Dust and Odour Management and Monitoring Plan – Peel Forest Landfill

Prepared for

Timaru District Council

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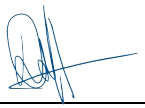
SIGNATURE 

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Limitations:

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1.0 Introduction

This Dust and Odour Management and Monitoring Plan (DOMMP) has been prepared by Pattle Delamore Partners Ltd (PDP) on behalf of the Timaru District Council (TDC) to assist their removal and remediation of a closed landfill at Dennistoun Road, Peel Forest.

This DOMMP has been prepared by a suitably experienced person in accordance with condition 16 of Environment Canterbury (ECan) resource consent CRC244188 and is consistent with the conditions of the resource consent.

1.1 Purpose

The purpose of the DOMMP is to provide a framework to manage the impacts of dust and odour discharged from actions relating to the removal and remediation of the Peel Forest Landfill. The DOMMP:

- Meets the requirements of ECan resource consent CRC244188 conditions.
- Meets the requirements defined in Schedule 2 of the Canterbury Air Regional Plan[1], including to address potential discharge of odour from exposed landfill material, in accordance with condition 13 of resource consent CRC244188.
- Facilitates the avoidance, remediation, and mitigation of any adverse effects of discharges of dust generated from excavation and heavy machinery movements at the Peel Forest landfill site.
- Promotes proactive solutions to the control of dust and odour discharges from the site; and
- Presents an industry good practice approach for dust and odour controls aligned with good practice guidance as relevant to the scale and nature of the potential for adverse effects.[2].

1.2 Landfill removal and remediation

The stages of the work will be:

1. Site establishment
2. Remedial excavation

[1] Schedule 2, Canterbury Air Regional Plan, Canterbury Regional Council, 2017. https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-air-regional-plan/

[2] Good Practice for Assessing and Managing Dust. Ministry for the Environment, 2016. MfE publication number ME1277.
Good Practice for Assessing and Managing Odour. Ministry for the Environment, 2016. MfE publication number ME1278.

3. Removal of rubbish to stockpiles
4. Waste segregation
5. Haulage from Peel Forest to Redruth Landfill
6. Adding clean soil to pullback area

A more detailed project description is provided in the technical memorandum prepared by PDP following the flood-induced exposure of the landfill[3], and the Remedial Action Plan prepared by PDP[4].

Shown in Figure 1, the site is in the Peel Forest region of Timaru District, located approximately 500 m east from the Peel Forest residential community via a partially unsealed road (Dennistoun Road). The proposed site is also immediately west of the Rangitata River, atop an approximately 30-metre-high terrace.

The timeframe for the remediation process is expected to be in the order of nine to twelve months.

Figure 1: Location of the Peel Forest Landfill.

[3]Technical Memorandum (C02450100M001), Pattle Delamore Partners Limited, 2023
[4] Remedial Action Plan – Peel Forest Closed Landfill, Dennistoun Road, Peel Forest (C02450100R002), Pattle Delamore Partners Limited, 2023

1.3 Objective

The objectives of this DOMMP are:

1) To support the contractors by defining the dust and odour sources, risks, and mitigation measures, so they can minimise the potential adverse impacts of dust and odour discharges on the receiving environment.

2) To ensure that the Landfill removal and remediation activities meet the Canterbury Regional Air Plan permitted activity requirements defined in rule numbers 7.32 and 7.35.

3) To comply with ECan resource consent CRC244188 conditions 13 to 18.

The DOMMP methods are designed to be practical and effective for the contractors involved in the remediation of the Peel Forest Landfill. The DOMMP includes a review and update procedure to ensure it is continuously improved and it adapts/improves dust control measures if needed to meet the required environmental objective. Odour control measures are to be applied as set out in Section 5 to address the discovery of odourous materials if encountered during excavation or observed odour on-site.

2.0 Key Performance Indicator

The key performance indicator for this DOMMP is that the dust and odour discharged from the landfill removal and remediation activities shall not cause any offensive or objectionable effects beyond the boundary of the site.

3.0 Canterbury Air Regional Plan Requirements

The DOMMP will ensure that the discharge of dust and odour to air from the operations required for the remediation of the Peel Forest Landfill is managed to an acceptable level. This will be in accordance with and comply with the permitted activity requirements of Rule 7.32 of the Canterbury Air Regional Plan (CARP)[5], concerning the discharge of contaminants to air from the construction of buildings, land development activities, unsealed surfaces or unconsolidated land, and Rule 7.35 of the CARP, concerning the discharge of contaminants into air from the handling of bulk solid materials.

