water permits are needed for diversion or damming of natural streams on or around the landfill site, taking of groundwater by a groundwater control system, or for use onsite (for example, dust suppression). A water permit may also be required for the diversion of stormwater around a landfill site. Water permits generally contain conditions relating to the:

- location of takes, dams or diversions
- quantity of take, storage, or diversion
- design and integrity of structures
- scour/erosion protection.

Location of discharges

Conditions should define the location of any takes, dams or diversion structures. These generally refer to a site plan.

Quantity of discharges

Limit conditions may be used to specify the maximum quantity of water taken, stored or diverted over a specific time period, or the maximum flow of a take or diversion.

Design, integrity and maintenance of structures

Conditions relating to structures generally refer to a site plan or management documents, which show(s) the locations and layout of takes, dams or diversion structures, erosion and sediment control.

Conditions should specify the design flood event that a dam or diversion system must accommodate. In some cases, conditions specify that the system must be able to pass a more severe flood event without damage, and specify secondary flowpaths.

Conditions are normally set precluding excessive channel erosion in any diversions and requiring the consent holder to be responsible for the structural integrity and maintenance of all structures.

Monitoring and reporting

Monitoring and reporting conditions with respect to takes and diversions should include the:

- location of monitoring sites
- parameters to be monitored
- frequency of monitoring.

Contingency conditions

Contingency conditions may be used to specify actions that must be taken if sediment or leachate contamination of discharges becomes evident. Contingency conditions normally refer to a contingency plan that sets out the procedures to be followed to confirm and/or monitor contamination and mitigation methods or options.

Issues that need to be addressed in contingency conditions are:

- trigger levels or a method to develop trigger levels
- a procedure for review of trigger levels
- reporting to the consent authority
- procedures to be carried out in the event of a trigger level exceedance (for example, stopping discharge until additional monitoring has been undertaken).

4.2.7 General conditions

General conditions applying to all or a number of consents for a landfill site can be used to address:

- the documents in accordance with which the site must be designed, developed, operated and monitored
- the provision of detailed designs for acceptance prior to construction
- the provision of as-built drawings
- requirements for suitably qualified personnel
- cultural considerations
- the requirement for peer review
- the requirement for a bond or financial assurance
- the requirements for activity-specific plans
- community liaison mechanisms.

Cultural considerations and the development of conditions to deal with the uncovering of human remains or archaeological items during a landfill's development will be addressed.

Some issues that relate to all types of consents will be addressed generally; issues specific to different types of consent will be covered as detailed below.

Documents

One or more general conditions usually refer to the documentation supplied as part of the resource consent application process and require that all design, construction, operation and monitoring be carried out generally in accordance with them. These documents may include:

- the application
- the assessment of effects on the environment
- the landfill management plan
- supplementary reports prepared following section 92 requests for additional information.

Detailed designs

A condition usually requires the consent holder to prepare detailed designs prior to commencing any physical works onsite, with these designs to be approved in writing by the consent authority.

This approval is a certification process and cannot be unreasonably withheld by the consent authority.

As-built drawings

A condition usually requires the consent holder to prepare as-built drawings of any works or structures, including liners, stormwater collection and treatment systems, diversions, leachate storage or treatment facilities. Such conditions should specify the timeframe for submission following construction.

Suitably qualified personnel

A condition usually requires that all investigations, design, supervision of construction, operation, monitoring and aftercare be undertaken by suitably qualified personnel, experienced in such works, and to the satisfaction of the consent authority.

Cultural and archaeological considerations

For new landfill developments it is common to include a condition addressing the potential discovery of human remains or cultural/archaeological items during excavation. Such a condition normally requires all work to stop immediately and that the Police, tangata whenua, New Zealand Historic Places Trust and consent authority be contacted. Some tribes and iwi authorities have accidental discovery protocols.

The condition normally enables work to recommence following the written approval of the consent authority after consideration of the interests of the interested or affected parties.

Peer review

Peer review conditions requiring the use of an independent technical peer reviewer, or peer review panel, are now becoming common practice. A peer reviewer/peer review panel is independent of the consent holder's technical advisors and design and monitoring staff or consultants. A peer reviewer/panel's task is to review those technical issues defined in the condition(s) and report and make recommendations to the consent authority. A peer reviewer/ panel has no power of approval.

The use of peer review provides a level of comfort to the community that a site is being designed, constructed, operated and monitored in compliance with consent conditions and in accordance with accepted industry practice.

The use of a peer reviewer/panel is not intended to be a substitute for the consent authority using its own expertise or engaging a consultant to provide expert advice. However, the consent authority may be satisfied with the results of the independent peer review and not undertake additional review.

The peer reviewer/panel is not intended to accept liability following acceptance of designs. Liability for the performance of designs would remain with the designer and with the consent holder.

A peer review condition normally requires the consent holder to engage a peer reviewer/panel at its own cost to review the design, construction, operation and maintenance of the landfill. The condition normally specifies that the peer reviewer/panel be:

- independent of the planning, design, construction, management and monitoring of the site
- experienced in landfill design, construction and management
- experienced in geotechnical, groundwater and surface water aspects of landfills
- recognised by their peers as having the necessary experience, knowledge and skill
- approved in writing by the consent authority.

The condition should set out the matters to be reviewed by the peer reviewer/panel, and define the limits of jurisdiction for recommendations to the consent authority and the frequency or timing of reports. The condition should enable the reviewer/panel to engage additional technical expertise if necessary, following consultation with the consent holder and the consent authority.

It is useful for the consent holder, the consent authority and the peer reviewer/panel to agree on a protocol, or terms of reference, outlining how the peer review process will work. The protocol should be outside the consent conditions, although it may be useful to include the need for such an arrangement as part of the peer review condition(s).

Peer reviewers are excluded from acting as a consultant to either the consent holder or consent authority.

The process for reviewing or changing the peer reviewer should also be specified in the condition.

Bond, or financial assurance

Consents for landfills developed by private companies normally have conditions requiring the consent holder to provide and maintain a bond, or other form of financial assurance, in favour of the consent authority, in order to:

- secure compliance with resource consent conditions and enable any adverse effects not authorised by the consents to be remedied or mitigated
- secure the completion of closure, rehabilitation and aftercare
- ensure monitoring in accordance with the consents
- enable the consent authority to undertake monitoring and management of the site until completion of closure, should the consent holder fail to do so.

The bond may take the form of a cash sum put aside, a bank guarantee, or insurance.

The condition should either state the quantum of the bond, if it has been calculated during the consent application process, or the mechanism for determining this amount. However, it would be preferable to have the information required to set a bond before the consent hearing.

The quantum should be sufficient to cover:

- estimated costs of rehabilitation and closure (including any contingency necessary)
- estimated costs of monitoring and management of the site and its effects following closure (including any contingency necessary)
- estimated costs of prevention and/or remediation of any adverse effects on the environment that may arise.

The condition should also make provision to review and vary the amount of the bond over time or as the potential for adverse effects from the landfill changes.

If required from a local authority, financial assurance can take the form of the identification of contingency funds in the local authority's budgetary processes. However, conditions should make provision for the imposition of a bond if consents are transferred to a private company.

Activity-specific plans

In addition to a landfill management plan, conditions may also require plans to be prepared to address specific activities onsite, including:

- landfill gas management
- stormwater management
- construction management
- quality assurance/quality control
- rehabilitation and aftercare
- monitoring and contingencies.

Conditions should specify a list of at least the minimum range of issues that each plan should address and the outcomes they are intended to achieve.

Community liaison mechanisms

Some consent authorities have used conditions to facilitate liaison between the consent holder and the local community. This has occurred at a small number of sites that have been particularly contentious, and where the consent holder and the local community have been in agreement over the benefit of community liaison mechanisms.

The purpose of such a condition is to ensure that the consent holder provides the opportunity for site neighbours and interested groups to meet with them to discuss issues related to the site as they affect the local community.

The use of such a mechanism should not be perceived by the consent holder or the community as a means for the community to interfere with site operations undertaken in accordance with the conditions of resource consents, nor as a mechanism for the enforcement of consent conditions.

A condition can require the consent holder to invite a specific list of property owners in a defined area or groups in the community, as a minimum, to meetings at specified times or intervals. It can also require the consent holder to report on the meeting to the consent authority. A condition cannot require the members of the community or the consent authority to attend, nor can it require the consent holder to comply with recommendations arising from such a meeting.

A condition relating to community liaison, if set, should address:

- frequency of meetings
- groups or individuals that must be invited
- reporting requirements.

It should be noted that the imposition of community liaison mechanisms is only likely to be effective if supported by the consent holder.

5 Review of Consent Conditions

5.1 Introduction

Landfills are developments that take place over a long period of time, usually at least 20 to 30 years. During development and operation, circumstances and potential effects on the environment can change. It is therefore necessary to make provision in consents for change and review of conditions. This section addresses:

- cancellation of consent and/or conditions of consent or change of conditions
- review of consent conditions, including review provisions in consent conditions.

5.2 Cancellation of consent and/or conditions of consent or change of conditions

Section 126 of the RMA sets out the circumstances in which a resource consent can be cancelled. A resource consent may be cancelled by the consent authority if the consent has not been exercised for a continuous period of two years (or more) unless:

- the consent provides otherwise; or
- an application has been made to extend the period.

The application to extend the period has the same process as outlined in Section 2.3.3 in respect of the lapsing of consents.

Section 127 of the RMA refers to the change or cancellation of a consent condition. A consent holder may apply for a change of any condition of consent:

- at any time specified in the consent; or
- if a time has not been specified in the consent, at any time if a change in circumstances has caused the condition to become inappropriate or unnecessary.

Any application under section 127 is treated and processed as an application for a resource consent. However, the application does not need to be notified if either:

- the adverse effects of the activity after the change or cancellation will continue to be minor; or
- written approval has been obtained from every person who would be adversely affected.

When an application is made for a variation of a condition, it is not considered as if there were a clean slate. The Court has held that four matters require consideration:

- the reasons why the condition was imposed
- the circumstances in which it was then seen to be appropriate
- the change in circumstances
- whether the change has caused the condition to become inappropriate or unnecessary.

It is therefore important for a consent authority to clearly record in its decision the reasons for imposing the conditions.

5.3 Review of consent conditions

Sections 128 to 133 of the RMA deal with the procedure for review of consent conditions by the consent authority. A review can be initiated:

- at any time specified in the consent to deal with adverse effects which may arise from the exercise of the consent and which it is appropriate to deal with at a later stage, or to require the adoption of the BPO to remove or reduce adverse effects
- to require the adoption of standards for water, coastal and discharge permits in a regional plan which becomes operative
- for any other purpose specified in the consent
- where the information accompanying the resource consent application was inaccurate and led to inappropriate conditions.

Sections 129 and 130 of the RMA set out the procedure to be followed by a consent authority in reviewing consent conditions. This includes advising the consent holder of what is proposed, and may also include public notification of a summary of what is proposed in the review. Where a review has been publicly notified and submissions have been received, a hearing of submissions is arranged. Section 131 sets out the matters that are to be considered in the review, and section 132 describes the limitations that apply to the making of decisions by a consent authority on a review of consent conditions.

A notice to review conditions of a consent must specify the conditions to be reviewed. A notice referring simply to the conditions means all the conditions.

Section 128 authorises a review condition in a discretionary manner only. A review condition cannot make it mandatory for the consent authority to undertake a review.

A review of consent conditions cannot result in a situation whereby the consent holder is effectively unable to undertake the activities allowed by the consent.

A review of consent conditions cannot alter the duration of consent (section 132(1) of the RMA).

5.3.1 Provision for review in consent conditions

A consent may have a condition which states the times at which the consent holder may apply for a change in condition(s) under section 127.

If a consent does not have such a condition, the consent holder may apply only for a change in a condition(s) under section 127(1)(b) and must demonstrate that there has been a change in circumstances that has caused the condition(s) to become inappropriate or unnecessary.

Section 128(1)(a) states that the authority may serve notice of its intention to review the conditions "at any time or times specified for that purpose in the consent". It is therefore necessary for the consent to prescribe or specify the time for review. A condition stating that the consent is subject to review "at any time that the consent authority considers appropriate" is not adequate. The time period specified should also be realistic; for example, "within one month of each anniversary" rather than "on each anniversary". The latter wording would allow only one day for making the application.

A consent should contain a condition stating the times at which the consent authority may serve notice on the consent holder of its intention to review the conditions of the consent in accordance with section 128 of the RMA. The condition should also be specific as to the purpose of the review, and include aspects that may be reviewed and that could result in a change in conditions; for example:

- management practices
- effects on the environment
- adoption of BPO (best practicable option) or use of other alternative means to remove or reduce adverse effects on the environment
- monitoring requirements in the light of previous results.

A consent may contain a condition that allows for review in the event of transfer of consent. The condition may also describe the purpose for the review; for example:

- reviewing bond requirements
- ensuring the new consent holder can comply with the intent and specific conditions of consent
- ensuring the adequacy of conditions.

A consent may also contain conditions that allow for review of specific conditions in response to a specific event or occurrence, or change in a regional plan or national guidelines, or release of a National Environmental Standard (NES), for example:

- review of monitoring or mitigation measure requirements in response to identification of leachate contamination in groundwater or surface water
- review of monitoring conditions following a certain number of monitoring events
- review of waste acceptance criteria in response to a change in the national definition of "hazardous waste", or national regulations, policies, standards or guidelines on acceptance criteria.

Where only particular conditions of a consent are identified as being subject to review without any general reference to any other conditions, the consent authority would not be able to review those other conditions.

Review conditions should state who will bear the costs of the review, which is normally the consent holder.

6 Site-based Management Plans

6.1 Introduction

All landfills should have a management plan. A landfill management plan is a site-specific document which details operating practices and procedures for landfill site activities. A management plan will incorporate operational, process, conditions and monitoring conditions and will outline the means by which limit, or compliance, conditions will be complied with.

