

# Schedule 2

## Management Plans Objectives and Contents

This schedule provides details of the framework for the Landfill Management Plan (LMP) and includes the objectives and content of the LMP.

### 1 General

Objectives:	<ul style="list-style-type: none"><li>• Describe the methodology for giving effect to consent conditions for both quarry and landfill operations</li><li>• Define the actions to be taken to ensure compliance with all conditions of resource consents and to respond to any incident that may adversely affect the environment, including use of hazardous substances and spill prevention and response procedures</li><li>• Include details of the steps to be taken to correct any element of non-compliance</li><li>• To identify approved documents illustrating the location of the quarry, landfill activities and associated physical works</li><li>• To operate in full compliance with the resource consent requirements and demonstrate this through reporting procedures to consent authorities.</li><li>• To provide information to neighbours and the local community regarding quarry and landfill operations issues.</li><li>• To ensure that any adverse effects from on site operations on the environment are avoided, remedied or mitigated.</li><li>• To provide a safe working environment for people on the site.</li><li>• To efficiently and economically utilise the site's capacity for quarry and landfill activities.</li><li>• To maintain an independent review process for the design, construction, operation and aftercare of the quarry and landfill to assess whether the work is undertaken by appropriately qualified personnel in accordance with good practice.</li><li>• To provide appropriate financial assurance (bond)</li></ul>
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The Landfill Management Plan (LMP) applies to the approximately ~~50ha~~42ha of land defined by the orange line on Drawing ~~F7-Issue-2B6~~ for which consents for quarrying and landfill activities have been obtained. There are separate Plans associated with existing consents for quarrying over other parts of the consent holders property.

The LMP consists of 16 Sections (including this Section 1), as detailed on the table below, and the key topics in each section:

<b>Section</b>	<b>Section Name</b>	<b>Topics</b>
1	General	Landfill activity approved plans Content, status and purpose of the LMP Calculation and provision of Bond Establishment and role of the Peer Review Panel Reporting to consent authorities processes
2	Site Management	General; hours of operation Management structure Staff roles and responsibilities Staff and contractor training Persons responsible for each action Process for developing and certification for each stage of the project Health and safety procedures Actions to be taken to ensure compliance with all conditions of resource consents Site access Queries and complaints response procedure Record keeping processes
3	Site Development	Design and construction standards Stages and order of landfill development including quarrying and landfill deposition Items to be completed prior to each stage Construction environmental management procedures External road upgrade and maintenance Design and construction oversight Noise and vibration management Construction quality assurance processes; including internal roading and general storm water management Fire fighting infrastructure Vegetation clearance management Construction and quality assurance testing of the lining system Provision of as built information and post development reporting
4	Landfill Operations	Hours of operation Site access Landfill working face and cover management Daily and temporary capping installation and maintenance Methods of placing refuse Handling special wastes Nuisance control procedures; including litter and

<b>Section</b>	<b>Section Name</b>	<b>Topics</b>
		noise Maintenance of stormwater systems Transport management Container transfer management Pest control
5	Waste Acceptance	Administrative process associated with contractual arrangements with waste generators and haulers. Administrative and testing processes involved in the acceptance of landfill material. Issuing of waste permits. Types of waste to be accepted and those that are prohibited. Waste acceptance control and monitoring of waste accepted. Sampling methodology.
6	Air Quality	Processes and procedures for odour management; Processes and procedures for dust management
7	Landfill Gas	Construction, monitoring and maintenance of the landfill gas collection wells, reticulation, generators, and flares.
8	Ecological Enhancement and Restoration	Ecological Impact Assessment Indigenous Vegetation Restoration Lizard management Wetlands management Pest management plan
9	Landscape and Visual Effects	Landscape Concept Landscape Management Maintenance of planting Weed and pest management Landscape reporting
10	Groundwater <b>Monitoring and Response</b>	Baseline monitoring of groundwater chemistry Monitoring programme Establishment of trigger levels Response to exceedances
11	Surface Water <b>Monitoring and Response</b>	Baseline stream biota monitoring Baseline monitoring of surface water chemistry Monitoring programme Establishment of trigger levels Response to exceedances
12	Leachate <b>Management</b>	Leachate collection and disposal processes Leak detection collection and measurement Leachate quantity and composition Leachate drainage maintenance

<b>Section</b>	<b>Section Name</b>	<b>Topics</b>
13	Erosion and Sediment Control	Site erosion and sediment control strategy Erosion and sediment measures for each stage of construction Maintenance of stormwater systems
14	Emergency Response	Emergency management plans Natural hazard response management strategies Fire management requirements Hazardous substances and spill prevention and response procedures
15	Closure	Final capping construction Final post settlement height, shape and contours Removal of unnecessary infrastructure
16	Aftercare	Tasks to be completed during aftercare Ongoing maintenance of infrastructure

Within each of the LMP sections there are a Plans that are required to be submitted to the consent authorities. The table below details which section of the LMP where each of these Plans is located and which consent authorities they are to be submitted to.

<b>Section</b>	<b>Title</b>
1	General (WDC and CRC)
2	Site Management (WDC and CRC)
3	Site Development <ul style="list-style-type: none"> <li>• Construction Environmental Management Plan (WDC and CRC)</li> <li>• Landfill Liner Quality Plan (WDC and CRC)</li> </ul>
4	Landfill Operation <ul style="list-style-type: none"> <li>• Transport Management Plan (WDC)</li> <li>• Litter Management Plan (WDC)</li> <li>• Landfill Pest Management Plan (WDC and CRC)</li> </ul>
5	Waste Acceptance (WDC and CRC)
6	Air Quality <ul style="list-style-type: none"> <li>• Air Quality Management Plan (WDC and CRC)</li> </ul>
7	Landfill Gas <ul style="list-style-type: none"> <li>• Landfill Gas Management Plan (CRC)</li> </ul>
8	Ecological <ul style="list-style-type: none"> <li>• Ecological Impact Assessment (WDC and CRC)</li> <li>• Indigenous Vegetation (and habitat of fauna) Restoration Plan (WDC and CRC)</li> </ul>

	<ul style="list-style-type: none"> <li>• Indigenous Fauna Management Plan (WDC)</li> <li>• Wetland Management Plan (WDC and CRC)</li> <li>• Pest Management Plan (WDC and CRC)</li> </ul>
9	<p>Landscape</p> <ul style="list-style-type: none"> <li>• Ecological Impact Assessment (WDC and CRC)</li> <li>• Landscape Concept Plan (WDC)</li> <li>• Landscape Management Plan (WDC)</li> </ul>
10	<p>Groundwater</p> <ul style="list-style-type: none"> <li>• Groundwater Monitoring and Response Plan (CRC)</li> </ul>
11	<p>Surface Water</p> <ul style="list-style-type: none"> <li>• Surface Water Monitoring and Response Plan (CRC)</li> </ul>
12	<p>Leachate</p> <ul style="list-style-type: none"> <li>• Leachate Management Plan (CRC)</li> </ul>
13	<p>Erosion and Sediment Control</p> <ul style="list-style-type: none"> <li>• Erosion and Sediment Control Management Plan (WDC and CRC)</li> <li>• Site Specific Erosion and Sediment Control Plans (WDC and CRC)</li> <li>• Erosion and Sediment Control Maintenance Plan (WDC and CRC)</li> </ul>
14	<p>Emergency response</p> <ul style="list-style-type: none"> <li>• Site Emergency Management Plan (WDC and CRC)</li> <li>• Hazardous Substance Management Plan (WDC and CRC)</li> </ul>
15	<p>Closure</p> <ul style="list-style-type: none"> <li>• Final Closure Plan (WDC and CRC)</li> </ul>
16	<p>Aftercare</p> <ul style="list-style-type: none"> <li>• Aftercare Plan (WDC and CRC)</li> </ul>

This section of the LMP shall include at least the following:

- a. Content, structure, status and purpose of the LMP.
- b. Operating policies.
- c. Process for calculating the value of the Bond.
- d. The process for the establishment and role of the Peer Review Panel.
- e. Processes for reporting to consent authorities.
- f. Document control and record keeping.