[5] Canterbury Air Regional Plan. Environment Canterbury, October 2017. https://www.ecan.govt.nz/your-region/plans-strategies-and-bylaws/canterbury-air-regional-plan/

4.0 Dust Management

4.1 Dust Sources

It is anticipated that approximately 18,000 m³ of waste will be excavated and remove from the landfill.

Over the course of the remediation process, there are multiple activities that have the potential to discharge dust. In approximate order of dust emissions (high to low), these activities include:

- Excavation of the landfill site;
- Removal and stockpiling of topsoil;
- Construction of contractor base area;
- Backfilling and recontouring of site;
- Vehicle movements on unsealed surfaces, both onsite and on unsealed portion of Dennistoun Road. It is estimated that there will be approximately 46 daily vehicle movements on Dennistoun Road throughout the remediation process;
- Wind interacting with stockpiles and unconsolidated surfaces; and
- Waste triaging.

Furthermore, the riverbed of the Rangitata River immediately to the east of the site is a large dust source. This DOMMP focuses on the dust produced as a result of the remediation of the Peel Forest Landfill, and as such the character of the dust produced from the riverbed should be noted in order to differentiate from the dust produced by the remediation activities.

4.2 Sensitivity of the Receiving Environment

Figure 2 shows potentially sensitive receptors that are located within 250 m of dust sources (i.e. the landfill site, the contractor base area and the unsealed portion of Dennistoun Road). Table 1 identifies the type and location of potentially sensitive receptors, which source of dust is likely to cause the largest impact and the distance between source and receptor.

Figure 2: Map of sensitive receptors within 250 of dust sources

Table 1: Potentially sensitive receptors within 250 m of dust sources

#	Type of sensitive receptor	Closest dust source	Sensitivity	Distance from closest boundary (m)	Downwind wind directions
1	Rangitata River	Peel Forest Landfill	Moderate	10	Northerly to south-westerly
2	Residence, 105 Dennistoun Road	Peel Forest Landfill	High	25	Southerly to westerly
3-8	45 - 57 Dennistoun Road	Dennistoun Road (unsealed)	High	30 - 80	Southerly to easterly
9-14	1174 – 1190 Peel Forest Road	Dennistoun Road (unsealed)	High	125 – 250	South-easterly to easterly
15	66 Dennistoun Road	Dennistoun Road (unsealed)	High	145	Northerly to north-easterly

Notes:

1. *Dwellings and buildings have been identified through desktop study using Canterbury Maps.*

The dust mitigation and dust monitoring detailed in this DOMMP will minimise the adverse dust effects on the receptors identified in Table 1.

Given the proximity of the residential property 105 Dennistoun Road to the boundary of the site this is presents a high risk of adverse dust impacts occurring. The mitigation of effects at 105 Dennistoun Road is detailed in Section 6.

Figure 3 shows the relative frequency of wind directions and speeds in Orari, approximately 23 km south of the Peel Forest Landfill site (the nearest available meteorological dataset), from 2016 - 2020. It can be seen in Figure 3 that the prevailing wind direction in the region is north-westerly, occurring approximately 12% of the time. In this direction, wind speeds rarely exceed 3 m/s.