This section addresses the following:

- issues to consider in management plans
- status of management plans
- aspects of plans which may be included in specific consent conditions
- review of management plans
- aftercare plans.

The management plan should be a public document which demonstrates, in detail, how the landfill operator will control and monitor actual and potential adverse effects due to operations at the site.

6.2 Issues to consider in management plans

A landfill management plan should be based on industry best practice, as adapted to site-specific conditions and requirements. Appendix 1 gives an outline table of contents for a generic landfill management plan, from the CAE *Landfill Guidelines.*

Landfill management plans should ideally provide detail down to the work instruction level. A landfill management plan may be a single document or it may include a number of activity-specific documents; for example:

- landfill operations manual
- health and safety manual
- design and construction manual
- environmental monitoring plan.

There may also be documents that are important to management of the landfill site but are not part of the formal landfill management plan; for example, sampling procedures manuals for leachate, groundwater, surface water and landfill gas.

The technical issues to be covered in landfill management plans are detailed in Chapter 5, Landfill Operations, of the CAE *Landfill Guidelines*. Some of these are repeated below, along with other issues that need to be considered when preparing a landfill management plan. These issues will include:

- resource consents
- site planning
- site management and responsibilities
- occupational safety and health
- waste acceptance and documentation
- site operations
- monitoring and reporting.

6.2.1 Resource consents

The management plan should list all resource consents granted for the site, and, where appropriate, specific provisions in the management plan should be referenced to the consent condition by which they are required. Consents are often included in an appendix to the management plan.

6.2.2 Site planning

The management plan should outline site development, including plans showing the staging of construction site development and locations of site structures and facilities.

6.2.3 Site management and responsibilities

The management plan should outline the management structure for the landfill and, where appropriate, the duties for specific positions. In addition it should contain contact information for the consent authorities and Fire Service and identify the individuals, or positions, within the consent holder's organisation responsible for liaison with these organisations.

6.2.4 Occupational safety and health

The management plan should either incorporate the landfill's health and safety plan or refer to the health and safety plan where appropriate. It should also contain contact information for the Department of Labour and identify the individuals, or positions, within the consent holder's organisation responsible for liaison with this organisation.

6.2.5 Waste acceptance and documentation

The management plan should detail the waste acceptance criteria for the landfill. It should also detail the procedures for handling disposal requests, including requirements for testing and documentation or manifest systems.

6.2.6 Site operations

All aspects of site operations should be addressed in the management plan, preferably down to the level of work instructions, including:

- site preparation
- stormwater control
- leachate control
- landfill gas control
- areas for disposal
- method of tipping
- size of face
- height of lifts
- method of compaction
- degree of compaction
- daily cover requirements
- intermediate cover requirements
- final cover requirements
- stockpiling of cover material
- control of nuisances, including: spillages, noise, odour, litter, dust, vermin, birds and scavengers.

The plan should ideally indicate who is responsible for the various operational tasks; for example, site manager, environmental manager, or operations staff/contractor.

6.2.7 Monitoring and reporting

The management plan should detail all monitoring and reporting required by resource consent conditions and any additional monitoring deemed necessary by the operator to assist in the running of the landfill.

6.3 Status of management plans

It is preferable for a landfill management plan to be prepared and presented in draft form as part of resource consent applications. In this way the consent authority and any affected or interested parties are informed about the ways in which the applicant intends to reduce actual and potential effects due to the operation.

However, if a consent condition such as the following is used, the management plan then becomes a condition of consent and can only be reviewed through the consent review process:

> *The consent holder shall develop, operate and monitor the landfill in accordance with the Landfill Management Plan, dated XXXX, following amendment to comply with consent conditions.*

For flexibility the applicant should include in the plan alternative means, or a range of options, that may be used to achieve the desired environmental outcomes.

Because technology might change, it is preferable for the consent holder to have the ability to change the management plan without having to go through the process of seeking a change to the conditions of consent. The consent holder is not then constrained to management practices that may no longer be appropriate to minimising potential adverse effects.

With respect to future management plans, the Environment Court has determined that a management plan can be required to be prepared pursuant to section 108(3) of the RMA, but its purpose should be to provide a consent authority, and anyone else interested, with information about the way in which the consent holder intends to comply with the more specific controls laid down by the other conditions of a consent. The Court held that this was an appropriate alternative to requiring management plans to form part of the conditions of consent.

In this case the consent authority should ensure that appropriate limit conditions are set for environmental receptors that may be affected by operations at the site, and that a number of critical aspects of site management are subject to consent conditions (as outlined in Section 6.4 below).

A consent condition such as the following enables the consent holder and consent authority to review aspects of the management plan in response to changes in technology or standard operational methods:

> *The consent holder shall prepare a landfill management plan that details the procedures to be put into place to operate the landfill in compliance with conditions of these consents and minimise the potential for adverse effects due to the operation of the landfill.*

The final plan can then be based on the original draft plan and detail the procedures that will be used to ensure compliance with limit and operational conditions of consents. The management plan can then be reviewed periodically, or in response to peer review reports or complaints, if management procedures are not ensuring compliance with consent conditions.

The conditions should require the draft management plan to be submitted to the consent authority for its approval in advance of the landfill commencing operations, for example:

> *No refuse shall be placed on the site before the landfill management plan has been approved in writing by the consent authority.*
>
> *The draft management plan shall be submitted to the consent authority within six months of the date of commencement of this consent.*

The management plan cannot in effect be an additional condition determined after the hearing process. The role of a management plan is to supplement the other conditions of the consent, detailing the methods to be used for complying with those conditions.

6.4 Aspects of site management to be included in specific consent conditions

While flexibility is required in landfill management plans to allow for changes on a site and developments in technology over time, the public is entitled to certainty over actual and potential effects on the environment due to a landfill's operations. Therefore aspects of the landfill's operations that are considered necessary to prevent or minimise actual or potential effects on the environment should be addressed in operational and monitoring conditions. In this way they cannot be altered in the landfill management plan without going through a formal review process. These may include, but are not limited to:

- waste acceptance criteria
- cover and capping requirements
- leachate treatment/disposal methods
- performance requirements with respect to stormwater system design
- monitoring requirements
- landfill gas flare operating conditions.

6.5 Review of management plans

Regular review of the landfill management plan should be undertaken to ensure that the most appropriate methods are being employed to reduce the potential for adverse effects and to comply with any limit conditions.

Reviews are generally undertaken for the following reasons:

- changes in technology or new developments in operating practices, which mean that more effective methods can be used to achieve the desired environmental outcomes
- changes to the landfill site due to development (for example, a change in location of the tipping face), which necessitate changes in operating practices to achieve the desired environmental outcomes
- changes to consent conditions
- changes in the pattern of surrounding land use
- formal periodic review is incorporated in consent conditions.

6.6 Aftercare plans

An aftercare plan is necessary for all landfill sites to ensure that development of the landfill will not preclude the intended final use of the site and appropriate management of the site following closure.

An aftercare plan will be prepared in differing degrees of detail during stages of the landfill's development, including:

- during the consent application process
- during operation
- prior to site closure.

6.6.1 During the consent application

A preliminary aftercare plan should be prepared as part of the resource consent application. This should include the following to give a clear indication of what the site will be like in the future:

- a description of the proposed final land use or uses
- final landform contours
- a landscape plan showing any plantings and landscape features
- the location of any structures that will be present following closure
- a brief description of site management requirements following closure (for example, maintenance of final cover, leachate and landfill gas collection and disposal)
- a brief description of potential hazards associated with the closed site.

6.6.2 During operation

During operation of a landfill site it is usual for stages to be completed and rehabilitated as they are filled. In addition, leachate collection, stormwater and landfill gas systems will be developed progressively.

The aftercare plan should be reviewed in the light of any changes to development plans and site infrastructure, and include:

- staging of landfill cell closure and rehabilitation
- details of leachate, stormwater and landfill gas management for completed portions of the site.

6.6.3 Prior to site closure

An aftercare plan should normally be finalised prior to landfill closure and may be required as part of the conditions of new consent if the original consents are due to expire.

Finalising the plan will include updating any previous plans and revising final landform and landscaping features in response to any changes during site development and aftercare consent requirements.

It is recommended that the consent holder consult with site neighbours and any other affected or interested parties in finalising the aftercare plan.

The final plan should include:

- details of aftercare consents
- responsibilities for site aftercare management
- details of intended final land use
- a landscape plan showing any plantings and landscape features
- the location of any structures that will be present following closure
- management requirements for:
  - maintenance of final cover and vegetation
  - operation and maintenance of the leachate collection and disposal system
  - operation and maintenance of landfill gas collection and disposal system
  - maintenance of stormwater diversions
- ongoing environmental monitoring and reporting
- an environmental contingency plan
- details of potential hazards associated with the closed site and with respect to end use.

7 Enforcement of Consent Conditions

7.1 Introduction

The 1998/99 National Landfill Census indicated that there were a large number of regional councils not monitoring or enforcing consent conditions.

This section outlines the mechanisms available to consent authorities to ensure compliance with consent conditions:

- compliance monitoring
- abatement notices
- enforcement orders
- infringement notices
- prosecution.

7.2 Compliance monitoring

Compliance monitoring is monitoring undertaken by a consent authority to check that a consent holder is complying with some or all of their consent conditions.

Before commencing monitoring at any landfill site, a consent authority should determine the level of effort it plans to put into monitoring that site. It should determine this based on risk, taking into account such factors as the nature of materials being landfilled, the level of protection in place, the scale of the activity and the sensitivity of the receiving environment. The consent holder should be informed of the activity the consent authority has planned and be given an indication of the cost.

It is desirable that the first activity in monitoring a site is education and liaison with the consent holder and site operator. The purpose of education and liaison is to establish a positive relationship with the consent holder and operator and make them aware of the consent authority's expectations. This should then be followed by the core activity – monitoring/ checking on compliance as detailed below. If non-compliance is identified, the consent authority should seek to negotiate with the consent holder regarding remedial actions that may be required, and a timeframe for any actions. It is particularly important that all monitoring activity is documented and that the key findings and agreed actions are reported back to the consent holder.

Follow up by the consent authority is then necessary to assess whether the required remedial actions have been undertaken. If sufficient progress has not been achieved, the consent authority will need to consider whether to step up its response and initiate some form of enforcement action. Enforcement against consent holders who do not comply with consent conditions is a key aspect of any monitoring programme. It will ensure the credibility of the programme and lead to positive environmental outcomes.

Compliance monitoring can be carried out in a number of ways, including:

- reviewing the self-monitoring results, reports and registers submitted by a consent holder in accordance with consent conditions
- undertaking site inspections to observe site activities and effects
- collection and analysis of samples from environmental receptors and from discharges.

7.2.1 Review of monitoring information

The consent authority can specify, in consent conditions, the monitoring information to be provided by the consent holder, including:

- results of all groundwater and surface water monitoring
- records of complaints with respect to odour, dust, noise and other nuisances
- records of inspections or assessments required to address specific issues
- records of non-compliance with limits or trigger levels specified in consent conditions
- an annual operations report
- peer review/panel reports.

Review of monitoring information can be time consuming. The consent authority can save time in compliance monitoring by requiring the consent holder to report on trends in reported monitoring data and any non-compliances or trigger level exceedances.

7.2.2 Site inspections

The consent authority can undertake site inspections at any time to review site operations and any records required to be kept on site.

The consent authority should make a formal record of any site inspections and include photographs of the site and any non-compliance or potential problems identified. Key findings from these inspections should be provided to the consent holder.

Regular site inspections are a good way for the consent authority to develop a relationship with the landfill operator and ensure that the site is operated to avoid potential problems. Both pre-arranged and unannounced inspections are necessary to provide the public with confidence that the consent authority is undertaking independent monitoring and is aware of activity at the site in question.

7.2.3 Sample collection and analysis

As an independent check on compliance with consent conditions, the consent authority can undertake its own sampling from discharge locations and environmental receptors, and analysis of the collected samples. This may be done on a regular basis, randomly or in response to complaints or identification of specific issues.

The consent authority can also check the results of monitoring undertaken by the consent holder and its laboratory QA/QC by collecting samples at the same time as sampling by the consent holder.

7.3 Legal enforcement mechanisms

The following are legal mechanisms available to consent authorities to ensure compliance with conditions of consents:

- abatement notices
- enforcement orders
- infringement notices
- prosecution.

Each legal mechanism has its place and should be chosen with care. Well targeted use of legal mechanisms is essential for a consent authority to achieve high levels of compliance within its region/district. However, these mechanisms will be used infrequently as for most consent holders other approaches are usually more successful. As a result, many consent authority staff will not be familiar with the use of legal mechanisms and will need support during all phases of their use.

It is vital that correct procedure is followed when using legal mechanisms and that there is meticulous attention to detail, as any case can go through the court process where it can be subjected to intense scrutiny. For more information on enforcement, refer to the *Resource Management Enforcement Manual* on the Local Government New Zealand web site (http://www.lgnz.co.nz/).

7.3.1 Abatement notice

These can be issued by any local government enforcement officer, and are a simple and inexpensive tool that can be used to formalise the consent authority's requirements. They can be used where an adequate response has not been achieved to the follow-up letter to some monitoring activity. Non-compliance with an abatement notice is an offence.

7.3.2 Enforcement order

An enforcement order is essentially the next step up from an abatement notice. It will involve significant cost and will be a time consuming and protracted process, because the consent authority makes application to the Environment Court for the order and must wait in line for the case to be heard.

An application for an interim enforcement order may be made for situations where urgent action is required. Such an application will normally be heard within days. An enforcement order is a powerful tool as the order is from the Environment Court and non-compliance is contempt of Court.

Generally speaking, an enforcement order may be applied for by any person at any time. Section 316 of the RMA sets out the specific limitations to that general provision.

This mechanism should be reserved for significant issues where the co-operation of the consent holder is not expected.

7.3.3 Infringement notice

An infringement notice is a quick, punitive tool and may be issued by any enforcement officer. The level of fine is prescribed for various offences, and ranges from $300 to $1000. These notices can be used where the consent authority has clear and simple evidence of a minor offence.