## 2 Site Management

Objectives:	<ul style="list-style-type: none"><li>• To have a clear management structure that details operational responsibilities and constraints</li><li>• To have robust and clear processes for defining the role and responsibilities of contractors</li><li>• To safeguard the health and safety of people on the site.</li><li>• To ensure compliance with regulations and resource consent conditions.</li><li>• To ensure familiarity with emergency procedures.</li><li>• To ensure familiarity with accidental discovery protocols.</li><li>• To maximise the efficiency and quality of landfill operations.</li><li>• To facilitate accurate record keeping.</li><li>• To ensure all site personnel, including contractors, are fully aware of the content and obligations in the Health and Safety Plan.</li><li>• To have effective processes for responding to incidents</li><li>• To have a functional queries and complaint system</li><li>• To be a good neighbour.</li><li>• To facilitate effective communication with the local community</li></ul>
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This section shall include at least the following:

- a. Site access details.
- b. Details of management responsibilities and the organisational structure to support the site operations
- c. The methods by which compliance with consent conditions is monitored.
- d. Details of the induction process for workers, contractors and visitors.
- e. Details of the training systems to ensure workers, including contractors, are aware of:
  - i. Accidental discovery protocols.
  - ii. Systems to prevent the disposal of hazardous waste
  - iii. Record keeping systems
  - iv. The contents and obligations in the Health and Safety Plan.
  - v. Incident response processes.
  - vi. Details of the operation of the complaint system
- f. Details of the personnel management system, including the training records process.
- g. Details of the complaints management system including:
  - i. The identification, management and notification of any complaints received regarding the consented activity including both on and off the site.
  - ii. The establishment of timeframes to respond to and act upon any complaint received.
  - iii. Procedures for informing relevant parties of receipt of the complaint, including Council.
  - iv. Procedures for communication with complainants.

### 3 Site Development

Objectives:	<ul style="list-style-type: none"><li>• To ensure physical development of the site for landfill activities is designed and constructed in accordance with recognized standards, and meets the engineering approval requirements of consent authorities</li><li>• To ensure internal roads, earthworks, container transfer area and associated storm water systems are designed and constructed to avoid adverse environmental effects.</li><li>• To minimise the effects of vegetation clearance</li><li>• To minimise effects on the health and safety of workers</li><li>• To achieve equivalent performance with the WasteMINZ Class 1 liner system in order to provide a landfill where all components are essentially “state-of-the-art” for New Zealand</li><li>• To use recognised quality assurance and quality control procedures</li><li>• To ensure that the risks of excessive liner hydration, slope failure and bund failure are minimised</li><li>• To optimise leachate containment through adoption of a quality assured liner system.</li><li>• To provide a robust, effective leachate drainage system with ready access for cleaning and maintenance.</li><li>• To control stormwater and moisture ingress into the landfill such that the site is able to be operated so as to provide effective waste stabilisation, while avoiding excessive leachate generation.</li><li>• To maximise LFG capture</li><li>• To provide for active LFG extraction at an early stage, and throughout the active and post-closure phases.</li><li>• To use incineration of LFG in an approved flare or other appropriate uses.</li><li>• To utilise a cover system to ensure effective site rehabilitation, while minimising long term leachate generation.</li><li>• To minimise any adverse effects of stockpiling within the site.</li><li>• To enable comprehensive stormwater and silt control, with all the runoff from non cell operational areas routed through the sedimentation ponds.</li><li>• To facilitate gravity drainage of leachate within the landfill as much as possible.</li><li>• To maximise flexibility to cater for variations in airspace demand.</li><li>• To enable early closure scenarios to be readily provided for.</li><li>• To configure slopes and benches so that the synthetic liner components can be readily installed.</li><li>• To ensure the slopes are stable for both the construction and long term cases.</li><li>• To contain leachate and LFG generated within the landfill.</li></ul>
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	<ul style="list-style-type: none"> <li>• To limit the migration of leachate and LFG into the underlying soil and groundwater.</li> </ul>
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This section shall include at least the following:

- a. Details of the requirements for the engineering resources engaged to undertake the designs.
- b. Details of the key quality assurance processes and independent reviewers to be engaged to monitor construction.
- c. A summary of the general engineering design principles to be adopted for each stage of construction.
- d. The process for developing design drawings and specifications.
- e. The role of the Peer Review Panel during the design process.
- f. Details of the proposed staging of construction.
- g. The key geotechnical matters that require consideration.
- h. Details of the management of indigenous vegetation clearance
- i. Details of the stripping of existing soils.
- j. The proposed strategy for temporary stockpiling of materials
- k. Details of the revegetation of temporary batters and slopes
- l. Pre construction activities.
- m. Locating and protecting underground services
- n. Details of how erosion and sediment control will be managed
- o. Details of the design of the liner, leak detection and underdrainage systems
- p. The design of site roading.
- q. Design of the leachate collection and storage system.
- r. The design of the landfill gas collection system.

This section also details the content of the following Plans that are required for each stage of development:

- A Construction Environmental Management Plan (CEMP)
- B Landfill Liner Quality Plan (LLQP)
- C Site Specific Erosion and Sediment Control Plan (SSESCP)

**A Construction Environmental Management Plan (CEMP)**

The Construction Environmental Management Plan (CEMP) shall include at least the following:

- a. Site management arrangements.
- b. Phone numbers and email addresses of key construction personnel
- c. Construction works programming.
- d. Consultation and communications processes.
- e. Hours and days of construction limitations
- f. Fencing, signage and site security arrangements
- g. Rubbish collection and disposal arrangements

- h. Site facilities details
- i. Details of the construction methodology, including permanent and temporary structures and clear identification of working areas and sensitive areas to be protected.
- j. Methods and systems to inform and train all persons working on the site of potential environmental issues.
- k. Procedures used to avoid discharges of contaminants from the ~~refuelling~~refueling, cleaning, maintenance and storage of plant and equipment;
- l. Measures to address the storage of fuels, lubricants, hazardous and/or dangerous materials, in particular measures to ensure hazardous substances are stored outside areas that may flood.
- m. Measures to manage sediment discharges
- n. Response procedures to address emergency spill.
- o. Procedures for incident management and to deal with extreme weather events.
- p. Measures to minimise the discharges of dust off-site
- q. Measures to minimise noise nuisance including awareness of NZS6803. Construction Noise.
- r. Methods and procedures for the design, firing and monitoring of any blasting undertaken on the site.