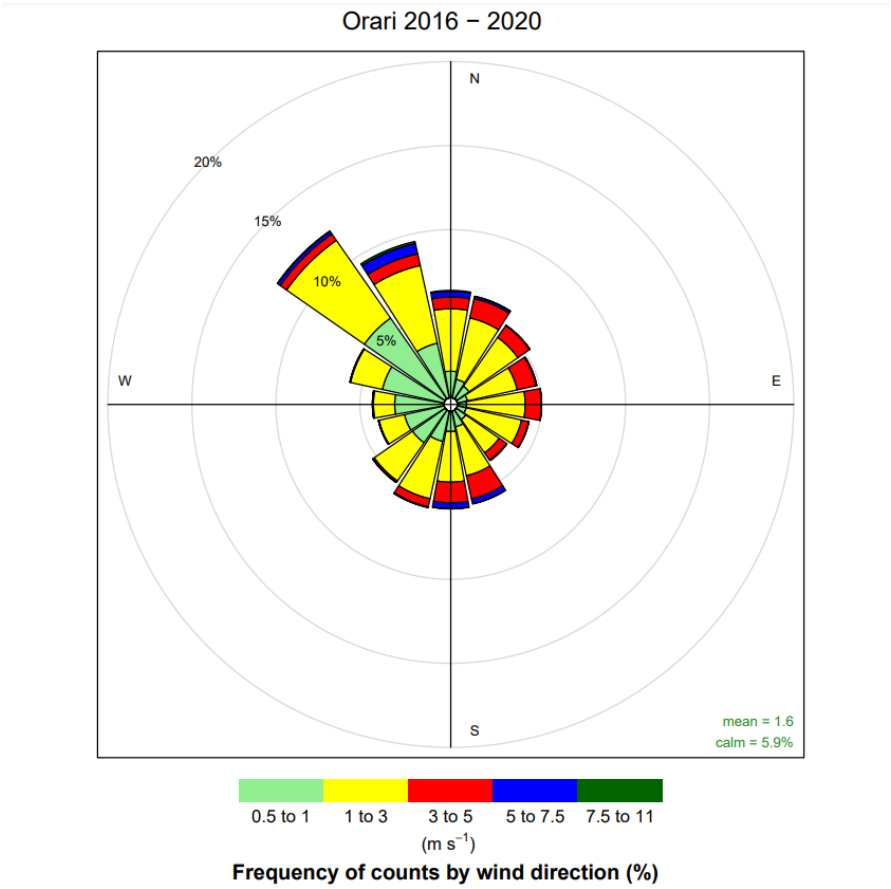


Figure 3: Wind distribution at Orari, 2016 – 2020

Table 4 shows a summary of the meteorological conditions contributing to different dust risk levels and required responses.

Table 2: Wind Speed Frequency Distribution for Orari wind station 2016 – 2020			
Direction	**Wind Speed (m/s)**		**Total (%)**
	0.5-5	**>5**	
North	6.0	0.4	6.4
North Northeast	6.1	0.1	6.2
Northeast	5.3	0.02	5.3
East Northeast	4.8	0.04	4.8
East	5.0	0.02	5.0
East Southeast	4.4	0	4.4
Southeast	3.6	0.03	3.7
South Southeast	5.4	0.3	5.7
South	5.5	0.4	5.8
South Southwest	5.8	0.05	5.9
Southwest	5.3	0.01	5.3
West Southwest	4.0	0	4.0
West	4.3	0.01	4.3
West Northwest	5.7	0	5.7
Northwest	12.0	0.2	12.2
North Northwest	8.8	0.8	9.5
Calms (<0.5 m/s)			5.9

As seen in Table 2, wind speeds greater than 5 m/s are relatively rare in each direction, with the greatest frequency (0.8% of the period surveyed) occurring in the northwest sector of the windrose.

Due to the combination of separation distance and wind speed, 105 Dennistoun Road is considered to be the most at-risk sensitive receptor, with strong southerly winds occurring 0.36% of the time.

4.3 Dust Mitigation Measures

4.3.1 Tiered Control of Dust Sources

Dust prevention on site uses a two-tiered approach. Tier 1 controls are employed routinely, and Tier 2 controls are implemented additionally in the

unlikely situation that the Tier 1 controls do not prove to be fully effective. Dust management and control measures for each dust source are detailed in Table 3. Due to the proximity of the sensitive receptors to the dust sources, dust suppression will be implemented on all areas of the remediation site.

Table 3: Sources of Dust and Tiered Controls to be Employed

Source of Dust	Controls	Responsibilities
⁘ Excavation of the landfill site; ⁘ Removal and stockpiling of topsoil; ⁘ Construction of contractor base area; ⁘ Backfilling and recontouring of site; ⁘ Waste triaging.	**Tier 1 Controls (Routine, must be employed)**	
	Take account of daily forecast wind speed, wind direction, and soil conditions before commencing an operation that has a high dust potential.	⁘ Site manager – refer to Section 9.2 Meteorological Monitoring.
	Implement good practice machine operation including minimizing drop heights.	⁘ Machine operator
	Tidy up excavation works daily.	⁘ All excavation workers
	Cover truck loads.	⁘ Truck drivers
	Tier 2 Controls (Additional, as needed)	
	Adequate water suppression systems will be available at the site to dampen areas that are to be worked prior to any earthworks or material disturbance commencing and shall be used until further earthworks or material disturbance in that area are not required. Water suppression systems could include k-line mobile sprinklers, fixed sprinklers or a water truck.	⁘ Site manager – plan for water application before any earthworks.