If the infringement notice is challenged, there will be a defended hearing in the Environment Court. An infringement offence is not entered onto an offender's record.

7.3.4 Prosecution

Prosecutions are suited to offences that a consent authority regards as significant. The prosecution process is costly, time consuming and protracted, although the potential level of fine is high. Under section 339 of the RMA, the most serious offences carry a penalty of up to two years' imprisonment or a fine of up to $200,000.

Like infringement notices, prosecution is a punitive mechanism. Although the cost of an individual prosecution may be high and not recovered through the level of the fine (of which the consent authority will receive 90 percent), it will often have a significant deterrent effect on the offender and other operators.

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Appendix 2: Case Study

Introduction

The following case study was prepared to provide examples of landfill resource consent conditions that reflect the issues discussed in this document.

It must be stressed that consent conditions in this case study are not intended to be used as templates for actual landfill consent conditions. Nor should they be viewed as the minimum or maximum number of consents or consent conditions required for a landfill site. Consent authorities need to thoroughly consider site-specific technical, social, planning and legal issues in determining consent requirements and preparing consent conditions for a particular landfill site.

Hinengaro Bay District Council

This case study looks at two landfills associated with Hinengaro Bay District Council. A sketch map of the district is given in Figure A2.1. The two landfills are:

- Dayton Landfill
- Rockville Refuse Limited Landfill.

Dayton Landfill

The Dayton Landfill is the former Dayton Borough Council landfill. The landfill was closed in the mid-1990s after receiving refuse from the district's largest community. A sketch plan of the site is given in Figure A2.2.

The landfill is sited on the banks of the Waiora River. It was operated as an uncontrolled council dump for a number of years, receiving up to 12,000 tonnes per year of municipal solid waste. In addition it received medical wastes from the Dayton Base Hospital and had been used for an early co-disposal experiment, mixing mildly hazardous wastes from the Department of Science and Technology with municipal waste.

Following a review of its landfill activities, the council decided to close all of its existing landfills and develop a new lined landfill site for the district's refuse. The landfill site was designated as a "refuse disposal area" in the Hinengaro Bay District Council's Transitional District Plan, but did not have any water permits or discharge consents. The council intended to apply for consents to operate the Dayton Landfill until the new landfill was consented and developed.

In order to prepare an Assessment of Effects on the Environment, the council installed four groundwater monitoring wells (one up-gradient and three between the landfill and the river). Monitoring of the groundwater in these wells indicated that leachate from the landfill was contaminating the groundwater down-gradient of the site and reaching the Waiora River.

Because of the existing contamination, the council decided to close the landfill as soon as possible, and built a transfer station in Dayton. An arrangement was made with the Rockville District Council to transport the Hinengaro Bay District's refuse to the Rockville Landfill, 30 km away.

The council installed a collection drain on the down-gradient side of the landfill, between the landfill and the Waiora River, to collect leachate-contaminated groundwater and pipe it to the Dayton Wastewater Treatment Plant.

Consent applications were made to the Rockville Regional Council for the following consents for closure and aftercare of the landfill:

- discharge of leachate onto or into land
- take groundwater
- discharge of contaminants into the air.

Supporting documentation comprised an Assessment of Effects on the Environment and an Aftercare and Monitoring Plan, which detailed proposals for capping and rehabilitation, collection and disposal of leachate-contaminated groundwater, post-closure management and monitoring.

No application was made for stormwater discharge consents as following closure works all stormwater runs off naturally as overland flow.

No land use consent was required as the site was designated as a "refuse disposal area" in the Hinengaro Bay District Council's Transitional District Plan.

Consents were granted with conditions specifying minimum capping requirements, and monitoring of the landfill capping, collected leachate-contaminated groundwater, groundwater and surface water.

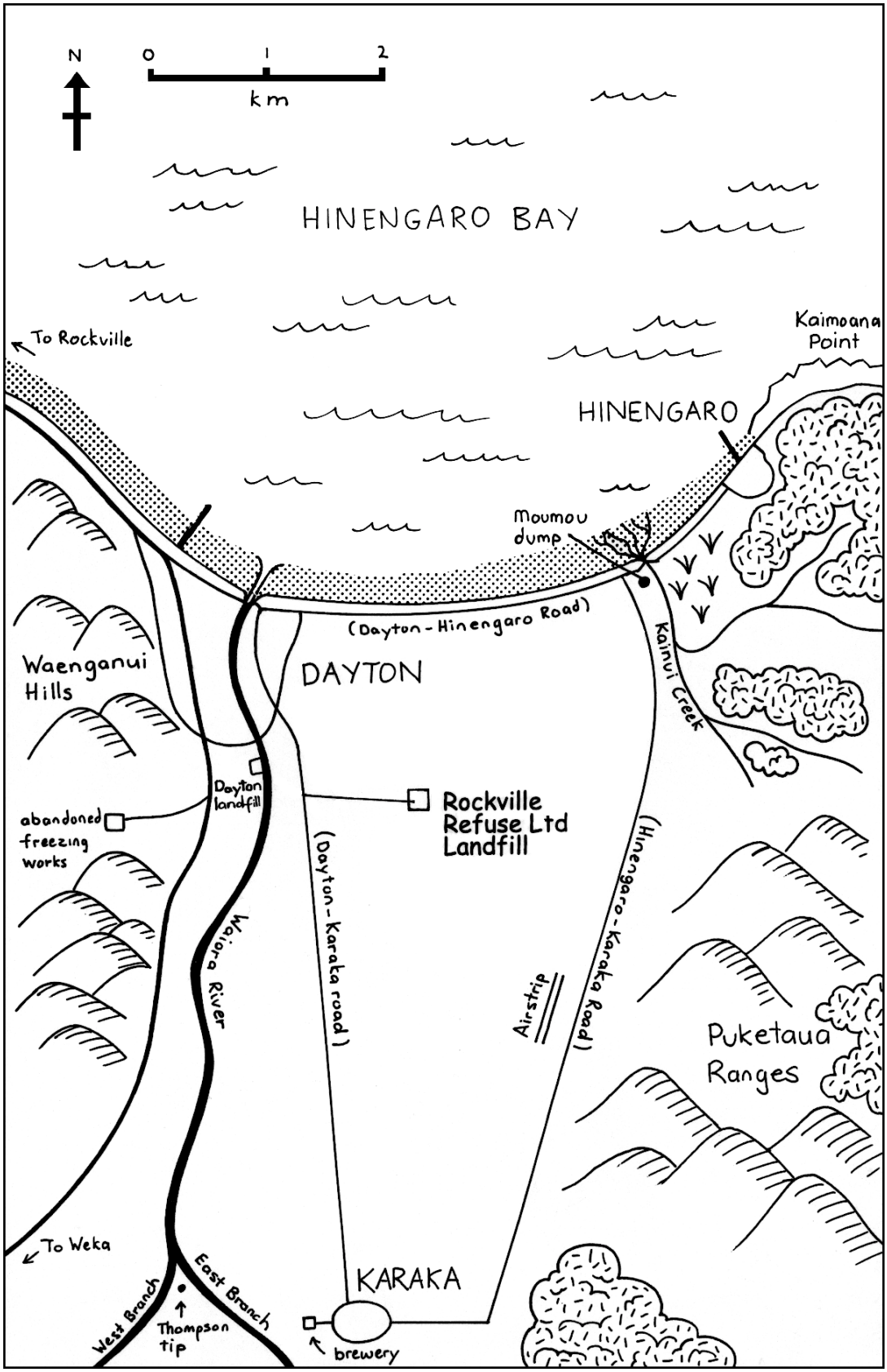

Figure A2.1: Sketch Map of Hinengaro Bay

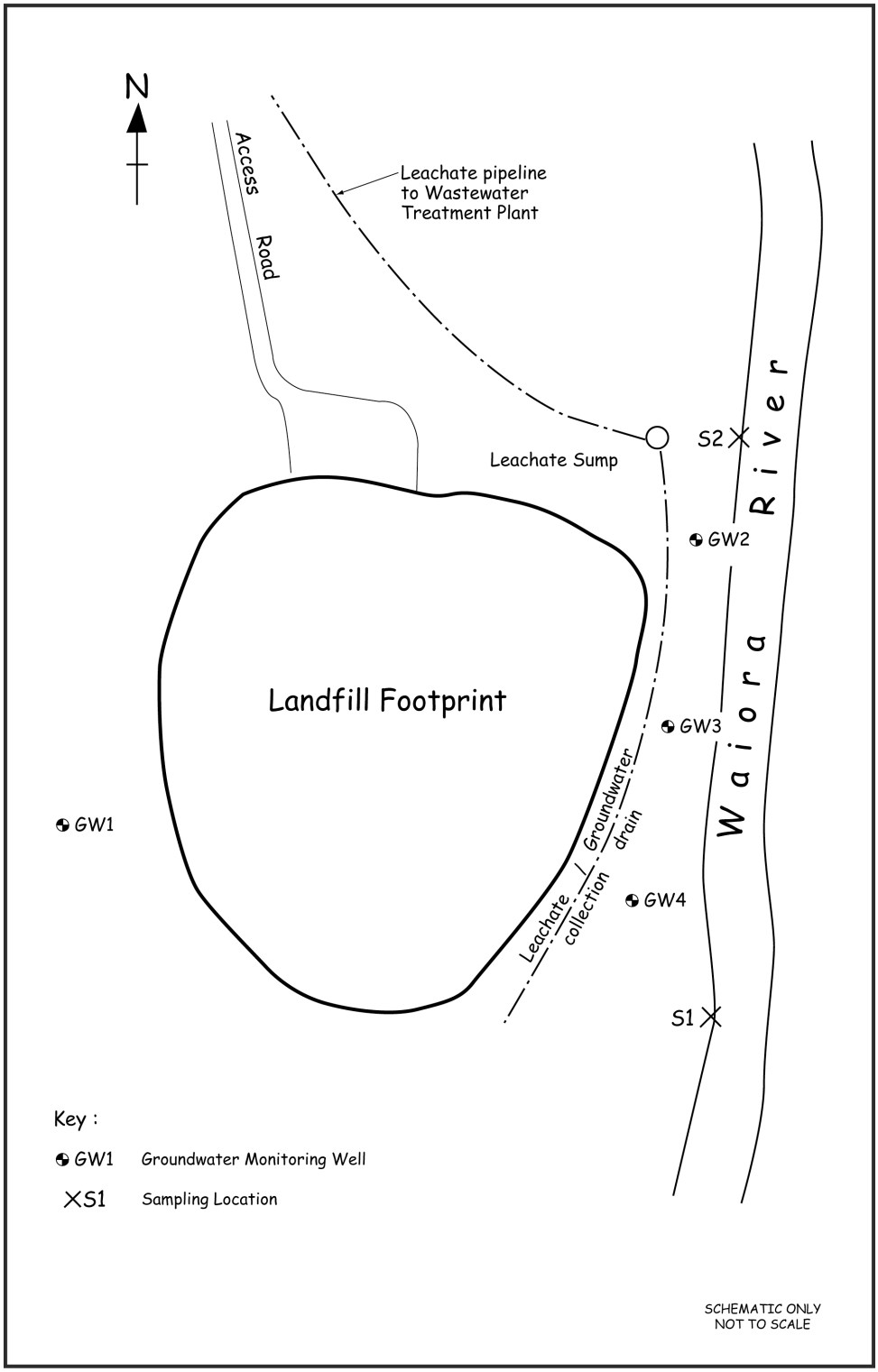

Figure A2.2: Closed Dayton Landfill

Consents for the closed Dayton Landfill

Consents for the closed Dayton Landfill are detailed on the following pages.

The Rockville Regional Council imposed the following conditions on consents.

Discharge of leachate onto or into land

A design condition was set specifying requirements for the landfill cap, to minimise infiltration of rainwater, with a further condition requiring regular monitoring and, if necessary, maintenance of the integrity of the cap.

Monitoring conditions were set for the leachate-contaminated groundwater abstracted from the collection trench, and groundwater and surface water down-gradient of the site. The groundwater-monitoring condition requires additional monitoring if levels of contamination are shown to be increasing significantly.

In addition to a standard review condition for five-yearly review of the consent, a review condition enables the review of monitoring locations, parameters and frequencies following receipt of a report on the results of the first two years of monitoring. This is to ensure that the most appropriate monitoring locations, parameters and frequencies can be put in place once the effectiveness of remedial measures has been determined.

Take groundwater

A limit condition was set allowing the taking of groundwater only from the leachate/ groundwater collection drain.

A monitoring and reporting condition was set requiring monitoring and reporting of the quantity of groundwater taken.

A standard review condition allowing five-yearly review of the consent was set.

Discharge of contaminants into the air

Limit conditions were set to limit the migration of landfill gas and discharge of odour beyond the legal boundaries of the site.

Monitoring and reporting conditions were set requiring the keeping of a complaints register and reporting of complaints.

A standard review condition allowing five-yearly review of the consent was set.

Schedule 1 – general conditions

A number of general conditions were set in a schedule and apply to all three consents. These conditions required:

- all works to be undertaken in accordance with the general principles contained within the Assessment of Effects on the Environment and Aftercare and Monitoring Plan, which were submitted with consent applications
- detailed designs for all works to be forwarded to the regional council for acceptance in writing and all works to be undertaken in accordance with the accepted designs
- the submission of as-built drawings
- the district council to place the site on any of its databases and/or planning maps relating to contaminated sites or potentially hazardous areas
- the preparation of an aftercare and monitoring plan, with the condition stating the issues it shall address, as a minimum.
- the consent holder to pay any administrative charges set in accordance with sections 36 and 360 of the RMA.

There was also:

- a condition specifying the standard methods to be used in water quality analysis
- a review condition allowing the review of consents in the event of transfer.