## **B Landfill Liner Quality Plan (LLQP)**

The Landfill Liner Quality Plan (LLQP) shall include at least the following:

- a. The standard of QA, undertaken by a party independent from the lining installer, contractor, or landfill operator.
- b. The construction specification that specify the standards to be achieved and the quality control testing required by the contractor to demonstrate compliance with the specification with reference to the GRI specifications wherever appropriate
- c. The processes that provides oversight of the testing undertaken by the contractor, regular or continuous observation of lining system placement and testing, and a review of all quality control documentation produced by the supplier and contractor.
- d. Items that are observed and reviewed as part of the QA process including specified manufacturing QA documentation,
- e. Independent testing of the geosynthetic materials supplied by the manufacturer.
- f. All material and compaction testing associated with the toe bund construction.
- g. All compaction testing associated with installing the cohesive soil liner (strength, density, moisture content, air voids).
- h. Permeability testing of the placed cohesive soil layer by an independent accredited laboratory;
- i. Thickness of the compacted cohesive soil layer.
- j. Approval of the cohesive soil surface before the placing of any geosynthetic lining components;
- k. Approval of the geosynthetic liner placement methodology and panel layout.
- l. Planning for weather conditions.
- m. Observation of placing, welding, and testing of geosynthetic lining components to

include.

- i. Shear and peel testing of test weld samples at the commencement of each day, and when weather conditions change;
- ii. Shear and peel testing of destructive test samples;
- iii. Air pressure testing of all dual track fusion welds;
- iv. Vacuum box or spark testing of all extrusion welds;
- v. Visual inspection of the completed surface;
- n. Review of all construction records.
- o. Fulltime observation of placement and thickness of aggregate above the geosynthetic liner, or controlled using either laser or GPS controlled machinery.
- p. Reporting requirements to the Peer Review Panel and consent authorities

**~~C—Site Specific Erosion and Sediment Control Plan (SSESCP)~~**

~~The requirements for preparing a Site Specific Erosion and Sediment Control Plan (SSESCP) are detailed in Section 13 of the LMP.~~

## 4 Landfill Operation

Objectives:	<ul style="list-style-type: none"><li>• To ensure only vehicles that have a Waste Haulage Agreement have access to the landfill and adhere to operation constraints</li><li>• To manage waste vehicle landfill arrival timing to minimise peaks in off-site and on-site traffic.</li><li>• To ensure waste and quarry haulage vehicles comply with the agreed heavy vehicle routes, vehicle speeds and hours of operation</li><li>• To ensure no unauthorised access to the landfill.</li><li>• To ensure that vehicle movements remain within approved limits and keep records of direction of travel.</li><li>• To ensure that all waste being transported to the landfill is securely contained in a manner that prevents the escape of liquid or solid material.</li><li>• To minimise road maintenance requirements.</li><li>• To minimise effects of road upgrading on the environment.</li><li>• To ensure no stock can get onto the landfill footprint.</li><li>• To fully control access to the landfill working areas.</li><li>• To ensure that only authorised persons access operational areas.</li><li>• To provide maintenance and service access to the landfill and surface drains.</li><li>• To manage landfill traffic to provide a safe working environment for all people on site.</li><li>• To maximise efficiency of container transfer.</li><li>• To minimise waste haulage vehicle turnaround time.</li><li>• To minimise waste container turnaround time.</li><li>• To ensure continued provision of potable water</li><li>• To ensure sufficient water is available in the sediment ponds for all landfill operational and construction requirements.</li><li>• To ensure all fuelling and chemical storage areas are suitably contained.</li><li>• To operate the landfill within the Rural Zone noise limits determined through the resource consent.</li><li>• To provide mitigation measures if noise complaints are received.</li><li>• To ensure all site machinery is well-maintained.</li><li>• To ensure that adequate fire control equipment is present on site and operable at all times, for all fires, including landfill fires.</li><li>• To ensure adequate water storage for fire-fighting.</li><li>• To avoid wind-blown litter outside the site boundaries.</li><li>• To ensure litter does not accumulate on screens and litter fences.</li><li>• To maintain a clean and tidy site.</li><li>• To achieve a minimum in-situ refuse density of 900 kg per cubic <a href="#">metre</a>, inclusive of temporary and intermediate cover.</li></ul>
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	<ul style="list-style-type: none"> <li>• To ensure no compaction equipment operates closer than 1 m to the landfill liner protection layer.</li> <li>• To ensure no special or combustible waste is placed within 3 m of the base or sidewall liners.</li> <li>• To maintain a working face that is as small as possible.</li> <li>• To cover all waste daily.</li> <li>• To record the location of special waste by survey.</li> <li>• To ensure that disposal of odorous loads only takes place when appropriate measures are in place.</li> <li>• To avoid the establishment of animal pest populations through effective management of the refuse disposal process and area.</li> </ul>
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This section shall include at least the following:

- a. Controls for ensuring that only authorised ~~personell~~ personnel can access the site
- b. Details of the operation of the weighbridge
- c. Methods for recording time of bin arrival and exit from the container transfer area to ensure that bins containing waste will be taken to landfill within 2 working days.
- d. Measures to control and manage the container transfer area ~~areain~~ in the event of a forecast extreme weather event.
- e. Controls on traffic movements into and out of the container transfer area,
- f. Measures to exclude public/non-permitted access to the container transfer area.
- g. Details of measures to ensure compliance with the Waste Acceptance Criteria (WAC) as detailed in Section 5 of this LMP.
- h. Measures to manage noise in the area, including restrictions on reversing alarms.
- i. Methods to confirm waste containers are sealed and contained.
- j. Details of the process for transferring waste containers to the landfill face.
- k. Details of the placing of waste.
- l. Details of the use of daily cover and intermediate cover.
- m. Details of waste compaction and monitoring waste density.
- n. Details of litter control in the operational landfill area. (Note that Odour and Dust Control are detailed in Section 6 Air Quality of the LMP).
- o. Methods specifically for controlling rats, feral cats and birds within the landfill. Control methods for these pests may include physical controls such as fencing or traps, shooting or bait.
- p. Details of firefighting response measures.
- q. Training of staff in firefighting techniques.

This section also details the content of the following Plans that are required:

- A Transport Management Plan
- B Landfill Pest Management Plan
- C Litter Management Plan

### **A Transport Management Plan**

A Transport Management Plan (TMP) is required to be prepared and communicated to all operators of heavy vehicles that access the site.

The TMP shall include at least the following:

- a. A one-way routing plan for all trucks to and from the south (via Waimakariri Gorge Bridge) to the site to minimise conflicts (including vehicles associated with RC185244);
- b. Heavy vehicles departing from the site south, over Waimakariri Gorge Bridge, will first turn left onto Woodstock Road from Trig Road, before turning right onto Harmans Gorge Road. At the end of Harmans Gorge Road, heavy vehicles will turn right onto Depot Road.
- c. No restrictions on heavy traffic along Woodstock Road, except as required by the one-way routing plan
- d. No restrictions on light vehicle movements associated with the activity
- e. A restricted heavy vehicle speed limit of 60km/h on Waimakariri Gorge Road, Harmans Gorge Road, Trig Road and Woodstock Road (between Harmans Gorge Road and Trig Road)
- f. Internal management protocol to manage traffic along Trig Road through the 'dip' section;
- g. Limited hours of operation, including only trucking from. 7am to 6pm Monday to Thursday, 7am to 5pm Friday, 7am to 11am Saturday (but may be exceeded in a civil emergency).
- h. A contingency route in the event of closure of the Waimakariri Gorge Bridge, [determined in consultation with Waimakariri District Council](#).

### **B Landfill Pest Management Plan**

A Landfill Pest Management Plan is required to ensure that animal pests in the operational landfill areas are controlled.