Table 3: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Controls**	**Responsibilities**
	Apply water to exposed areas and soils being loaded into trucks during high dust risk conditions, while also avoiding surface ponding, soil erosion, or run off.	⁘ Site manager – refer to weather forecast and current meteorological data. Define high risk conditions as winds ≥ 7.5 m/s with sensitive receptors less than 250 metres downwind of the site (refer to Section 9.2 Environmental Monitoring).
	Suspend dust generating activities if dust control measures become ineffective.	⁘ Site manager – refer to weather forecast and current meteorological data and cease work at wind speeds above 10 m/s.
Vehicle movements on unsealed surfaces (onsite and on Dennistoun Road)	**Tier 1 Controls (Routine, must be employed)**	
	Compact all unconsolidated surfaces where practicable.	⁘ Site manager ⁘ Excavation workers
	Enforce a speed limit onsite of 20 km/hr.	⁘ Site manager ⁘ Individual vehicle operators
	Encourage site vehicles to comply with the speed limit on Dennistoun Road	⁘ Individual vehicle operators
	Maintain surface of Dennistoun Road to minimise dust emissions	⁘ Coordinate with TDC

Table 3: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Controls**	**Responsibilities**
	Seal or landscape completed areas as soon as practical.	⁘ Site manager
	Tier 2 Controls (Additional, as needed)	
	Use water application to ensure that unsealed surfaces are kept damp when haulage is occurring.	⁘ Site manager and water tank operators – ensure that water is applied at the recommended rate (1 litre per m^2 per hour) to unsealed surfaces. ⁘ Heavy vehicle operators - check unsealed surfaces are sufficiently damp before haulage commences.
	Cover heavy trafficked areas with pea gravel or similar	⁘ Site manager
	Apply a dust suppression polymer to exposed surfaces if dusty conditions persist.	⁘ If TDC continues to receive complaints following all other Tier 2 controls, the site manager can choose to apply a polymer at their discretion.
Stockpiles and unconsolidated surfaces	**Tier 1 Controls (Routine, must be employed)**	
	Minimise height of stockpiles – maximum height 4 m.	⁘ Excavation workers - maintain awareness of the height of in-use stockpiles.

Table 3: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Controls**	**Responsibilities**
	Place stockpiles in locations less exposed to wind.	⁘ Site manager – determine areas vulnerable to wind prior to stockpile laydown.
	Tier 2 Controls (Additional, as needed)	
	Water stockpiles	⁘ Water tanker operator - apply water to stockpiles when site manager has determined that sufficiently high-risk dust conditions have occurred.
	Cover stockpiles	⁘ Excavation workers - maintain awareness of the height of in-use stockpiles.
	Install wind shelters	⁘ If TDC continues to receive complaints following all other Tier 2 Controls, the site manager can choose to install wind shelters around stockpiles at their discretion.

Table 4: Dust Risk Levels, Meteorological Conditions and Responses		
Dust Risk Level	**Forecast Wind Speed**	**Response**
Low	< 5 m/s	-
Medium	5 – 7.5 m/s	Prepare for mitigation actions, visually inspect dust discharges and implement water application for dust suppression if required.
High	≥ 7.5 m/s	Operators to visually identify potentially sensitive receptors within 100 m in downwind direction and to use Tier 1 & Tier 2 dust mitigation measures as appropriate.

4.3.2 Targeted dust control measures for 105 Dennistoun Road

As the closest sensitive receptor to the remediation site (immediately to the north of the remediation site), 105 Dennistoun Road requires specific dust control measures, shown in Table 5.

Table 5: Dust control measures for 105 Dennistoun Road

Controls	Responsibilities
Establishing a communication system with the householder	Site Manager, householder
Erecting dust barriers on the northern edge of the remediation site.	Site Manager, excavation workers
Locating stockpiles to at the southern edge of the remediation site to maximise buffer distances	Excavation workers
Avoiding dust generating activities when whenever the conditions are dry, and winds are above 5 m/s from the south.	Site Manager, excavation workers
Watering dusty surfaces whenever the conditions are dry, and winds are above 5 m/s from the south.	Site Manager and water tank operators – ensure that water is applied at the recommended rate (1 litre per m^2 per hour) to unsealed surfaces. Heavy vehicle operators - check unsealed surfaces are sufficiently damp before haulage commences.
Realtime dust monitoring if dust effects occur.	Site Manager
Cleaning exterior of house if needed.	Site Manager

As the receptor is also located adjacent to the Rangitata River (another large dust source), it should be noted that dust impacts at 105 Dennistoun Road during north-easterly to south-easterly winds are more likely to be due to the proximity of the riverbed, rather than the remediation activities. This should be communicated to the householder prior to remediation activities by the site manager.