Discharge of leachate onto or into land

Consent number:	RRC/1996/1
Consent type:	Discharge permit
Consent subtype:	Discharge to land
Consent holder:	Hinengaro Bay District Council Private Bag DAYTON
Activity authorised:	To discharge leachate from a municipal solid waste landfill onto land, in circumstances that may result in contaminants entering groundwater
Location:	Dayton-Karaka Road – Hinengaro Bay
Map reference:	NZMS 260 T100:99-199
Consent duration:	Granted for a period expiring on 31 December 2032

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The discharge of leachate onto, or into, land is authorised only on those areas of the site identified as the Dayton Landfill, as shown in the Dayton Landfill Site Plan attached to this consent.

Design conditions

3. Final cover shall comprise, from bottom to top:
   - a minimum of 150 millimetres of intermediate cover;
   - a minimum of 600 millimetres of compacted clay, with a permeability coefficient (k) of not more than 1×10^{-7} metres per second;
   - a minimum of 100 millimetres subsoil;
   - a minimum of 150 millimetres of topsoil.

Monitoring and reporting conditions

4. The consent holder shall undertake a formal inspection of the surface and capping of the landfill site every six months and following significant storm events, to the satisfaction of the Rockville Regional Council. The consent holder shall inspect for:
   - vegetation die-off;
   - cracking of the landfill cap;
   - subsidence and erosion;
   - leachate breakout through the cap;
   - damage by stock; and
   - refuse protruding through the cap.

   Any defects noticed during the inspection shall be remediated as soon as practicable.

   A written report on the inspection and rehabilitation undertaken as a result shall be forwarded to the Rockville Regional Council within one month of each inspection.

5. The consent holder shall monitor the quality of the groundwater in monitoring wells GW1, GW2, GW3 and GW4, as shown in the Dayton Landfill Site Plan, and the outlet of the leachate/groundwater pump, to the satisfaction of the Rockville Regional Council every three months, with two monitoring rounds to coincide with the winter groundwater level maximum (generally September) and summer groundwater level minimum (generally April).

   To this end, the consent holder shall monitor the groundwater for the following parameters:
   - water level
   - pH (field and laboratory)
   - conductivity (field and laboratory)
   - alkalinity
   - chloride
   - potassium
   - ammoniacal nitrogen
   - nitrate nitrogen
   - total organic carbon

- boron (soluble in groundwater wells, total in leachate/groundwater)
- zinc (soluble in groundwater wells, total in leachate/groundwater).

Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council, including on site filtration and preservation of samples for soluble metals analysis.

The results of such monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling, unless otherwise agreed in writing by the Rockville Regional Council.

If the levels of the above leachate indicators show an increased value (increase or decrease in the case of pH) in excess of three standard deviations from the mean for that parameter, using the mean established by the first four monitoring rounds (following the granting of this consent), then additional monitoring shall be immediately undertaken for the suite of parameters, as listed in condition 6 of this consent (metals analysis shall be for soluble metals in groundwater wells).

6. The consent holder shall monitor the quality of the water in the outlet to the leachate/groundwater pump, to the satisfaction of the Rockville Regional Council once every year, to coincide with summer groundwater level minimum (generally April):

   To this end, the consent holder shall monitor the groundwater for the following parameters:
   - semi-volatile organic compounds (SVOCs)
   - volatile organic compounds (VOCs)
   - total Kjeldahl nitrogen
   - dissolved reactive phosphorous
   - total aluminium
   - total chromium
   - total manganese
   - total iron
   - total cobalt
   - total nickel
   - total copper
   - total arsenic
   - total cadmium
   - total lead.

   Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council.

   If the results of the above annual analysis of the outflow of the leachate/groundwater pump indicate statistically significant increases in concentrations of any of the above parameters, those parameters shall also be analysed in all groundwater monitoring wells.

   The results of such monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling.

7. The consent holder shall monitor the quality of water in the Waiora River, at surface water sampling locations S1 and S2, as shown in the Dayton Landfill Site Plan, to the satisfaction of the Rockville Regional Council.

To this end the consent holder shall monitor surface water every three months, to coincide with low flow, for the following parameters:

- estimate of flow
- pH (field and laboratory)
- conductivity (field and laboratory)
- BOD_5
- chloride
- potassium
- ammoniacal nitrogen
- nitrate nitrogen
- dissolved reactive phosphorous
- potassium
- total zinc
- total boron
- suspended solids.

Sampling shall be undertaken under protocols approved in writing by the Rockville Regional Council.

The results of such monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling.

Review conditions

8. The Rockville Regional Council may, within one month after the receipt of a report detailing the results of two years of monitoring following the granting of this consent (at least four monitoring rounds), review the following:

    - the number and location of groundwater sampling wells and groundwater monitoring parameters and frequency with a view to determining the most appropriate locations, parameters, trigger levels and frequency for ongoing monitoring of groundwater;
    - the parameters for monitoring at the outflow of the leachate/groundwater pump with a view to determining the most appropriate parameters and trigger levels for ongoing monitoring of collected leachate/groundwater;
    - the number and location of surface water sampling points and surface water monitoring parameters and frequency with a view to determining the most appropriate locations, parameters and frequency for ongoing monitoring of surface water.

9. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2001, 2006, 2011, 2016, 2021 and 2026 in order to ensure that:

    (i) leachate control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

    (ii) that an appropriate effects monitoring programme is being undertaken.

    Costs relating to the above reviews shall be borne by the consent holder.

Take groundwater

Consent number:	RRC/1996/2
Consent type:	Water permit
Consent subtype:	Take water
Consent holder:	Hinengaro Bay District Council Private Bag DAYTON
Activity authorised:	To take groundwater from a contaminated groundwater collection drain.
Location:	Dayton-Karaka Road – Hinengaro Bay
Map reference:	NZMS 260 T100:99-199
Consent duration:	Granted for a period expiring on 31 December 2032

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The taking of groundwater is authorised only from the leachate/groundwater collection drain, as shown in the Dayton Landfill Site Plan attached to this consent.

Monitoring and reporting conditions

3. The consent holder shall monitor the quantity of leachate/groundwater pumped from the leachate/groundwater collection drain to the satisfaction of the Rockville Regional Council. The volume of leachate/groundwater pumped to the oxidation ponds shall be recorded at monthly intervals. The volume of leachate/groundwater pumped to the oxidation ponds shall be reported in writing to the Rockville Regional Council by 1 August every year.

Review condition

4. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2001, 2006, 2011, 2016, 2021 and 2026 in order to ensure that:

   (i) leachate control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

   (ii) that an appropriate effects monitoring programme is being undertaken.

   Costs relating to the above reviews shall be borne by the consent holder.

Discharge of contaminants into the air

Consent number:	RRC/1996/3
Consent type:	Discharge permit
Consent subtype:	Discharge into the air
Consent holder:	Hinengaro Bay District Council Private Bag DAYTON
Activity authorised:	To discharge landfill gas and odour into the air.
Location:	Dayton-Karaka Road – Hinengaro Bay
Map reference:	NZMS 260 T100:99-199
Consent duration:	Granted for a period expiring on 31 December 2032

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. No landfill gas, in excess of 1 percent methane (by volume in air), from the landfill shall be discharged via the ground and thence air outside of the legal boundaries of the site.

3. There shall be no discharge of odour as a result of the activities authorised by this resource consent, that causes an objectionable effect beyond the boundary of the site.

Monitoring and reporting conditions

4. The consent holder shall maintain and keep a complaints register for all objectionable odour complaints received by the consent holder. The register shall record:

   (i) the date, time and duration of the incident that has resulted in a complaint;

   (ii) the location of the complainant when the odour was detected;

   (iii) the possible cause of the odour;

   (iv) the weather conditions and wind direction at the site when the odour event allegedly occurred;

   (v) any corrective action undertaken by the consent holder in response to the complaint.

   The register shall be made available to the Rockville Regional Council at all reasonable times. Complaints received by the consent holder that may indicate non-compliance with the conditions of this resource consent shall be forwarded to the Rockville Regional Council within five days of the complaint being received.

5. Should an emission of odour occur that has an objectionable or offensive effect, the consent holder shall provide a written report to the Rockville Regional Council within five days of being notified of such by the Rockville Regional Council. The report shall specify:

   (i) the cause or likely cause of the event and any factors that influenced its severity;

   (ii) the nature and timing of any measures implemented by the consent holder to avoid, remedy or mitigate any adverse effects; and

   (iii) the steps to be taken in future to prevent recurrence of similar events.

Review condition

6. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2001, 2006, 2011, 2016, 2021 and 2026 in order to ensure that:

   (i) management and aftercare practices are appropriate to avoid or reduce any adverse effects on the environment; and

   (ii) that an appropriate effects monitoring programme is being undertaken.

   Costs relating to the above reviews shall be borne by the consent holder.

Schedule 1 – general conditions

The granting of consents RRC/1996/1, RRC/1996/2 and RRC/1996/3 is subject to the following general conditions which shall apply to each individual consent:

1. All works shall be undertaken generally in accordance with the general principles contained within:
   - Dayton Landfill Resource Consent Application, Assessment of Effects on the Environment, dated 1996.

2. Detailed designs for works on the landfill shall be forwarded to the Rockville Regional Council for acceptance in writing prior to works commencing. All works shall be carried out in accordance with the designs as accepted by the Rockville Regional Council.

3. As built drawings shall be forwarded to the Rockville Regional Council as soon as practicable following completion of works and structures.

4. All landfill investigations, design, supervision of construction, monitoring and aftercare shall be undertaken by suitably qualified personnel experienced in such works, or works of a similar nature, and to the satisfaction of the Rockville Regional Council.

5. The consent holder shall place the landfill site on any databases and/or planning maps relating to contaminated sites or potentially hazardous areas.

6. The consent holder shall prepare an aftercare and monitoring plan for acceptance in writing by the Rockville Regional Council within six months of granting of consents.

   The aftercare and monitoring plan shall provide details of the procedures to be put into place to manage and monitor the site in compliance with conditions of these consents and minimise the potential for adverse effects due to the closed landfill. This plan shall address the following, as a minimum:

   - responsibilities for aftercare;
   - final contours;
   - maintenance of capping and revegetation;
   - maintenance of leachate/water control systems; and
   - ongoing monitoring, including groundwater, surface water, landfill gas and site capping.

7. All water quality sample analyses required shall be undertaken using standard methods as detailed in the "Standard Methods for the Examination of Water and Waste Water, 1998" 20th edition by A.P.H.A. and A.W.W.A. and W.E.F. or by some other method approved in advance in writing by the Rockville Regional Council.

8. In the event of the transfer of this consent the Rockville Regional Council may review the conditions of this consent, for the purpose of:

   (a) ensuring the adequacy of the consent in terms of protecting the environment; and/or

   (b) ensuring that the new consent holder can comply with the intent and specific requirements of the conditions;

   (c) reviewing the requirements for a bond.

   Costs relating to the above reviews shall be borne by the consent holder.

9. The consent holder shall pay to the Rockville Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act 1991.

Rockville Refuse Limited Landfill

The Hinengaro District Council had intended to replace its old landfills with a new landfill, sited and designed in accordance with the latest guidelines. However, following initial concept design and economic analysis it decided that it was uneconomic to develop a landfill to modern standards for the small quantity of waste produced by the district.

At the same time a private waste disposal company, Rockville Refuse Limited, was looking to develop a new regional landfill to take refuse from Rockville and other surrounding areas following the impending closure of the Rockville Landfill.

A large site, close to the site initially selected by the Council for its new landfill, was identified in low-permeability clays with shallow, but slow-moving groundwater. The site has access from the Dayton-Karaka Road and the nearest neighbouring dwelling is over 500 metres away.

The landfill is shown in Figure A2.3. Its design includes a groundwater under-drainage system, a composite liner of compacted clay overlain by an HDPE flexible membrane liner and a leachate collection system. The design capacity is 2,500,000 tonnes and the company plans on accepting between 50,000 and 100,000 tonnes of refuse per year from throughout the Rockville Region over 35 years.

Leachate is piped to the Dayton Wastewater Treatment Plant, which has been upgraded specifically for this purpose.

Rockville Refuse Limited applied for a land use consent from the Hinengaro District Council and the following consents from the Rockville Regional Council:

- discharge of refuse onto or into land
- discharge of leachate onto or into land
- take groundwater
- discharge groundwater to water
- divert and dam stormwater
- discharge stormwater to water
- discharge of contaminants into the air.

Supporting documentation comprised a comprehensive Assessment of Effects on the Environment and a Landfill Management Plan, covering the issues associated with all consents applied for.