This Plan shall include at least the following:

- a. Identify target pest species and target thresholds to be aimed for.
- b. Methods to achieve target species outcomes.
- c. Details of each of the methods which may include:
  - i. Bird scaring devices
  - ii. Baiting

- iii. Trapping
- iv. Shooting
- d. Details of the safety precautions associated with the methods
- e. Details of the training associated with each of the methods
- f. A description of monitoring, response and auditing proposed in accordance with standard accepted practice.

### **C Litter Management Plan**

A Litter Management Plan is required to ensure that potential litter nuisance in the operational landfill areas is controlled.

This plan shall include at least the following:

- a. Identify the persons responsible for carrying out all actions in relation to meeting the requirements of this consent.
- b. Describe the methods to control litter at source during landfill activities.
- c. A system for training workers, including contractors, to make them aware of the requirements of this section of the LMP.
- d. Methods for determining the weather conditions that will trigger a restriction on potentially litter activities.
- e. Identify responses to non-compliance with consent triggers and complaints.
- f. A method for recording, investigating and responding to complaints from the public.

## 5 Waste Acceptance

Objectives:	<ul style="list-style-type: none"><li>• To ensure the receiving environment is protected.</li><li>• To ensure the health and safety of people is protected.</li><li>• To ensure all waste received is compatible with the landfilling operation.</li><li>• To ensure all waste landfilled complies with the Waste Acceptance Criteria</li><li>• To ensure that the composition of all special waste is identified.</li><li>• To ensure that all special waste disposal is pre-booked.</li><li>• To ensure that appropriate provisions for disposal of each special waste load are in place before the waste arrives at the landfill.</li><li>• To ensure that all landfill users and workers are fully aware of the Waste Acceptance Criteria.</li><li>• To provide a suitably protected and controlled location for temporary storage of inadvertent hazardous or otherwise unacceptable waste.</li></ul>
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This section shall contain at least the following:

- a. Documentation provided to waste generators and waste haulers providing guidance on requirements of consents and WQL operating procedures.
- b. Details of contractual arrangements between WQL and waste generators and / or waste haulers.
- c. Detailed description of the Waste Acceptance Criteria (WAC) including prohibited wastes
- d. Procedures for issuing waste permits.
- e. Procedures for acceptance or rejection of wastes.
- f. Weighbridge and waste receipting processes.
- g. Details of training of workers to ensure the WAC is complied with.
- h. Waste placing procedures, particularly for difficult wastes.
- i. Details of the random sampling and testing procedures
- j. Details of the process for quarantining wastes that do not meet the WAC.
- k. Processes associated with handling of asbestos wastes.
- l. Processes for assessing the impact of emerging contaminants.
- m. Process for review of the WAC
- n. Details of digital record keeping of wastes received.
- o. Processes for surveying the location of wastes.

## 6 Air Quality

Objectives:	<ul style="list-style-type: none"><li>• To ensure the safety of workers</li><li>• To ensure effective daily cover of at least 150 mm of soil or equivalent alternative material.</li><li>• To keep the working face as small as practicable.</li><li>• To ensure effective intermediate cover of at least 300 mm thickness.</li><li>• To avoid excavation into old areas of refuse as far as practicable.</li><li>• To minimise water ingress to the working face.</li><li>• To achieve early and progressive installation and extraction from the LFG system in the active landfill areas.</li><li>• To avoid having gas wells unconnected to the extraction system.</li><li>• To ensure provision for standby power to avoid flare outages.</li><li>• To minimise the extent of unvegetated areas.</li><li>• To enforce vehicle speed limits on site.</li><li>• To ensure sealed road surfaces are regularly swept.</li><li>• To maintain unsealed road surfaces and working areas to minimise potential for dust emissions.</li></ul>
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This section shall include at least the following:

### A Air Quality Management Plan (AQMP)

An Air Quality Management Plan is required to ensure that air quality surrounding the site is maintained.

- a. A description of the sources of odour and dust on site.
- b. A description of odour and dust management measures to be implemented on site;
- c. A description of the receiving environment and identification of sensitive receptors
- d. Identify the persons responsible for carrying out all actions in relation to meeting the requirements of this consent
- e. Describe the methods to control dust, including the frequency and triggers for water suppression activities.
- f. Waste inspection and handling procedures with regards to highly odorous loads;
- g. Landfill gas monitoring and recording procedures, including the gas monitoring bores and surface monitoring;
- h. Landfill gas flaring, including.
  - i. conditions under which flaring would take place;
  - ii. maintenance of the flare(s).
- i. The methods to be used for controlling dust at each source during quarry activities.
- j. A system for training workers, including contractors, to make them aware of the requirements of this section of the LMP.
- k. Methods for determining the weather conditions that will trigger a restriction on potentially dusty activities.
- l. Identify responses to non-compliance with consent triggers
- m. Identify responses to complaints.

- n. A method for recording, investigating and responding to complaints from the public.

## 7 Landfill Gas

Objectives:	<ul style="list-style-type: none"><li>• To ensure the safety of workers</li><li>• To control odours so that there shall be no odour or particulate matter that causes an objectionable effect beyond the boundary of the land owned by the Consent Holder, or land over which the Consent Holder has rights.</li><li>• To ensure maintenance of methane concentrations at monitoring probes located at the property boundary below the lower explosive limit (LEL), which corresponds to 5 percent methane by volume.</li><li>• To ensure maintenance of methane concentrations in on-site structures at or below 25 percent of the LEL, or 1.25 percent by volume.</li><li>• To ensure that the concentration of hydrogen sulphide at the surface of Landfill areas with intermediate or final cover does not exceed 0.0005 percent by volume.</li><li>• To provide for the treatment of any recovered landfill gas by combustion.</li><li>• To ensure that surface emission concentrations above the areas of the landfill surface that are closed or are under intermediate cover, are maintained at less than 5,000 ppm as methane</li></ul>
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This section shall contain at least the following:

### A Landfill Gas Management Plan

A Landfill Gas Management Plan is required to ensure that any gas emitted by the landfill is managed in accordance with relevant standards.

- a. An overview of the design of the Landfill Gas System (LFG) for the whole site
- b. Details of the operation of the various components of the LFG system.
- c. Details of construction techniques for all components of the LFG system.
- d. Details of methodologies to prevent blockages caused by condensate.
- e. Details of the testing methodologies and frequency of testing at the key locations in the LFG system.
- f. Details of the inspections of the landfill surface to detect LFG breakout
- g. Details of the operation of each type of flare that may be utilised.
- h. Details of the safety procedures required to protect workers from potentially hazardous gases, especially hydrogen sulphide.
- i. Details of the monitoring of the various components of the LFG system
- j. Training requirements for landfill workers constructing LFG wells and LFG reticulation.
- k. LFG system maintenance measures including checklists.

- I. Measures to monitor for elevated temperatures and provide trigger levels and response actions that may indicate a fire in the landfill.