5.0 Odour Management

There is potential for odour emissions from excavating the landfill and removal of waste offsite.

5.1 Odour Sources

During the landfill remediation process, activities that may contribute to odour include:

- Landfill remediation working face (open area);
- Temporary stockpiles of excavated waste;
- Transfer and transport of excavated material offsite; and
- Landfill gas released during excavation activities.

5.2 Potential for Effects from Odour

The same receptors that are sensitive to dust (shown in Figure 2) are also sensitive to odour, other than the Rangitata River, which has a low sensitivity to the impacts of odour because people are unlikely to be present in the river environment for any significant period of time.

As shown in Figure 2, the nearest sensitive receptor to the remediation site is 105 Dennistoun Road, 25 metres to the north of the site boundary. As such, during the remediation process this receptor is at risk of being impacted by odour emissions if they occur under wind conditions from the south.

Odour impacts are expected to be a low risk due to the nature and age of the materials present. During the site investigation phase, odour was noted as not being observed during test pitting and drilling, and landfill gas (LFG) alarms were not triggered, however, not all the material within the landfill has been characterised.

While the risk of odour is considered as low, if LFG and/or odourous areas are identified during the excavation, then good practice odour management procedures will be followed to minimise the odour and the potential for adverse effects. LFG monitoring will be undertaken in accordance with the Remedial Action Plan (RAP).

5.3 Odour Management and Mitigation

Condition 14a of resource consent CRC244188 requires the OMP includes procedures for handling odourous materials, including measures to mitigate the discharge of odours. The management and mitigation measures are outlined below.

The area of the working face of the landfill remediation site will be minimised as much as practical. The working face will be covered at the end of each day's operation, principally to limit windblown litter, but this will also suppress the discharge of any working face odour overnight.

If LFG is detected, odorous materials are uncovered in the excavations, or the site walk over observations identify odour from on-site, the following actions will be initiated:

- Review the wind conditions and consider if there is potential for odour to be detected at sensitive receptors;
- If wind conditions are dispersing odour away from sensitive receptors work can continue; or
- If wind conditions are carrying odour towards sensitive receptors cease excavation and/or identify the source of LFG/odour;
- Once the odour source is identified undertake the following:
  - prioritise removal of the odorous materials off-site; or
  - cover the material/area until wind conditions change.

Trucks carrying remediated landfill material offsite will be covered and inspected for excess waste material on their exteriors before leaving site.

The contractor will ensure that a daily tidy of excavation areas is undertaken to remove any spilled material to be disposed of appropriately; and/or odourous materials retained onsite will be covered overnight.

6.0 Environmental Monitoring Programme

6.1 Dust Monitoring

6.1.1 Visual Monitoring

All staff will be required to continuously visually monitor activities to identify dust events during the removal and remediation activities. The Site Manager or delegate will undertake a site walkover for carrying out visual dust monitoring. The walkover will be undertaken at least once per day, in the early afternoon, to assess the overall effectiveness of the DMMP and assess compliance with the requirements of the CARP rules 7.32 and 7.35.

The daily visual monitoring will:

- Identity source(s) of dust (e.g. from heavy machinery, earthworks or material disturbance, etc.);
- Identify any areas of deposited dust from the site on surrounding roads and properties;

- Assess the extent and direction of any dust plumes (e.g. within boundary, cross-boundary, or covering a large extent);
- Identify receptors potentially impacted by the plume (e.g. properties downwind to the southwest);
- Assess offensiveness as:
  - High: e.g. opaque, highly visible dust plume and dark coloured plume;
  - Medium: e.g. translucent, visible, grey- or brown-coloured dust plume; or
  - Low: e.g. mainly transparent, but visible light-coloured dust plume.
- Assess overall impact as
  - High: e.g. plume passes over the landfill boundary, impacts a sensitive receptor and/or deposited dust is detectible;
  - Medium: e.g. plume passes over the landfill boundary and/or deposited dust is detectible; or
  - Low: e.g. dust plume is contained within the landfill boundary.

As part of the daily site walk over the Site Manager will also make visual dust observations on Dennistoun Road close to 45 – 57 Dennistoun Road.

With the householder's permission, the exterior of the house at 105 Dennistoun Road will be inspected and photographed.