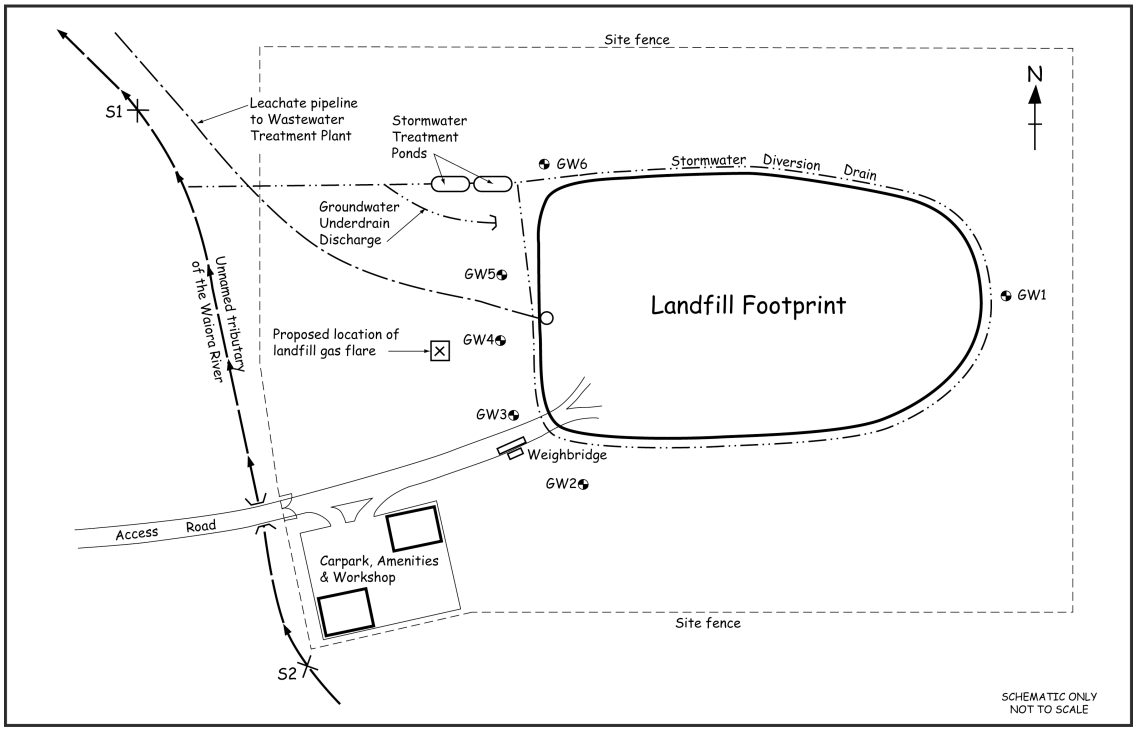

Figure A2.3: Rockville Refuse Limited Landfill

During consultation with local residents, the primary concerns raised were traffic, dust and odour. In addition the local tangata whenua, while not aware of any waahi tapu sites in the locality, were concerned that proper protocols be followed should any human remains or archaeological items be found during site development.

Consents for the Rockville Refuse Limited Landfill

Following a joint hearing of the Hinengaro District Council and Rockville Regional Council all consents were granted. There were no appeals to the Environment Court by the applicant or submitters.

Consents for the Rockville Refuse Limited Landfill are detailed on the following pages.

The Hinengaro District Council and Rockville Regional Council imposed the following conditions on the land use consent.

Land use consent

A condition was set requiring the landfill development to be undertaken generally in accordance with consent application documentation.

To reduce traffic to the site a condition was set prohibiting public access and restricting refuse delivery to refuse transport vehicles.

Three conditions were set with respect to noise. The first sets operational noise limits, means of measurement and a compliance point. The second deals with construction noise and requires compliance to the New Zealand Standard. The third limits the times that trucks transporting refuse, cover or construction material can enter the site.

A condition was set requiring a two-metre high stockproof fence, also intended to capture litter.

A condition was set requiring progressive rehabilitation and landscaping in accordance with the applicant's proposed plan.

Five conditions were set with respect to roading and traffic. The first requires improvements to the main road at the intersection with the access road, at the consent holder's cost, to improve safety. The second requires sealing of the access road from the main road to the site access gate. The third requires submission of plans, relating to the first two consents, for approval. The fourth limits the number of refuse vehicles leaving and entering each day, in order to reduce the effects of traffic on other road users. The fifth requires recording and reporting of vehicle types and numbers.

A condition was set requiring collection of litter, resulting from landfill operations, from around the site.

Two conditions were set with respect to dust. One requires all practicable steps to reduce dust, and the other limits dust deposition rates beyond the boundary of the site.

A condition was set outlining the procedure to be followed if human remains or archaeological items are discovered during development.

Two review conditions were set. The first allows an annual review; the second allows the consent holder to apply for a change or cancellation of any consent condition on an annual basis.

A condition was set requiring the consent holder to pay monitoring costs in accordance with section 36 of the RMA.

Discharge of refuse onto land

Two limit conditions were set: one specifying the areas of the site, by reference to a site plan, on which waste may be discharged; and the other limiting the total quantity of refuse (in tonnes) that may be discharged over the term of the consent.

Four conditions were set with respect to waste acceptance. The first defines and prohibits liquid waste. The second and third define requirements for medical and asbestos waste disposal, with reference to New Zealand Standards and Regulations. The fourth defines (using characteristics and TCLP limits) and prohibits hazardous waste. It allows the disposal of small quantities, which it would be unreasonable to expect to be detected, and states procedures to be used to minimise the potential for hazardous waste disposal.

A condition requires the monitoring and annual reporting of waste types and quantities.

Another condition requires the consent holder to notify the regional council if a vehicle that contains waste not complying with acceptance criteria is turned away.

A review condition enables the review of waste acceptance conditions following the publication of a new national definition of hazardous waste or new policies, regulations, standards or guidelines.

Discharge of leachate onto or into land

A limit condition was set specifying the areas of the site, by reference to a site plan, on which leachate may be discharged to land.

Design conditions were set specifying minimum requirements for the landfill liner, performance of the leachate collection system and design of the landfill final cap.

Monitoring and reporting conditions were set with respect to:

- quantity of leachate withdrawn from the landfill, on a monthly basis
- quality of leachate
- quality of groundwater in groundwater monitoring wells (on a twice-yearly basis, as appropriate for the permeability of materials underlying the landfill
- development of trigger levels to determine leachate contamination of groundwater
- quality of surface water, if leachate contamination of groundwater is detected.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Take groundwater

A limit condition was set allowing the taking of groundwater only from the groundwater under-drainage system.

A monitoring and reporting condition was set requiring monitoring and reporting of the quantity of groundwater taken.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Discharge of groundwater into water

This consent to discharge the groundwater taken by the under-drainage system to surface water has two monitoring and reporting conditions. The first requires continuous monitoring of the discharge for pH and conductivity and trigger levels to indicate potential leachate contamination. The second requires three-monthly monitoring of a range of leachate indicator parameters.

Two contingency conditions were set. The first requires additional monitoring if trigger levels for continuous monitoring are exceeded. The second requires the disposal of leachate-contaminated groundwater to the leachate treatment/disposal system.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Divert and dam stormwater

A limit condition precludes stormwater that comes in contact with refuse from being treated and discharged as stormwater.

Three design conditions prescribe design requirements and scour protection measures for diversion channels and stormwater ponds.

Two operational conditions were set with respect to maintenance of the diversions and treatment of stormwater, in accordance with the applicant's proposals.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Discharge of stormwater to water

A compliance condition sets the point of compliance for the stormwater discharge with reference to a site plan.

Two limit conditions prescribe the quality of the stormwater discharge.

Three design conditions were set: for pond design, scour protection and maintenance of works.

Two monitoring and reporting conditions were set. The first requires continuous monitoring of the inlet to the ponds for pH and conductivity and trigger levels to indicate potential leachate contamination. The second requires three-monthly monitoring of a range of leachate indicator parameters.

Two contingency conditions were set. The first requires additional monitoring if trigger levels for continuous monitoring are exceeded. The second requires the consent holder to cease discharging stormwater and take steps to prevent further contamination.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Discharge of contaminants into the air

Limit conditions were set to limit the migration of landfill gas and discharge of dust and odour beyond the legal boundaries of the site.

An operational condition was set requiring the progressive installation of a landfill gas collection system and treatment/disposal system. Monitoring and reporting conditions were set requiring the keeping of a complaints register and reporting of complaints to the regional council.

A design condition prescribing landfill gas flare requirements was set.

Two monitoring and reporting conditions were set. The first requires monitoring of landfill gas for a range of parameters at each flare. The second requires monitoring of gas probes if the collection system is not operating.

Two reporting conditions were set with respect to dust and odour complaints.

A standard review condition allowing five-yearly reviews of the consent, and review six months prior to landfill closure, was set.

Schedule 1 – general conditions

A number of general conditions were set in a schedule and apply to all seven consents.

A condition was set requiring all works to be undertaken in accordance with the general principles contained within the Assessment of Effects on the Environment, Management Plan and Rehabilitation and Landscaping Plan, which were submitted with consent applications.

A condition requires all earthworks and sediment control measures to be constructed and carried out in accordance with the regional council's guidelines.

A condition requires detailed designs for all works to be forwarded to the regional council for acceptance in writing and all works to be undertaken in accordance with the accepted designs. Another condition requires the submission of as-built drawings.

A condition specifies that all work relating to the development be undertaken by suitably qualified and experienced personnel.

The preparation of a landfill management plan was required, with the condition stating that the plan provide details of the procedures to be put into place to operate the landfill in compliance with consent conditions.

The preparation of a monitoring and contingency plan was required, with the condition stating the issues it shall address, as a minimum, with respect to groundwater, surface water and landfill gas.

The preparation of a rehabilitation and aftercare plan was required, with the condition stating the issues it shall address, as a minimum.

A condition was set requiring the preparation of an annual report and stating the issues it shall address.

A peer review condition was set, requiring a two-person peer review panel and outlining peer reviewer qualifications and matters for peer review.

A condition specifies the standard methods to be used in water quality analysis.

A condition was set outlining the procedure to be followed if human remains or archaeological items are discovered during development.

Ten conditions were set relating to the provision of a bond and setting of the amount of the bond.

A review condition was set allowing the review of consents in the event of transfer.

A general condition requiring the consent holder to pay any administrative charges was set in accordance with sections 36 and 360 of the RMA.

Land use consent

Pursuant to sections 105(1)(c) and 108 of the Resource Management Act 1991 the Hinengaro District Council grants land use consent for a non-complying activity under the Hinengaro District Plan to undertake the development and operation of a municipal solid waste landfill on a site legally described as Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District.

This land use consent is subject to the following conditions.

Plans

1. The development shall be generally in accordance with the application documentation, unless otherwise altered by the consent conditions, and comprising:

    - Rockville Refuse Limited Landfill Resource Consent Application, Assessment of Effects on the Environment, dated 1999;
    - Rockville Refuse Limited Landfill Resource Consent Application, Landfill Management Plan, dated 1999;
    - Rockville Refuse Limited Landfill Resource Consent Application, Rehabilitation and Landscaping Plan, dated 1999;
    - Reports and correspondence supplied in response to requests for additional information.

Access

2. The site shall not be open to the general public. Refuse shall be delivered to the site only in vehicles constructed for the transport of refuse which have been given prior authorisation by the consent holder.

Noise

3. The landfill shall be managed and operated in a manner to ensure that the noise level (L_{10}) measured at or within the notional boundary of any dwelling beyond the site shall not exceed the following limits:

   Monday to Saturday inclusive
   7.00 am to 6:00 pm 50 dBA (L_{10})

   Sunday and public holidays
   7.30 am to 6.00 pm 45 dBA (L_{10})

   At all other times 40 dBA (L_{10})

   Noise shall be measured and assessed in accordance with the requirements of NZS 6801: 1991 – Measurement of Sound and NZS 6802: 1991 – Assessment of Environmental Sound.

   Note: The notional boundary as referred to in condition 3 means a line 20 metres from the facade of any rural dwelling or legal boundary of the rural dwelling whichever is the closer to the rural dwelling.

   The consent holder shall take all practicable steps to minimise the noise created on the landfill site.

4. Construction work on the landfill shall comply with the requirements of NZS 6803P: 1984 The Measurement and Assessment of Noise from Construction, Maintenance, and Demolition Work.

   Construction work is defined as site clearing, the construction of buildings, bunds, roadways, leachate, stormwater and landfill gas works, and the mass excavation, preparation and lining of the site prior to filling. Construction work does not include the day to day winning and stockpiling of material for daily and intermediate cover.

5. Trucks transporting refuse, cover and construction material to and from the site shall not enter on the site before 6.45 am or depart after 5.00 pm.

Fencing

6. The consent holder shall construct a two-metre high stockproof fence around the perimeter of the site, as indicated on the Rockville Refuse Limited Landfill Site Plan, dated 1999.

Landscaping and visual

7. The consent holder shall undertake progressive rehabilitation and landscaping works as each stage of the landfill is completed, and maintain such works, in accordance with the Rockville Refuse Limited Landfill Resource Consent Application, Rehabilitation and Landscaping Plan, dated 1999.

Roading and traffic

8. Prior to landfill operations commencing, the junction of the Dayton-Karaka Road and the site access road shall be designed and constructed in accordance with the standards and specifications for a side road junction on a state highway, at the consent holder's cost. The new intersection shall include a right turn bay, deceleration lanes, 1.5 metre wide sealed shoulders and sight benching to provide minimum sight line standards for an intersection with a state highway in both horizontal and vertical planes.

9. The access road to the landfill shall be formed to a suitable standard for the type and number of vehicles that will use it. It shall be sealed from the intersection with the Dayton Karaka Road to the landfill site gate and maintained in a dust-free condition.

10. Engineering design plans for the works required by conditions 7 and 8 of this consent shall be submitted to and approved by the Hinengaro District Council prior to the work being undertaken.

11. The number of refuse-containing vehicles per day entering and leaving the site shall be limited to 75.

12. The consent holder shall record the number and type of vehicle movements to and from the site on a daily basis. This record shall be reported to the Hinengaro District Council every six months.

Litter

13. The consent holder shall be responsible for the removal, as soon as practicable, of any litter spillage resulting from site operations onto public roads, and wind-blown litter on land adjacent to the site, at the request of the landowner, to the satisfaction of the Hinengaro District Council.

Dust

14. The consent holder shall take all practicable steps to reduce the potential for dust nuisance from the site.

15. Dust and fine particulate matter discharged into the air from any activity subject of this consent shall not result in the rates of deposition in excess of 4 grams per square metre per 30-day period in any location beyond the boundary of the site.

Cultural and archaeological

16. In the event that any human remains or archaeological items are discovered, the works in that area of the site shall cease immediately and the Police, tangata whenua, and/or New Zealand Historic Places Trust, and also the Hinengaro District Council, shall be notified as soon as practicable. Works may recommence with the written approval of the Hinengaro District Council. Such approval shall be given after the Hinengaro District Council has considered:

    i) tangata whenua interests and values;

    ii) the consent holder's interests;

    iii) any archaeological or scientific evidence; and

    iv) any requirements of the Police.