## 8 Ecological Enhancement and Restoration

Objectives:	<ul style="list-style-type: none"><li>• To identify important indigenous flora and fauna in the operational landfill area in accordance with Section 6 of the Resource Management Act (RMA).</li><li>• To describe the appropriate measures to avoid, remedy or mitigate adverse effects, attributable to the project, on the important indigenous flora and fauna values identified, and inform remedial landscaping.</li><li>• To provide for effective management of wetlands</li><li>• To provide effective management of fauna</li><li>• To provide effective pest plant management</li><li>• To provide for long-term reduction in rat, possum, feral cat and mustelid densities within the operational landfill area.</li><li>• To provide for long-term containment of deer, feral goat and pig densities within the landfill operational area.</li><li>• To ensure exclusion of farm stock within habitat for native fauna and areas of indigenous vegetation within the operational landfill area.</li></ul>
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This section shall include at least the following:

- a. Details of who will hold management responsibility for the restoration of indigenous flora and fauna and the organisational structure which will support this process.
- b. A monitoring programme to determine compliance with the requirements for restoration of indigenous flora and fauna.
- c. A programme for regular inspection of the landscaping.
- d. General inspection checklists for all aspects of the restoration of indigenous flora and fauna.
- e. Details of the training of workers, including contractors.
- f. Details of the review process of the Indigenous Vegetation (and habitat of fauna) Restoration Plan, Indigenous Fauna Management Plan, Wetland Management Plan, and the Pest Management Plan.
- g. Details of the reporting to Council.

This section also details the content of the following assessments and plans that are required:

- A Ecological Impact Assessment
- B Indigenous Vegetation (and habitat of fauna) Restoration Plan
- C Indigenous Fauna Management Plan
- D Wetland Management Plan
- E Pest Management Plan

## **A Ecological Impact Assessment**

An Ecological Impact Assessment (EcIA) shall be prepared by a suitably qualified and experienced ecologist with the objective of identifying any actual or potential adverse effects on important indigenous flora and fauna and outlining appropriate mitigation measures for the management of effects. The EcIA shall inform the preparation of an Indigenous Vegetation Restoration Plan, Indigenous Fauna Management Plan, a Landscape Management Plan and other management plans deemed appropriate for the values and effects identified.

This assessment shall include at least the following.

- a. Identify important, as defined by Section 6 of the RMA, indigenous forest and wetland ecosystem values that may be affected by the project.
- b. Identify important indigenous fauna that may be affected by the project through on-site field surveys by suitably qualified ecologists during suitable survey conditions and under the appropriate Department of Conservation Wildlife Act Authority.
- c. The identification of appropriate mitigation measures to minimize the effects on important indigenous flora and fauna values including avoidance, enhancement and restoration planting, and fauna capture and relocation, with appropriate DOC authorisations, where necessary.

## **B Indigenous Vegetation (and habitat of fauna) Restoration Plan**

The objective of this plan is to describe the appropriate measures to ensure the restoration of indigenous ecosystems and habitats impacted by the construction of the project. The plan shall be prepared by an appropriately qualified ecologist(s) and based on the outcomes of the EcIA.

A separate Landscape Concept Plan and Landscape Management Plan, as detailed in Section 9 of the LMP shall detail the methods for enhancing areas to be protected, the planting of margins of the construction works, and planting of the fully filled landfill.

This Plan shall include at least the following.

- a. Vegetation clearance protocols to protect surrounding habitat and to avoid intrusion of construction works beyond the construction area, such as the physical delineation/protection of areas and individual significant or high value vegetation or habitat features that are close to but outside the project footprint, directional felling of vegetation away from areas which are to be retained and protected, or sediment controls around wetlands.
- b. Timing of removal of indigenous vegetation to avoid the bird breeding season (including nest surveys) and coincide with best practice lizard management period (September to May).
- c. Proposed measures to stockpile and manage cleared vegetation to avoid or

minimise potential adverse effects.

### **C Indigenous Fauna Management Plan**

In the event an indigenous fauna population is detected, an Indigenous Fauna Management Plan (IFMP) based on pre-clearance surveys shall be prepared by a suitably qualified person. The IFMP shall be prepared, and any DOC authorisations obtained, and the IFMP implemented prior to construction works being commenced in that area.

This Plan shall include at least the following:

- a. Provide details of the procedures to be put in place to minimise the potential for adverse effects on the fauna population due to vegetation clearance, excavation and the operation of the quarry and landfill.
- b. Timing of the works and any pre-clearance salvage.
- c. A description of fauna salvaging methodology, including alignment with DOC best practice guidelines.
- d. The identification of the implementing ecologist and appropriate Wildlife Act authorisation.
- e. A description of relocation methodology, including transfer methods, relocation site(s) selection and habitat enhancement measures (such as deployment of logs and pest control).
- f. Details of the process for notifying CRC of any fauna ~~relocation~~relocation.
- g. Details of the process for certification by the implementing ecologist and reporting to the consent authorities.

### **D Wetland Management Plan**

A Wetland Management Plan shall be prepared by a suitably qualified person with the objective of protecting existing wetlands.

This Plan shall include at least the following:

- a. Characteristics of the wetlands to be affected in accordance with Schedule 2 of the NES: Freshwater, including delineation of wetland extents.
- b. Measures to be implemented –to protect wetlands from harm, including methods to avoid changes to water flows into or out of the wetland, methods to minimize or avoid sediment impacts on the wetland and a description of actions to be taken to minimize or avoid adverse effects on wetland fauna from quarry or landfill activities.
- c. Wetland monitoring design including monitoring methodology, permanent plot locations and schedule of monitoring measurements.
- d. Identification of appropriate monitoring thresholds for response and reporting.
- e. Potential remediation measures (if applicable)

### **E Pest Management Plan**

A Pest Management Plan shall be prepared by a suitably qualified ecologist with the objective of undertaking pest animal control for the purposes of ecological enhancement.

This Plan shall include at least the following:

- a. Identify target pest species and target reduction thresholds to be aimed for.
- b. Methods to achieve target species outcomes, which may include descriptions of spatial configuration of bait lines and baiting and/or trapping details including types of baits/traps and frequency of baiting.
- c. Details of the safety precautions associated with the methods.
- d. Details of the training associated with each of the methods.
- e. A description of monitoring, auditing and reporting proposed in accordance with standard accepted practice.

## 9 Landscape and Visual Effects

Objectives:	<ul style="list-style-type: none"><li>• To identify important indigenous flora and fauna in the operational landfill area in accordance with Section 6 of the Resource Management Act (RMA).</li><li>• To minimise the visual impacts of consented activities on neighbours and the public</li><li>• To develop a long term Landscape Concept Plan</li><li>• To develop a Landscape Management Plan</li><li>• To minimise the loss of indigenous vegetation</li><li>• To minimise erosion of exposed soils</li><li>• To reestablishment vegetation and habitats identified in the Indigenous Vegetation (and Habitats) Restoration Plan</li><li>• To enhance indigenous vegetation areas with flora from the local ecological district</li><li>• To develop and implement weed and animal pest plans to encourage indigenous vegetation enhancement</li><li>• To implement progressive landscaping of the area; addressing construction earthworks stage, landfill operation stage (including capping layers), closure and aftercare</li></ul>
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This section shall include at least the following:

- a. Details of who will hold management responsibility for the protection of indigenous vegetation and the organisational structure which will support this process.
- b. The process for developing the Ecological Impact Assessment, the Landscape Concept Plan, and the Landscape Management Plan
- c. General inspection checklists for all aspects of the landscape establishment and maintenance.
- d. A programme for regular inspection of the landscaping.
- e. Details of the training of workers, including contractors.
- f. Details of the review process of the Landscape Management Plan.
- g. Details of the reporting to Council.

This section also details the content of the following Plans that are required:

- A Ecological Impact Assessment
- B Landscape Concept Plan
- C Landscape Management Plan

### **A Ecological Impact Assessment**

The details of the Ecological Impact Assessment are included in Section 8 of the LMP. The outputs from the Ecological Impact Assessment will inform the development of the Landscape Concept Plan

## **B Landscape Concept Plan**

An overall landscape concept plan and design for the life of the consented activity is required to be prepared by a registered landscape architect, for the approval of Council.

This plan shall include at least the following:

- a. The identification of vegetation and habitats identified in the Indigenous Vegetation section of the Ecological Impact Assessment.
- b. The identification of any areas to be protected or retained
- c. Not be in conflict with the Indigenous Vegetation Restoration Plan
- d. The identification of any areas to be restored with indigenous vegetation.
- e. Description of the objectives of the landscape treatment, including the intent of each of the planting areas and how this will be fulfilled over time as the plants develop and age.
- f. Outline an ongoing and adaptive planting and management process for the landfill both during its development and during the aftercare period.
- g. Ensure planting is of appropriate scale and mix of species to reflect the existing vegetation structure of the rural and indigenous forested area.
- h. Consider the potential impact of deep rooting vegetation on the landfill capping
- i. The identification of different areas of the site and when landscaping works will occur.
- j. Stages for the progressive landscaping of the area.
- k. Transition between land uses, including management of fire (such as fire breaks).
- l. Consider temporary and permanent rehabilitation of the sequential development of landfill zones.

## **C Landscape Management Plan**

A detailed landscape management plan is required to be prepared by a registered Landscape Architect, for the consented activity which details all landscape works to be undertaken in the first ten years of the consented activity, and one year prior to the end of the previous ten year period.

This shall include at least the following:

- a. Incorporation of information provided in the Landscape Concept Plan and EcIA.
- b. The identification of all works to be undertaken during the construction stage prior to the operation of the landfill activity, such as boundary treatments and fencing, and any progressive works during landfill waste receipt and placement activities.
- c. Confirmation of the extent and spatial configuration of plantings proposed.
- d. A location plan showing the locations proposed for photos to be taken each year for the Landscape Report
- e. Identification of areas of existing vegetation to remain or be removed and the methodology for managing, and supplementing this vegetation where necessary in a timely manner to maintain the objectives.
- f. Site preparation, e.g. fencing, weed or animal pest management and habitat enhancement.
- g. Process for procuring, where available, plants from the local ecological district.

- h. The landscaping to be carried out over the ten year period including timeframes for landscaping activities including.
  - i. Planting schedules
  - ii. Planting densities
  - iii. Grades of plantings
- i. Phasing of implementation
- j. Site preparation requirements including staking, fertiliser and protection
- k. Maintenance procedures and schedules
- l. Weed and pest control
- m. Irrigation if required
- n. Management of visually exposed faces of the fill areas, long term stockpiles wherever possible, with the front face formed, shaped and vegetated, as filling progresses;
- o. Stabilisation with grasses, erosion mats or tarps, of bare earth surfaces of the long term stockpiles and cohesive soil borrow pit areas on completion of filling/earthworks at the end of each earthmoving season.
- p. The rehabilitation of those areas which can be immediately rehabilitated within the first available planting season.
- q. The treatment of long term stockpile and borrow areas not required for any 6 month period.
- r. Plant maintenance methods for ensuring successful establishment and long-term persistence of plantings, including the duration of maintenance, methods for ongoing control of weed or animal pests and infill planting;
- s. Monitoring and reporting requirements, including annual reporting to Council. Reporting to include photos and details of plants planted during each year, including any areas where replacement planting has been required.

Objectives:	<ul style="list-style-type: none"> <li>• To ensure compliance with the relevant conditions of consent</li> <li>• To establish baseline chemistry of the existing groundwater</li> <li>• To ensure that potential contaminants are retained within the landfill site by establishing a monitoring regime that includes.             <ul style="list-style-type: none"> <li>○ Monitoring locations</li> <li>○ Monitoring parameters</li> <li>○ Monitoring frequency</li> <li>○ Detection limits</li> <li>○ Reporting</li> </ul> </li> <li>• To ensure that appropriate procedures are in place to respond to exceedance of trigger levels (for each monitoring location) and implementing response/remedial actions</li> </ul>
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This section shall include at least the following:

**A Groundwater Monitoring and Response Plan**

A Groundwater Monitoring and Response Plan is required to ensure that groundwater quality is maintained.

- a. Identify management responsibilities.
- b. Details of up gradient and down gradient groundwater monitoring bore locations.
- c. Details of the methodology for the installation of monitoring boreholes
- d. Methods and procedures for groundwater quality sampling
- e. Identify trigger levels for each of the parameters required by the consents.
- f. Methods of ongoing monitoring of water levels and water quality parameters
- g. The methods and procedures for investigating and reporting groundwater monitoring results.
- h. Details of the groundwater protocols for sample collection, field measurement, data analysis and quality assurance that will be followed, including laboratory methods and detection limits.
- i. Define the internal data review procedures that will be employed.
- j. Guidelines for the determination of whether leachate contamination of groundwater is occurring.
- k. Details of an investigation into the source and pathway of any such leachate discharge would be conducted including identifying the current New Zealand or other relevant standard for the compound/s detected and identify the risk or potential risk to human health or the environment from the presence of the compound at the concentration detected.
- l. The response if a bore structure fails.
- m. Plans for remedial actions should contamination of groundwater by leachate or other pollutants associated with the landfill and activities on the site be detected.

- n. Describe procedures for reporting monitoring results to the Council
- o. Provide guidance on the preparation of Remedial Action Plans which may include.
  - i. evaluation of the source of the contaminant(s); and
  - ii. evaluation of the appropriateness of monitored natural attenuation; and/or
  - iii. removal of material that is the source of the contamination or isolation of the area of the fill that contains the source material; and/or
  - iv. in situ or ex situ treatment of the groundwater plume.

## 11 Surface Water **Monitoring and Response**

Objectives:	<ul style="list-style-type: none"><li>• To ensure compliance with the relevant conditions of consent</li><li>• To assess instream biota, surface water quality, and a quantitative habitat assessment of the Woodstock Stream and the eastern ephemeral stream</li><li>• To establish baseline chemistry of the surface waters</li><li>• To ensure that potential contaminants are retained within the Landfill site by establishing a monitoring regime that includes.<ul style="list-style-type: none"><li>○ Monitoring locations</li><li>○ <u>Continuous monitoring equipment installed, calibrated and maintained in accordance with the manufacturer's instructions</u></li><li>○ Monitoring parameters</li><li>○ Monitoring frequency</li><li>○ Detection limits</li><li>○ Reporting</li></ul></li><li>• To ensure that appropriate procedures are in place to respond to exceedance of trigger levels (for each monitoring location) and implementing response/remedial actions</li></ul>
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This section shall include at least the following:

### **A Surface Water Monitoring and Response Plan**

A Surface Water Monitoring and Response Plan is required to ensure that surface water quality is maintained.