Review

17. Pursuant to section 128 of the Resource Management Act 1991 the Hinengaro District Council may commence a review of the conditions of this consent within one month following the first anniversary of the granting of this consent and at two-yearly intervals thereafter. Such a review will be undertaken after consultation between the Hinengaro District Council and the consent holder and shall include but not be limited to any of the following issues:

(i) To deal with any adverse effects on the environment that may arise from the exercise of this consent, specifically effects relating to land subsidence, land rehabilitation, traffic, noise and landscaping.

18. Pursuant to section 127(1)(a) of the Resource Management Act 1991, the consent holder may apply to the Hinengaro District Council within one month of any anniversary of the date of the granting of this consent for a change or cancellation of any condition of the consent. Such an application shall be made only after consultation between the consent holder and the Hinengaro District Council.

Monitoring

19. The consent holder shall pay to the Hinengaro District Council all actual and reasonable costs and additional charges in respect of monitoring the conditions of this consent in accordance with section 36 of the Resource Management Act 1991.

Discharge of refuse onto or into land

Consent Number:	RRC/1999/1
Consent type:	Discharge permit
Consent subtype:	Discharge to land
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To discharge up to 2,500,000 tonnes of municipal waste onto land
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The discharge of waste is authorised only on the areas of the site identified as landfill footprint on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

3. The total quantity of waste discharged onto, or into, the landfill shall not exceed 2,500,000 tonnes during the term of this consent, namely during the period from 1 January 1998 until 31 December 2033.

Operational conditions

4. No liquid waste shall be accepted for disposal. The definition of liquid waste shall be any waste that contains free liquid on arrival at the landfill.

5. Medical wastes shall be accepted only in accordance with NZS 4304:1990 "Health Care Waste Management" or subsequent amendments.

6. Asbestos wastes shall be accepted only in accordance with the Asbestos Regulations 1983, or subsequent amendments.

7. With the exception of medical wastes and asbestos wastes, no hazardous waste shall be accepted for disposal at the landfill. The definition of "hazardous waste" shall be:

   (i) Wastes which are defined as either radioactive, explosive, flammable, oxidising, corrosive, toxic or ecotoxic in terms of the HSNO regulations, or capable, by any means after disposal, of yielding another material, e.g. leachate, which possesses any of the above characteristics; and

   (ii) Wastes which exhibit the following characteristics of toxicity and eco-toxicity which following testing using the US EPA Toxicity Characteristic Leaching Procedure (TCLP) results in leachable concentrations of contaminants in excess of the NSW EPA leachable concentration values for solid waste landfills.

   Where NSW EPA leachable concentration TCLP values for solid waste landfills do not exist for a substance for which a disposal request is made, the TCLP limit shall be set at the lesser of:

   - NZS 9201 Trade Waste Bylaw limits; or
   - 100 times the New Zealand drinking water standard; or
   - 1000 times the ANZECC Guidelines for protection of aquatic species.

   The definition of "hazardous waste" shall not include small quantities of waste products containing potentially hazardous components that are not likely to have adverse effects on the environment, such as can reasonably be expected to be contained in the municipal waste stream.

   To minimise the potential for hazardous waste to be disposed of at the landfill the following measures shall be taken:

   - notice shall be clearly positioned at the landfill entrance to identify the hazardous wastes which are unacceptable at the landfill; and
   - random inspections of incoming loads for the presence of hazardous waste shall be undertaken.

Monitoring and reporting conditions

8. The consent holder shall maintain to the satisfaction of the Rockville Regional Council a record of the quantities and types of waste accepted at the landfill.

   A copy of this record shall be forwarded to the Rockville Regional Council by 1 August each year, unless otherwise agreed in writing by the Rockville Regional Council.

9. The consent holder shall immediately notify the Rockville Regional Council if any vehicle(s) is turned away from the landfill with waste that does not comply with the waste acceptance criteria detailed in conditions 4, 5, 6 and 7. This notification shall include the vehicle registration number and source of the waste (if known).

Review conditions

10. The Rockville Regional Council, after consultation with the consent holder, may commence a review of conditions 4, 5, 6 and 7 of this consent within six months of the publication of any change in the national definition of hazardous wastes, or the publication of new national hazardous waste policies, regulations or treatment and/or disposal standards or guidelines.

    Costs relating to the above review shall be borne by the consent holder.

Discharge of leachate onto or into land

Consent Number:	RRC/1999/2
Consent type:	Discharge permit
Consent subtype:	Discharge to land
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To discharge leachate from a municipal solid waste landfill onto land, in circumstances that may result in contaminants entering groundwater
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The discharge of leachate onto, or into, land is authorised only on those areas of the site identified as landfill Stages 1 to 8 on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

Design conditions

3. The leachate containment and leachate collection system for the landfill shall consist of the following, from bottom to top:
   - a groundwater under-drainage system;
   - 600 millimetres of compacted clay with a permeability coefficient (k) of not more than 1×10^{-9} metres per second;

- a 1.5 millimetre HDPE flexible membrane liner;
- a 300 millimetre liner protection leachate collection layer of granular material with a permeability coefficient (k) of not less than 1 x 10^{-3} metres per second.

4. The maximum head of leachate shall not exceed 300 millimetres on the base liner, as demonstrated by measurement taken in the leachate collection sump(s).

5. Final cover and capping shall be constructed to the following minimum specification, from bottom to top, as each stage of the landfill is completed:
   - 300 millimetres of intermediate cover;
   - 600 millimetres of compacted clay with a permeability coefficient (k) of not more than 1 x 10^{-7} metres per second;
   - 300 millimetres of subsoil; and
   - 300 millimetres of topsoil.

Monitoring and reporting conditions

6. The consent holder shall monitor the volume of leachate withdrawn from the landfill and record this volume on a monthly basis. This record shall be reported in writing to the Rockville Regional Council by 1 August each year, unless otherwise agreed in writing by the Rockville Regional Council.

7. The consent holder shall, to the satisfaction of the Rockville Regional Council, monitor the collected leachate twice a year, to coincide with the winter groundwater level maximum (generally September) and summer groundwater minimum (generally April) for the following parameters:
   - pH (field and laboratory)
   - conductivity (field and laboratory)
   - alkalinity
   - sulphate
   - dissolved reactive phosphorus
   - total organic carbon
   - chloride
   - sodium
   - potassium
   - calcium
   - magnesium
   - ammoniacal nitrogen
   - nitrate nitrogen
   - total boron
   - total iron
   - total zinc
   - silica.

The consent holder shall, to the satisfaction of the Rockville Regional Council, monitor the leachate once a year, to coincide with the summer groundwater minimum (generally April) for the following parameters:

- total Kjeldahl nitrogen
- BOD5
- COD
- total aluminium
- total chromium
- total manganese
- total cobalt
- total nickel
- total copper
- total arsenic
- total cadmium
- total lead
- unfiltered pentachlorophenol
- unfiltered organochlorine pesticides
- unfiltered polychlorinated biphenyls
- unfiltered semi-volatile organic compounds (SVOCs)
- unfiltered volatile organic compounds (VOCs).

Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council. An ion balance to APHA criteria shall be provided for the anions and cations.

The results of leachate monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling.

8. The consent holder shall, to the satisfaction of the Rockville Regional Council, monitor water quality in groundwater monitoring wells GW1, GW2, GW3, GW4, GW5 and GW6 as indicated on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

   To this end the consent holder shall monitor water level every month, and for the following parameters twice a year, to coincide with the winter groundwater level maximum (generally September) and summer groundwater minimum (generally April):

   - water level
   - pH (field and laboratory)
   - conductivity (field and laboratory)
   - dissolved oxygen (field)
   - total organic carbon
   - alkalinity
   - sulphate
   - dissolved reactive phosphorus
   - chloride
   - sodium
   - potassium
   - calcium

- magnesium
- ammoniacal nitrogen
- nitrate nitrogen
- soluble boron
- soluble zinc
- silica.

The consent holder shall monitor for the following parameters once every year, to coincide with summer groundwater minimum:

- SVOCs
- VOCs.

Sampling shall be undertaken under protocols approved in writing by the Rockville Regional Council, including on-site filtration and preservation of samples for soluble metals analysis. An ion balance to APHA criteria shall be provided for the anions and cations.

The results of such monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling.

9. The consent holder shall develop trigger levels for each parameter within each groundwater monitoring well down-gradient of the landfill, to identify, to the satisfaction of the Rockville Regional Council, any significant change in background groundwater quality for these wells. The consent holder shall within three months of the completion of each such well submit interim trigger levels to the Rockville Regional Council. Trigger levels shall be finalised using the mean plus three standard deviations of baseline groundwater quality data after a minimum of four sampling rounds over at least two years. The consent holder shall notify the Rockville Regional Council in writing within one month of the identification of any significant change in groundwater quality.

10. The consent holder shall, to the satisfaction of the Rockville Regional Council, monitor water quality in the unnamed tributary of the Waiora River at the sampling locations S1 and S2, as indicated on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

    To this end the consent holder shall, if leachate is identified in groundwater monitoring wells, monitor for the following parameters twice a year, to coincide with low flow during the winter groundwater level maximum (generally September) and summer groundwater minimum (generally April):

    - estimate of flow
    - pH (field and laboratory)
    - conductivity (field and laboratory)
    - BOD_5
    - chloride
    - potassium
    - ammoniacal nitrogen
    - nitrate nitrogen
    - dissolved reactive phosphorous
    - potassium
    - total zinc

- total boron
- suspended solids.

Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council.

The results of such monitoring shall be reported in writing to the Rockville Regional Council within two months of sampling.

Review condition

11. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2004, 2009, 2014, 2019, 2024 and 2029 or within six months after cessation of landfilling operations at the site, in order to ensure that:

    (i) leachate control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

    (ii) an appropriate effects monitoring programme is being undertaken.

    Costs relating to the above reviews shall be borne by the consent holder.

Take groundwater

Consent Number:	RRC/1999/3
Consent type:	Water permit
Consent subtype:	Take water
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To take groundwater from beneath a municipal solid waste landfill
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The taking of groundwater is authorised only from the groundwater under-drainage system beneath the landfill footprint as shown on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

Monitoring and reporting conditions

3. The consent holder shall monitor the quantity of groundwater taken from the groundwater under-drainage system to the satisfaction of the Rockville Regional Council. The volume of groundwater taken shall be recorded at monthly intervals. The volume of groundwater taken shall be reported in writing to the Rockville Regional Council by 1 August every year.

Review condition

4. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2001, 2006, 2011, 2016, 2021 and 2026 in order to ensure that:

   (i) leachate control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

   (ii) an appropriate effects monitoring programme is being undertaken.

   Costs relating to the above reviews shall be borne by the consent holder.

Discharge of groundwater into water

Consent Number:	RRC/1999/4
Consent type:	Discharge permit
Consent subtype:	Discharge to water
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To discharge groundwater from beneath a municipal solid waste landfill into an unnamed tributary of the Waiora River
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Monitoring and reporting conditions

2. The consent holder shall continuously monitor (30-minute readings) the discharge of the groundwater under-drainage system to the satisfaction of the Rockville Regional Council, for the following parameters:

   - pH
   - conductivity.

   Trigger levels to indicate potential leachate contamination shall be set using the mean plus three standard deviations of baseline groundwater pH and conductivity data after six months of continuous monitoring.

   The monitoring system shall be fitted with an alarm to indicate when trigger levels for pH and conductivity have been exceeded.

   The consent holder shall monitor the discharge of the groundwater under-drainage system every three months, to the satisfaction of the Rockville Regional Council, for the following parameters:

   - pH
   - conductivity
   - ammoniacal nitrogen
   - nitrate nitrogen
   - alkalinity
   - chloride
   - potassium
   - total organic carbon.

   Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council.

   The results of such monitoring shall be reported in writing to the Rockville Regional Council within one month of sampling.

Contingency condition

4. If the trigger levels for continuous pH and conductivity monitoring are exceeded, the consent holder shall take a grab sample of water and analyse this sample for the parameters listed in condition 3 of this consent.

   The results of the grab sample analysis shall be reported to the Rockville Regional Council within two weeks of sampling, unless otherwise agreed in writing by the Rockville Regional Council.

5. If monitoring of the groundwater under-drainage system indicates leachate contamination then the consent holder shall treat and/or dispose of the collected groundwater as leachate using the landfill's leachate treatment/disposal system.

Review condition

6. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2004, 2009, 2014, 2019, 2024 and 2029 or within six months after cessation of landfilling operations at the site, in order to ensure that:

   - leachate control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and
   - an appropriate effects monitoring programme is being undertaken.

   Costs relating to the above reviews shall be borne by the consent holder.

Divert and dam stormwater

Consent Number:	RRC/1999/5
Consent type:	Water permit
Consent subtype:	Divert and dam stormwater
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To divert stormwater from a municipal solid waste landfill and dam water in constructed stormwater treatment ponds
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description:	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. No stormwater coming in contact with refuse shall be discharged as stormwater, but shall be considered leachate and discharged into the leachate treatment/disposal system.

Design conditions

3. Suitable scour protection of concrete, rock or timber construction shall be placed at the beginning and end of the diversion channel and, if needed to prevent scour, at intermediate locations.

4. All diversion channels shall be designed to manage a 1% AEP (Annual Exceedance Probability) design flood. The diversion channels shall be designed such that if this capacity is exceeded the preferential (secondary) flow path is away from the landfill.

5. The primary stormwater pond shall be designed in accordance with the principles contained within the Rockville Regional Council document "Erosion and Sediment Control – Guidelines for Land Disturbing Activities". As a minimum the pond shall be designed with a minimum volume of 3 percent of the contributing catchment.

Operational conditions

6. Diversion channels and cut-off drains shall be maintained to minimise the infiltration and run-off of stormwater onto the landfill from areas outside the landfill footprint.

7. All diverted stormwater shall be treated in the stormwater detention ponds as shown on the Rockville Refuse Limited Landfill Site Plan attached to this consent.

Review condition

8. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2004, 2009, 2014, 2019, 2024 and 2029 or within six months after cessation of landfilling operations at the site, in order to ensure that:

   (i) stormwater control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

   (ii) an appropriate effects monitoring programme is being undertaken.