- a. Details of an assessment of instream biota, surface water quality, and a quantitative habitat assessment of the Woodstock Stream, and a habitat assessment of the ephemeral stream to the east of the landfill: to be completed in accordance with the *Stream Habitat Assessment Protocols for wadeable rivers and streams of New Zealand (2009)*, the *Protocols for sampling macroinvertebrates in wadeable streams (2001)* and the *New Zealand Freshwater Fish Sampling Protocols (2013)*.
- b. Details of the final locations of the surface water monitoring sites.
- c. Details of the methodology for the installation of monitoring equipment.
- d. Methods and procedures for surface water quality sampling
- e. Details of the surface water protocols for sample collection, field measurement, data analysis and quality assurance that will be followed, including laboratory methods and detection limits.
- f. Define the internal data review procedures that will be employed.
- g. Identify trigger levels for each of the parameters required by the consents.
- h. Methods of ongoing monitoring of surface water quality parameters
- i. The methods and procedures for investigating and reporting surface

- water monitoring results.
- j. Guidelines for the determination of whether leachate contamination of surface water is occurring.
  - k. Details of an investigation into the source and pathway of any such leachate discharge would be conducted including identifying the current New Zealand or other relevant standard for the compound/s detected and identify the risk or potential risk to human health or the environment from the presence of the compound at the concentration detected.
  - l. Describe procedures for reporting monitoring results to the Council.
  - m. Response plans for remedial actions should contamination of natural waterways by leachate or other pollutants associated with the landfill and activities on the site be detected.
  - n. Provide guidance on the preparation of Remedial Action Plans which may include.
    - i. evaluation of the source of the contaminant(s); and
    - ii. evaluation of natural attenuation or dilution; and/or
    - iii. removal of material that is the source of the contamination or isolation of the area of the fill that contains the source material; and/or
    - iv. in situ or ex situ treatment of the surface water discharge.

## 12 Leachate Management

### Flow rate limitations

Objectives:-	<ul style="list-style-type: none"><li>• To have no <del>constructed</del>-liner penetrations</li><li>• To ensure the <del>average</del> leachate head on the liner does not exceed 300 mm.</li><li>• To ensure all main leachate collector drains and sumps are readily accessible for cleaning and flushing.</li><li>• To maximise <del>gravity</del> flow within the landfill cells.</li><li>• To ensure that any leachate storage facility has at least 125% external containment capacity.</li><li>• To ensure that the removal of leachate from site for treatment is undertaken safely in accordance with the Code of Practice for Hazardous and Liquid Waste.</li><li>• To ensure continued compliance with requirements of the liquid waste treatment facility</li></ul>
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This section shall include at least the following:

#### A Leachate Management Plan

A Leachate Management Plan is required to ensure that leachate discharges from the landfill are contained within the landfill site or removed to an approved facility.

- a. Methods for managing the collection, treatment and disposal of leachate to manage potential adverse effects.
- b. Specify methods for managing the collection of leachate, including pump out of sumps, regime of maintenance checks on integrity of pipes, and management of trucks to prevent spills.
- c. Describe procedures for leachate level monitoring;
- d. Specify the methods of the sampling and analysis of leachate.
- e. Contain guidelines for procedures to determine whether leachate contamination is occurring;
- f. Procedures or systems to monitor and identify potential leachate breakouts
- g. Details of continuous monitoring of pH and conductivity at the underdrainage inlet to the sedimentation ponds as an indicator of the presence of leachate in surface water including automated notification from site operated telemetry system if inlet pH and conductivity exceeds the trigger limits.
- h. Provide response plans for mitigation and remedial actions should leachate contamination occur.
- i. Details of the leachate generation estimates for each landfill cell, and location and size of the leachate storage facility required for each landfill cell.
- j. Contain details of the methodology for Leachate Storage Facility monitoring.
- k. Provide response plans for remedial actions should leachate contamination or other pollutants associated with the landfill cell and activities on the site occur.

- I. Define the circumstances and times when notification to the Canterbury Regional Council is required;

### 13 Erosion and Sediment Control

Objectives-	<ul style="list-style-type: none"> <li>• To meet the conditions of consent</li> <li>• To implement effective erosion and sediment control during the site development, operational and aftercare phases of the life of the landfill</li> <li>• To keep all stormwater runoff from landfill activities within the Woodstock Stream catchment, to maximise runoff available for water supply storage, and ensure environmental impacts on surrounding catchments are minimised.</li> <li>• To control silt runoff from the site so that silt discharges below the sedimentation ponds are not greater than those currently occurring naturally in accordance with the conditions of consent.</li> <li>• To detain flows from runoff so that deposition of transported sediment through settlement is maximised.</li> <li>• To minimise disturbed earthworks areas.</li> <li>• To divert as much stormwater as possible away from the active landfill face so that operational leachate volumes are minimised.</li> <li>• To design stormwater systems so as to minimise the risk of hydration of the geosynthetic clay liner</li> <li>• To provide effective drainage of the final surface of the landfill so that scour of the cap is prevented and long term seepage into the landfill is minimised.</li> <li>• To ensure that earthworks and sediment control measures shall be constructed and carried out in accordance with the principles contained within the Canterbury Regional Council publication Canterbury Regional Council Erosion &amp; Sediment Control Toolbox for Canterbury or where the Canterbury Regional Council Erosion &amp; Sediment Control Toolbox for Canterbury does not cover a particular situation GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region is utilised.</li> </ul>
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This section shall include at least the following:

- a. Details of who will hold responsibility for maintenance of the stormwater management system and the organisational structure which will support this process.
- b. A monitoring programme to determine maintenance frequency.
- c. A programme for regular maintenance and inspection of the stormwater management system.
- d. A programme for the collection and disposal of debris and sediment collected by

- the stormwater management devices or practices.
- e. A programme for post storm inspection and maintenance.
  - f. A programme for inspection and maintenance of the outfalls
  - g. General inspection checklists for all aspects of the stormwater management system, including visual check.
  - h. Details of all inspections and maintenance for the stormwater system.
  - i. Details of the training of workers, including contractors.
  - j. Details of the review process of the Erosion and Sediment Control Management Plan (ESCMP) and the Site Specific Erosion and Sediment Control Plans (SSESCP)

This section also details the content of the following Plans that are required:

- A Erosion and Sediment Control Management Plan (ESCMP)
- B Site Specific Erosion and Sediment Control Plan (SSESCP)
- C Erosion and Sediment Control Maintenance Plan (ESCMaP)

### **A Erosion and Sediment Control Management Plan (ESCMP)**

The Erosion and Sediment Control Management Plan (ESCMP) shall detail the erosion and sediment control strategy for all earthworks which are to be undertaken throughout the full duration of consent including the initial site construction works and landfill operation. The ESCAMP shall address monitoring requirements and changes to management procedures in response to the results of monitoring.

This Plan shall include at least the following:

- a. Pre-construction baseline monitoring data of the receiving environment.
- b. Weather forecasting and monitoring, including implementation of an onsite weather station with a telemetered system that provides text and email notifications.
- c. Trigger levels for water quality, rainfall (actual and forecasted events),
- d. Ongoing monitoring and sampling regime for the receiving environment, including turbidity and TSS monitoring downstream of works within Woodstock Stream.
- e. Ongoing monitoring and sampling regime for sediment retention devices including the incorporation of automated sampling at the inlet and outlet of devices.
- f. Management responses when a trigger level is exceeded.
- g. Reporting to Council.

### **B Site Specific Erosion and Sediment Control Plan (SSESCP)**

A Site Specific Erosion and Sediment Control Plan (SSESCP) is required for each stage of development. Each SSESCP shall include the following information as appropriate to the scale, location and type of earthworks.