   Costs relating to the above reviews shall be borne by the consent holder.

Discharge of stormwater into water

Consent Number:	RRC/1999/6
Consent type:	Discharge permit
Consent subtype:	Discharge to water
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To discharge treated stormwater from a municipal solid waste landfill into an unnamed tributary of the Waiora River
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description:	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Compliance conditions

2. The point of compliance for discharge of treated stormwater is the outlet to the stormwater treatment ponds, as shown on Rockville Refuse Limited Landfill Site Plan attached to this consent.

Limit conditions

3. There shall be no discharge which results in any of the following effects:

   (a) the production of any conspicuous oil or grease film, scums or foams or floatable or suspended material;

   (b) any conspicuous change in colour or visual clarity;

   (c) any emission of objectionable odour;

   (d) the rendering of freshwater unsuitable for consumption by farm animals;

   (e) any significant adverse effect on aquatic life.

4. The suspended solids (SS) concentration of the discharge shall not exceed the greater of either 100 grams per cubic metre, or twice the suspended solids concentration measured in the unnamed tributary of the Waiora River upstream of the discharge point.

Design conditions

5. The stormwater retention ponds shall be designed to manage a 10% AEP (Annual Exceedance Probability) design flood, with provision to pass a 1% AEP design flood.

6. Scour protection works of concrete, rock or timber construction shall be placed at the outlet of the stormwater treatment ponds to prevent scour.

7. The consent holder shall be solely responsible for the structural integrity and maintenance of all dam works, and for any erosion control and energy dissipation works that become necessary as a result of the exercise of this consent. To this end all channels shall be engineered to preclude excessive channel erosion at peak velocities.

Monitoring and reporting conditions

8. The consent holder shall continuously monitor (30-minute readings) water entering the stormwater treatment ponds at the pond inlet, to the satisfaction of the Rockville Regional Council, for the following parameters:
   - pH
   - conductivity.

Trigger levels to indicate potential leachate contamination shall be set using the mean plus three standard deviations of baseline stormwater pH and conductivity data from three months of continuous monitoring of the system prior to refuse deposition.

The monitoring system shall be fitted with an alarm to indicate when trigger levels for pH and conductivity have been exceeded.

9. The consent holder shall monitor the water in the lower stormwater treatment pond every three months, to the satisfaction of the Rockville Regional Council, for the following parameters:
   - pH
   - conductivity
   - ammoniacal nitrogen
   - nitrate nitrogen
   - alkalinity
   - chloride
   - potassium
   - total organic carbon.

   Sampling shall be undertaken in accordance with protocols approved in writing by the Rockville Regional Council.

   The results of such monitoring shall be reported in writing to the Rockville Regional Council within one month of sampling.

Contingency conditions

10. If the trigger levels for continuous pH and conductivity monitoring are exceeded the consent holder shall take a grab sample of water and analyse this sample for the parameters listed in condition 3 of this consent.

    The results of the grab sample analysis shall be reported to the Rockville Regional Council within two weeks of sampling, unless otherwise agreed in writing by the Rockville Regional Council.

11. If monitoring of the stormwater discharge system indicates leachate contamination then the consent holder shall cease discharge of treated stormwater (if possible) and take immediate steps to prevent further leachate contamination.

    The consent holder shall immediately report to the Rockville Regional Council on actions taken and further actions proposed to address leachate contamination.

Review condition

12. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2004, 2009, 2014, 2019, 2024 and 2029 or within six months after cessation of landfilling operations at the site, in order to ensure that:

    (i) stormwater control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and

    (ii) that an appropriate effects monitoring programme is being undertaken.

    Costs relating to the above reviews shall be borne by the consent holder.

Discharge of contaminants into the air

Consent Number:	RRC/1999/7
Consent type:	Discharge permit
Consent subtype:	Discharge into the air
Consent holder:	Rockville Refuse Limited Private Bag ROCKVILLE
Activity authorised:	To discharge landfill gas, dust and odour from a municipal solid waste landfill
Location:	Dayton-Karaka Road – Hinengaro Bay
Legal Description:	Sections 1 and 2 and Part Section 3 and 4, Block XI, Hinengaro Survey District
Map reference:	At, or about, NZMS 260 T100:100-200
Consent duration:	Granted for a period expiring on 31 December 2034

Conditions

General conditions

1. This consent is subject to the general conditions listed in Schedule 1 – General Conditions. Where there may be differences or apparent conflict between the general conditions and the conditions below, the conditions below shall prevail.

Limit conditions

2. The consent holder shall operate the landfill in such a manner that the generation of dust is kept to a practicable minimum. In any case dust shall not create an objectionable or offensive effect beyond the boundary of the site.

   For the purpose of condition 2 the Rockville Regional Council will consider an effect that is objectionable or offensive to have occurred if any appropriately experienced officer of the Rockville Regional Council deems it so having regard to:

   (i) the frequency, intensity, duration, amount and location of the effect(s) of the particulate emission; and/or

   (ii) a written declaration from no less than three individuals that the effect of the particulate emission was objectionable or offensive. That declaration shall include the individuals' names and addresses, the date and time that the nuisance event occurred and when it was detected. Where a declaration is made following a number of discharge events having objectionable or offensive effects, that declaration shall provide details of the nature frequency, intensity, duration and location of those events. The individuals shall also state the circumstances that led to the declaration (for example, called upon by another individual, detected from a distance). The declaration shall be signed and dated.

3. There shall be no objectionable or offensive odour detectable within 100 metres of any dwelling as a result of the activities authorised by this consent.

   For the purpose of condition 3, the Rockville Regional Council will consider an effect that is objectionable or offensive to have occurred if any appropriately experienced officer of the Rockville Regional Council deems it so having regard to:

   (i) the frequency, intensity, duration, amount and location of the effect(s) of the odour;

   (ii) nature of the receiving environment and consequences of the odour.

4. No landfill gas, in excess of 1 percent methane (by volume in air), from the landfill shall be discharged via the ground and thence air outside of the legal boundaries of the site.

Operational condition

5. Within five years of the commencement of refuse disposal at the landfill the consent holder shall begin progressive installation of a landfill gas collection system. The consent holder shall maximise the quantity of landfill gas collected, taking account of the nature of the final capping. All landfill gas collected shall be flared, in accordance with the requirements of condition 6 of this consent, or otherwise treated or removed from the site, to the satisfaction of the Rockville Regional Council.

Design condition

6. All landfill gas flares shall be designed, operated and monitored in accordance with the requirements of the United States EPA Code of Federal Regulations 40 CFR Part 60, Subpart A – General Provisions, Section 60.18 (1997) and shall have the following minimum features and specifications:

   (i) flame arrestor and backflow prevention devices, or equivalent system, approved in writing by the Rockville Regional Council, to prevent flash back/landfill fire;

   (ii) automatic ignition system to provide a minimum of 99.0% reliability; and

   (iii) appropriate sampling ports to enable monitoring of the flow rate and composition of combustion gas.

Monitoring condition

7. The consent holder shall monitor landfill gas at each flare to the satisfaction of the Rockville Regional Council.

   To this end the consent holder shall, unless otherwise directed in writing by the Rockville Regional Council, monitor for the following parameters every month:

   - gas flow rate
   - methane (percentage)
   - carbon dioxide (percentage)
   - oxygen (percentage)
   - nitrogen (percentage)
   - carbon monoxide (parts per million)
   - hydrogen sulphide (parts per million)
   - gas pressure

- barometric pressure
- total non-methane organic compounds (NMOCs).

The results of such monitoring shall be reported in writing to the Rockville Regional Council within one month of sampling.

8. During times when the landfill gas extraction system is not operating, for any reason, the consent holder shall monitor every week for landfill gas migration in the landfill gas monitoring probes adjacent to those stages which have a landfill gas extraction system, for the following parameters:
   - methane
   - carbon dioxide
   - oxygen
   - pressure.

   The results of such monitoring shall be reported to the Rockville Regional Council within one week of sampling.

Reporting conditions

9. The consent holder shall notify the Rockville Regional Council of any complaints received by the consent holder regarding odour or dust as soon as practicable and no longer than 24 hours after the complaint is received.

10. When complaints regarding objectionable or offensive odour or dust are received by the consent holder, the consent holder shall record the following details in a complaint log:
    (a) type and time of complaint;
    (b) name and address of complainant (if available);
    (c) location from which the complaint arose;
    (d) wind direction at the time of complaint;
    (e) the likely cause of the complaint;
    (f) the response made by the consent holder; and
    (g) action taken or proposed as a result of the complaint.

    The complaint log shall be immediately made available to the Rockville Regional Council on request.

Review condition

11. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in October of 2004, 2009, 2014, 2019, 2024 and 2029 or within six months after cessation of landfilling operations at the site, in order to ensure that:
    - landfill gas control systems and management practices are appropriate to avoid or reduce any adverse effects on the environment; and
    - that an appropriate effects monitoring programme is being undertaken.

    Costs relating to the above reviews shall be borne by the consent holder.

12. The Rockville Regional Council, after consultation with the consent holder, may commence a review of the conditions of this consent in response to any government regulation, policy, standard or guideline with respect to greenhouse gas emissions from landfills.

    Costs relating to the above review shall be borne by the consent holder.

Schedule 1 – general conditions

The granting of consents RCR/1999/1, RCR/1999/2, RCR/1999/3, RCR/1999/4, RCR/1999/5, RCR/1999/6 and RCR/1999/7 is subject to the following general conditions which shall apply to each individual consent:

1. All works shall be undertaken generally in accordance with the general principles contained within:

    - Rockville Refuse Limited Landfill Resource Consent Application, Assessment of Effects on the Environment, dated 1999;
    - Rockville Refuse Limited Landfill Resource Consent Application, Landfill Management Plan, dated 1999;
    - Rockville Refuse Limited Landfill Resource Consent Application, Rehabilitation and Landscaping Plan, dated 1999;
    - Reports and correspondence supplied in response to requests for additional information.

2. Earthworks and sediment control measures shall be constructed and carried out in accordance with the principles contained within the Rockville Regional Council document "Erosion and Sediment Control – Guidelines for Land Disturbing Activities".

3. Detailed designs of all works shall be forwarded to the Rockville Regional Council for acceptance in writing prior to works commencing. All works shall be carried out in accordance with the designs as accepted by the Rockville Regional Council.

4. As-built drawings shall be forwarded to the Rockville Regional Council following completion of works and structures. These drawings shall include 0.25 metre contours for the liner base, final elevations of the HDPE liner prior to placement of the leachate drainage layer sufficient to monitor future movement of the base, and spot levels to plus or minus 10 millimetres at leachate collection sump locations.

5. All investigations, design, supervision of construction, operation, monitoring and aftercare shall be undertaken by suitably qualified personnel experienced in such works, or works of a similar nature, and to the satisfaction of the Rockville Regional Council.

6. The consent holder shall, within three months of the commencement of these consents, prepare a landfill management plan, for acceptance in writing by the Rockville Regional Council.

    The landfill management plan shall provide details of the procedures to be put into place to operate the landfill in compliance with conditions of these consents and minimise the potential for adverse effects due to the operation of the landfill.

The Rockville Regional Council may, on 1 October of each year, commence a review of the landfill management plan to ensure that management practices result in compliance with the conditions of these consents.

Costs relating to the above review shall be borne by the consent holder.

7. The consent holder shall, within three months of the commencement of these consents, prepare a monitoring and contingency plan, for acceptance in writing by the Rockville Regional Council.

   The monitoring and contingency plan shall detail the following with respect to groundwater, surface water and landfill gas:

   - monitoring locations;
   - monitoring parameters;
   - monitoring frequency;
   - detection limits;
   - reporting;
   - trigger levels (for each monitoring location) for implementing contingency/ remedial actions;
   - proposed contingency measures which have been assessed to be appropriate and shown to be feasible.

8. The consent holder shall submit a rehabilitation and aftercare plan to the Rockville Regional Council, for acceptance in writing, within 6 months of the commencement of these consents and a revised plan at least 24 months prior to landfill operations ceasing on this site. The revised plan shall be prepared after consultation with the owners of adjacent properties and the Hinengaro Bay District Council. Both plans shall address at least the following issues:

   - land ownership and liability for contamination;
   - responsibilities for aftercare;
   - final contours;
   - capping and revegetation;
   - operation and maintenance of leachate management systems;
   - operation and maintenance of landfill gas management systems;
   - ongoing monitoring, including groundwater, surface water, landfill gas and site capping; and
   - funding of aftercare.

9. The consent holder shall retain an appropriately experienced person to supervise the operation of the landfill. That person shall compile an annual report on the operation of the landfill, including:

   (i) the status of landfilling operations on the site and work completed during the preceding year;

   (ii) any difficulties which have arisen in the preceding year and measures taken to address those difficulties; and

   (iii) activities proposed for the next year of the landfill operation.

   This report shall be forwarded to the Rockville Regional Council by 1 August each year, unless otherwise agreed in writing with the Rockville Regional Council.

10. The consent holder shall establish, at its own cost, an Independent Peer Review Panel, to review the design, construction, operation and maintenance of the landfill and to assess whether or not the work is undertaken by appropriately qualified personnel in accordance with good practice.

    The Independent Peer Review Panel shall comprise at least two persons and shall be:

    - independent;
    - experienced in landfill design, construction and management;
    - experienced in landfill geotechnical, groundwater and surface water aspects;
    - recognised by their peers as having such experience, knowledge and skill;
    - approved in writing by the Rockville Regional Council.

    The Independent Peer Review Panel shall report to the Rockville Regional Council by 1 September each year on the following matters:

    - management and monitoring plans;
    - site preparation, including hydrogeological and geotechnical issues;
    - liner design and construction and use of on-site materials;
    - water control, including stormwater and leachate management;
    - compaction, including method and degree;
    - waste acceptance;
    - cover material used;
    - monitoring, modelling and records;
    - rehabilitation.