Each of these Plans shall include at least the following:

- a. The location and total area of earthworks, including catchment boundaries and

- contour information;
- b. Details of construction methods to be employed, including timing and duration;
  - c. The volume of earthworks. This is to include details of the volumes to be excavated, stockpiled, re-used and exported off-site;
  - d. Detail how earthworks and sediment control measures shall be constructed and carried out in accordance with the principles contained within the Canterbury Regional Council publication Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury, or where the Canterbury Regional Council Erosion & Sediment Control Toolbox for Canterbury does not cover a particular situation utilise GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region
  - e. The location and type of erosion and sediment controls.
  - f. The location and type of sediment controls along low points of the site where surface water will discharge from site or around stockpile areas.
  - g. Supporting calculations for erosion and sediment controls
  - h. Staging of the earthworks, including details of progressive stabilisation of exposed areas for each stage;
  - i. Key responsibilities for implementing and maintaining the controls detailed in the SSESCP during the project;
  - j. The location of site entrance points and means to control tracking of dirt off-site;
  - k. The frequency of monitoring the effectiveness of controls, downstream water quality, and the undertaking of any maintenance on controls;
  - l. The details for decommissioning controls;
  - m. Response plans in case of unexpected sediment discharges during works and to respond to extreme weather events;
  - n. Detail of the location of erosion and sediment controls in relation to flood plains and how flood risk will be managed;
  - o. Specific detail of how erosion and sediment controls will avoid adverse effects to vegetation where earthworks are located adjacent to indigenous vegetation;
  - p. Specific detail of how the outlets from erosion and sediment control devices will avoid adverse effects
  - q. Response plans and measures, including stabilisation of works areas over night or during rain;
  - r. Permanent stabilisation measures upon completion of the specific works.

### **C Erosion and Sediment Control Maintenance Plan ([ESCMaPESCMP](#))**

The Erosion and Sediment Control Maintenance Plan ([ESCMaPESCMP](#)) shall detail the manner in which the erosion and sediment controls are maintained to operate in the manner for which they were designed for the full duration of consent following the initial site construction works and landfill operation.

The Erosion and Sediment Control Maintenance shall contain at least the following:

- a. Details of who will hold responsibility for maintenance of the stormwater management system and the organisational structure which will support this process.
- b. A monitoring programme to determine maintenance frequency.
- c. A programme for regular maintenance and inspection of the stormwater management system.
- d. A programme for the collection and disposal of debris and sediment collected by the stormwater management devices or practices.
- e. A programme for post storm inspection and maintenance.
- f. A programme for inspection and maintenance of the outfalls
- g. General inspection checklists for all aspects of the stormwater management system, including visual check.
- h. Details of all inspections and maintenance for the stormwater system.
- i. Details of the training of workers, including contractors.

## 14 Emergency Response

Objectives:	<ul style="list-style-type: none"><li>• To ensure that natural hazards are identified and appropriate response measures are in place to respond to natural hazards and minimise risk to workers and the environment</li><li>• To ensure that appropriate measures are in place to respond to a spill of potentially hazardous materials to protect workers and the environment</li><li>• To ensure that all waste and leachate transporters have current incident response plans meeting the Ministry for the Environment Code of Practice for the Transport of Hazardous and Liquid Waste</li></ul>
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This section shall include at least the following:

- a. Details of management responsibilities for managing natural hazards
- b. Details of potential hazardous materials and the process for maintaining a register of hazardous materials.
- c. Details of the training of workers, including contractors.
- d. Details of the review process of the Site Emergency Management Plan and Hazardous Substance Management Plan.
- e. Details to waste and leachate transporters to prepare and maintain incident response plans.

This section also details the content of the following Plans that are required:

- A Site Emergency Management Plan (SEMP)
- B Hazardous Substance Management Plan (HSMP)

### **A Site Emergency Management Plan (SEMP)**

The SEMP, which must be prepared in consultation with Fire and Emergency New Zealand (FENZ) shall include at least the following:

- a. The identification of potential natural hazards.
- b. Procedures to manage the risk from and response for a landfill fire, wildfire, forecast extreme weather events and flooding.
- c. Measures to mitigate the risk and effect of natural hazards.
- d. Management responsibilities for dealing with site emergencies.
- e. Training of staff, and contractors, to respond to site emergencies.
- f. Details of resources that may be required to respond to natural hazard events.

### **B Hazardous Substance Management Plan (HSMP)**

The HSMP shall include at least the following:

- a. Contain a description of the content and purpose of the HSMP.
- b. Document measures to prevent leaks and avoid spills of fuels or any other hazardous substance.

- c. Set out procedures to be undertaken in the event of a spill of fuel or any hazardous substance, including an incident that may involve a waste transport vehicle outside the WQL site.
- d. Detail response measures to be used on site.
- e. Detail instructions for removing and disposing of all material potentially contaminated or contaminated by a spill.
- f. Details for reporting and recording spills.
- g. Detail worker, including contractors, training requirements for responding to spills.

## 15 Closure

Objectives:	<ul style="list-style-type: none"><li>• To include provisions for temporary and full closure.</li><li>• To provide a long term capping that minimises ingress of water and surface erosion</li><li>• To provide effective stormwater management</li><li>• To provide cap drainage and erosion control.</li><li>• To rehabilitate disturbed areas.</li><li>• To remove any unnecessary site infrastructure</li><li>• To minimise the exposure to natural hazards, considering potential climate changes</li><li>• To ensure that the landfill can move to Aftercare</li></ul>
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This section shall include at least the following:

### A Final Closure Plan (FMPFCP)

A Final Closure Plan is required to ensure that closure of the landfill progresses in an orderly manner and covers all requirements.

- a. The identification of all construction works necessary for a temporary closure of the landfill.
- b. The identification of all construction works necessary to close the operating landfill and move to the aftercare stage.
- c. A landscape management plan to address final landfill capping treatment and aftercare ~~of the site for a thirty year timeframe~~ beyond closure.
- d. The provision of detailed rehabilitation plans detailing the final form of the landfill site.
- e. Details of the final capping system.
- f. Details of the capping stormwater drainage.
- g. Details of infrastructure that is to be removed as part of the closure process.
- h. Specifications and requirements for any importation of topsoil for temporary stockpiling and use in the landfill capping layer, including the avoidance of the use of contaminated material.



## 16 Aftercare

Objectives:	<ul style="list-style-type: none"><li>• To minimise the exposure to natural hazards, considering potential climate changes</li><li>• To minimise ingress of rainwater into the landfill.</li><li>• To minimise erosion and cracking of the cap through design, planting and maintenance.</li><li>• To retain and maintain vegetation</li><li>• To provide effective weed and pest management</li><li>• Operation and maintenance of leachate management systems</li><li>• Operation and maintenance of landfill gas management systems</li><li>• Ongoing monitoring, including groundwater, surface water, landfill gas and site capping</li><li>• To minimise aftercare costs</li><li>• To prepare Aftercare Management Plans</li><li>• To prepare consents (if required) for the Aftercare period</li></ul>
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This section shall include at least the following:

### **A Aftercare Plan**

An After Care Plan is required to ensure that ongoing management requirements following closure to ensure ongoing site integrity.

- a. Ongoing measures for collection and disposal of leachate and landfill gas.
- b. Ongoing monitoring and reporting of groundwater, surface water and landfill gas.
- c. Detailed monitoring to be undertaken for the closed landfill and measures to be undertaken if an issue is identified.
- d. Proposed access and use of the site, including consideration of access to the site whilst limiting activities to avoid damage to the final cap and gas extraction infrastructure.
- e. Monitoring of site integrity, including repairs to the final cover system.
- f. Response measures in case of natural hazards.
- g. Maintenance and control of vegetation.
- h. Contact arrangements for Council and adjacent property owners to maintain communications with aftercare operations personnel.
- i. Details of the process for preparing an Aftercare Plan
- j. Details of the process to lodge consents (if required) for the Aftercare period.