    Where the Independent Peer Review Panel does not have the expertise in any of the areas it is required to report on, as detailed above, it may, with the agreement of the consent holder and the Rockville Regional Council, engage the services of an appropriate expert to report on the relevant matter to the Independent Peer Review Panel. The report shall form part of the review provided by the Independent Peer Review Panel as required by this condition.

    Copies of all reports shall be sent to the consent holder and the Rockville Regional Council.

11. In the event that any human remains or archaeological items are discovered, the works in that area of the site shall cease immediately and the Police, tangata whenua, and/or New Zealand Historic Places Trust, and also the Rockville Regional Council, shall be notified as soon as practicable. Works may recommence with the written approval of the Rockville Regional Council. Such approval shall be given after the Rockville Regional Council has considered:

    i) tangata whenua interests and values;

    ii) the consent holder's interests;

    iii) any archaeological or scientific evidence; and

    iv) any requirements of the Police.

12. All water quality sample analyses required shall be undertaken using standard methods as detailed in the "Standard Methods for the Examination of Water and Waste Water, 1998", 20th edition by A.P.H.A. and A.W.W.A. and W.E.F. or by some other method approved in advance in writing by the Rockville Regional Council.

13. (a) Prior to the placement of refuse the consent holder shall provide and maintain in favour of the Rockville Regional Council a bond to:

- secure compliance with all the conditions of these consents and to enable any adverse effects on the environment resulting from the consent holder's activities, and not authorised by a resource consent to be avoided, remedied or mitigated;
- secure the completion of rehabilitation and closure in accordance with the approved Rehabilitation and Aftercare Plan;
- ensure the performance of any monitoring obligations of the consent holder under this consent;
- enable the Rockville Regional Council to undertake monitoring and management of the site until completion of closure of the site.

(b) The quantum of the bond shall be sufficient to cover:

i) the estimated costs (including any contingency necessary) of rehabilitation and closure of the site in accordance with the conditions of the Rockville Regional Council consents;

ii) the estimated costs (including any contingency necessary) of monitoring and management of the site and its effects following closure or abandonment, for as long as may be required to comply with conditions of the Rockville Regional Council consents. This shall include the ongoing operation and maintenance of any stormwater and leachate management systems;

iii) the estimated costs of prevention and/or remediation of any adverse effect on the environment that may arise from the site, including planting and landscaping provisions; and

iv) any further sum which the Rockville Regional Council considers necessary for monitoring any adverse effect on the environment that may arise from the site, including monitoring anything which is done to avoid, remedy, or mitigate an adverse effect.

(c) The bond shall be for an amount and in a form approved by the Rockville Regional Council and shall, subject to this condition, be on the terms and conditions required by the Rockville Regional Council.

(d) Subject to parts (e) to (h) of this condition, the amount of the bond shall be that fixed by the Rockville Regional Council prior to the commencement of the placement of refuse at the site, and every anniversary thereafter. The amount of the rehabilitation bond shall be advised in writing to the consent holder at least one month prior to the review.

(e) Unless the bond is a cash bond, the performance of all the conditions of the bond shall be guaranteed by a guarantor acceptable to the Rockville Regional Council. The guarantor shall bind itself to pay for the carrying out and completion of any condition of the bond in the event of any default of the consent holder, or any occurrence of any adverse environmental effect requiring remedy.

(f) Should the consent holder not agree with the amount of the bond fixed by the Rockville Regional Council then the matter shall be referred to arbitration in accordance with the provisions of the Arbitration Act 1996. Arbitration shall be commenced by written notice by the consent holder to the Rockville Regional Council advising that the amount of the bond is disputed, such notice to be given

by the consent holder within two weeks of notification of the amount of the rehabilitation bond. If the parties cannot agree upon an arbitrator within a week of receiving the notice from the consent holder, then an arbitrator shall be appointed by the President of the Institute of Professional Engineers of New Zealand. Such arbitrator shall give an award in writing within 30 days after his or her appointment, unless the consent holder and the Rockville Regional Council agree that time shall be extended. The parties shall bear their own costs in connection with the arbitration. In all other respects, the provisions of the Arbitration Act 1996 shall apply. Pending the outcome of that arbitration, and subject to condition 19, the existing bond shall continue in force. That sum shall be adjusted in accordance with the arbitration determination.

(g) If the decision of the arbitrator is not made available by the 30th day referred to above, then the amount of the bond shall be the sum fixed by the Rockville Regional Council, until such time as the arbitrator does make his/her decision. At that stage the new amount shall apply. The consent holder shall not place further refuse at the site if the variation of the existing bond or a new bond is not provided in accordance with this condition.

(h) If, on annual review, the amount of the bond to be provided by the consent holder is greater than the sum secured by the current bond, then within one month of the consent holder being given written notice of the new amount to be secured by the bond, the consent holder and the guarantor shall execute and lodge with the Rockville Regional Council a variation of the existing bond or a new bond for the amount fixed on review by the Rockville Regional Council. No refuse shall be placed at the site if the variation of the existing bond or new bond is not provided in accordance with this condition.

(i) The bond may be varied, cancelled, or renewed at any time by agreement between the consent holder and the Rockville Regional Council.

(j) The bond shall be released on completion of closure of the site.

Completion of closure means when the Rockville Regional Council deems that resource consents for the site are no longer required.

14. All costs relating to the bond shall be paid by the consent holder.

15. The Rockville Regional Council may review the conditions of these consents in the event of any new government regulation, policy, standard or guideline with respect to landfill design, operation, monitoring, aftercare or discharges.

Costs relating to the above review shall be borne by the consent holder.

16. The Rockville Regional Council may review the conditions of these consents in the event of the transfer of these consents, for the purpose of:

i) ensuring the adequacy of the consents in terms of protecting the environment; and/or

ii) ensuring that the new consent holder can comply with the intent and specific requirements of the conditions; and/or

iii) reviewing the requirements for a bond.

Costs relating to the above reviews shall be borne by the consent holder.

17. The consent holder shall pay to the Rockville Regional Council any administrative charge fixed in accordance with section 36 of the Resource Management Act 1991, or any charge prescribed in accordance with regulations made under section 360 of the Resource Management Act 1991.

Glossary

Aquifer A geological formation or layer of rock or soil that is able to hold or transmit water. A confined aquifer is where an upper layer of low permeability confines groundwater in the aquifer under greater than atmospheric pressure. An unconfined aquifer is where the upper surface of a saturated zone forms a water table within the water-bearing stratum.

Background level The ambient level of a contaminant in the local area of the site under consideration.

Bio-accumulation Accumulation within the tissues of living organisms.

Biosolids The semi-liquid residue from sewage treatment plants, septic tanks and the processing of organic materials.

Cleanfill Any landfill that accepts only cleanfill material and inert wastes.

Cleanfill material Material that when discharged to the environment will not pose a risk to people or the environment. It includes natural materials such as clay, soil and rock, and such other materials as concrete, brick or demolition products that are free of:

- combustible, putrescible or degradable components
- hazardous substances or materials (such as municipal solid waste) likely to create leachate by means of biological breakdown
- any products or materials derived from hazardous waste treatment, stabilisation or disposal practices
- materials such as medical and veterinary waste, asbestos, or radioactive substances that may present a risk to human health if excavated
- contaminated soil and other contaminated materials.

Closed landfill Any landfill that no longer accepts waste for disposal.

Co-disposal The disposal of hazardous waste by mixing, in an informed and predetermined manner, with municipal refuse, so as to use the attenuation and biochemical processes operating within the landfill to reduce the environmental impact from the mixed waste to an insignificant level.

Contaminant Any substance (including gases, liquids, solids, and micro-organisms) or energy (excluding noise) or heat, that either by itself or in combination with the same, similar, or other substances, energy or heat:

a) when discharged into water, changes or is likely to change, the physical, chemical, or biological condition of water; or

b) when discharged onto or into land or into air, changes or is likely to change, the physical, chemical, or biological condition of the land or air onto or into which it is discharged.

Corrosivity	The ability of a substance to corrode metals or to cause severe damage by chemical action when in contact with living tissue.
Designation	A provision made in a district plan to give effect to a requirement made by a requiring authority under section 168 or 168A, or clause 4 of the First Schedule of the RMA.
Diffusion	Migration of dissolved substances within a fluid due to random movement of particles (this is significant when flows are low).
Discharge	Includes emit, deposit and allow to escape.
Discharge permit	A consent to do something that otherwise would contravene section 15 of the RMA.
Down-gradient	In the direction of decreasing water level (in groundwater this is following the hydraulic gradient).
Ecosystem	A dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit.
Ecotoxic	Capable of causing ill health, injury, or death to any living organism.
Environment	Includes: a) ecosystems, including people and communities b) all natural and physical resources c) those qualities and characteristics of an area that contribute to the community's reasonable enjoyment d) the cultural, economic, aesthetic, and social conditions that affect the above.
Flammability	The ability of a substance to be ignited and to support combustion.
Geomembrane	A polymeric sheet material that is impervious to liquid as long as it maintains its integrity.
Geosynthetic clay liner (GCL)	A relatively thin layer of processed clay (typically bentonite), either bonded to a geomembrane or fixed between two sheets of geotextile.
Geotextile	A woven or non-woven sheet material less impervious to liquid than a geomembrane, but more resistant to penetration damage.
Groundwater	All water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

Hazardous waste

Hazardous waste is waste that poses a present or future threat to people or the environment as a result of one or more of the following characteristics:

- explosiveness
- flammability
- capacity to oxidise
- corrosiveness
- toxicity
- ecotoxicity.

Hazardous waste landfill

A hazardous waste landfill is any landfill that accepts waste formally defined as "hazardous waste" in statutory instruments or as specifically determined through any special requirements that may be set by the Environmental Risk Management Authority (ERMA).

Industrial or trade premises

a) Any premises used for industrial or trade purposes; or

b) any premises used for the storage, transfer, treatment, or disposal of waste materials or for other waste management purposes, or used for composting organic materials; or

c) any other premises from which a contaminant is discharged in connection with any industrial or trade process, and includes any factory farm, but does not include production land.

Industrial waste

Industrial waste is that waste specific to a particular industry or industrial process. It typically contains somewhat higher levels (up to four times) of contaminants (such as heavy metals and human-made chemicals) than municipal solid waste and needs to be managed with environmental controls appropriate to the specific waste(s) being landfilled.

Industrial waste landfill

An industrial waste landfill is any landfill that accepts industrial waste.

Land use consent

A consent to do something that otherwise would contravene sections 9 or 13 of the RMA.

Landfill

A waste disposal site used for the controlled deposit of solid wastes onto or into land.

Landfill gas

Gas generated as a result of the decomposition processes on biodegradable materials deposited in a landfill. It consists principally of methane and carbon dioxide, but includes minor amounts of other components.

Leachate

Liquid that has percolated through or emerged from solid waste, and that contains dissolved and/or suspended liquids and/or solids and/or gases.

Monitoring

A continuous or regular periodic check to determine the ongoing nature of the potential hazard, conditions along environmental pathways and environmental impacts of landfill operations to ensure that the landfill is performing according to design.

Municipal solid waste	Municipal solid waste (MSW) is any non-hazardous, solid, degradable waste from a combination of domestic, commercial and industrial sources. It includes putrescible waste, garden waste, uncontaminated biosolids and clinical and related waste. All municipal solid waste shall have an angle of repose of greater than five degrees (5°) and have no free liquids.
Municipal solid waste landfill	A municipal solid waste landfill is any landfill that accepts municipal solid waste.
Oxidise	The ability to cause or contribute to the combustion of other material by yielding oxygen.
Permeability	A measure of the rate at which a fluid will move through a medium. The permeability of a medium is independent of the properties of the fluid.
Receptor	A resource (including humans) that may be affected by a contaminant, via a pathway.
Resource consent	A coastal permit, discharge consent, land use consent or water permit granted under the RMA. It includes all conditions to which the consent is subject.
Risk	A quantitative or qualitative combination of the probability of a defined hazard causing an adverse consequence at a receptor, and the magnitude of that consequence.
Risk assessment	The process of identifying and quantifying a risk and assessing the significance of that risk in relation to other risks.
Toxicity	The adverse effects caused by a toxin (poison) that, when introduced into or absorbed by a living organism, destroys life or injures health. Acute toxicity means the effects that occur a short time after exposure to the toxin, and chronic toxicity means the effects that occur either after prolonged exposure or an extended period after initial exposure.
Transfer station	A facility where wastes are transferred from smaller vehicles (cars, trailers, trucks) into larger vehicles for transport to a disposal site.
Treatment	In relation to wastes, any physical, chemical, or biological change applied to a waste material prior to ultimate disposal, in order to reduce potential harmful impact on the environment.
Waste	Any material, whether it is liquid, solid or contained gas, that is unwanted and unvalued and discarded or discharged by its holder.
Water permit	A consent to do something that otherwise would contravene section 14 of the RMA.

About the Ministry for the Environment Manatu Mo Te Taiao

Making a difference through environmental leadership.

The Ministry for the Environment Manatu Mo Te Taiao advises the Government on policies, laws, regulations, and other means of improving environmental management in New Zealand. The significant areas of policy for which the Ministry is responsible are: management of natural resources; sustainable land management; air and water quality; management of hazardous substances, waste and contaminated sites; protection of the ozone layer; and responding to the threat of climate change. Advice is also provided on the environmental implications of other Government policies.

The Ministry monitors the state of the New Zealand environment and the operation of environmental legislation so that it can advise the Government on action necessary to protect the environment or improve environmental management.

The Ministry carries out many of the statutory functions of the Minister for the Environment under the Resource Management Act 1991. It also monitors the work of the Environmental Risk Management Authority on behalf of the Minister.

Besides the Environment Act 1986 under which it was set up, the Ministry is responsible for administering the Soil Conservation and Rivers Control Act 1941, the Resource Management Act 1991, the Ozone Layer Protection Act 1996 and the Hazardous Substances and New Organisms Act 1996.

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