Visual monitoring should also be undertaken of the riverbed each day to identify how much that dust source may be contributing to the overall dust impact.

Site observations will be recorded in a daily log form, an example of which is provided as Appendix A. The daily log forms will be kept by the contractors during the remediation of the Peel Forest Landfill.

6.1.2 Instrumental Dust Monitoring

Should the contractors receive two or more validated dust complaints from surrounding neighbours or Environment Canterbury (validated meaning that activities related to the Peel Forest Landfill remediation are the confirmed source of dust) within any 6-month period, this DOMMP must be revised to incorporate real time dust monitoring. Specific issues to be considered in the updated DOMMP include:

- Type of monitor;
- Location of monitor;
- Dust mitigation trigger alerts;
- Responses to dust trigger mitigation alerts; and

- Reporting of dust monitoring data.

6.2 Odour Monitoring

Landfill gas concentrations will be monitored according to the Remedial Action Plan (RAP)[6], with at least one person wearing a person gas alert unit appropriately calibrated from landfill gas monitoring.

Odour observations will also be undertaken as part of the daily site observations with recording as per the daily log in Appendix A.

6.3 Meteorological Monitoring

Monitoring of weather forecasts will be undertaken daily and used to inform the potential need for additional mitigation measures (e.g. if strong winds are forecast). As the nearest MetService weather station is in Orari (approximately 23 kilometres away), it is recommended that a windspeed gauge is kept onsite.

Before the daily briefing meeting, the Site Manager must obtain the weather forecast for the day and identify whether high dust risk conditions (see Table 4) may occur. If high dust risk conditions are forecast, the Site Manager will highlight this to other on-site staff and instruct whether any additional dust mitigation is to be implemented for that day.

The forecast occurrence of high dust risk conditions shall be noted in the daily log along with any outcomes from the daily briefing meeting.

Should the contractors receive one validated dust complaint from surrounding neighbours or council (validated meaning that activities relating to the Peel Forest Landfill remediation are the confirmed source of dust) within any 6-month period, this DOMMP must be revised to incorporate real time wind monitoring.

6.4 Frequency of Monitoring

Table 6 outlines the frequency of the activities undertaken as part of the monitoring programme.

[6] Remedial Action Plan – Peel Forest Closed Landfill, Dennistoun Road, Peel Forest, PDP (April 2024).

Table 6: Earthworks Phase Monitoring Programme Activities and Frequency	
Monitoring Activities	**Frequency**
Check **weather forecasts** for strong winds and rainfall to plan appropriate activities and dust management response (7-day forecasts also available on www.metvuw.com and www.metservice.com).	Daily and as conditions change
The Site Manager or delegate will undertake a walkover of the site for **visual dust monitoring and odour observations**. The walkover will be undertaken at least once per day, in the early afternoon, to assess the overall effectiveness of the DOMMP and assess compliance with the requirements of the CARP.	Daily
Inspect specified highly sensitive receptors: ⁘ Site access and egress points; ⁘ 49-75 Dennistoun Road; and ⁘ 105 Dennistoun Road. to ensure dust and odour is being contained to within the site.	Daily
Daily log form for visual monitoring of dust and odour observations.	Daily
Inspect watering systems (sprinklers and any other watering system) to ensure equipment is maintained and functioning to effectively dampen exposed areas.	Weekly
Inspect dust generating activities (as listed in Section 4.0) to ensure dust emissions are effectively controlled.	Ongoing
Continuously monitor dust generating activities and water application rate.	In winds over 5 m/s from the south
Continuously monitor dust generating activities and water application rate.	In winds over 5 m/s from any direction

6.5 Reporting of Monitoring Programme

The following information must be recorded in a daily log or equivalent system (an example of the type of detail that may comprise the daily log is provided in Appendix A of this DOMMP):

- Results of the daily site inspections of visible dust emissions and any odour observations;
- Likely source(s) of any observed dust or odour;
- General weather conditions during the day (i.e., windy, calm, warm, rain etc.);
- Dust and odour mitigation measures employed (as needed);
- The frequency of use of the sprinkler system (if needed);
- Dust control equipment malfunctions and any remedial action(s) taken;
- Any unusual on-site activities; and
- Records of any complaints or other community feedback regarding the site activities.

The log forms will be collated and stored on site and will be made available to Canterbury Regional Council (CRC) staff upon request.

Recording relevant inspection results, as well as recording the conditions of external and internal factors relevant to dust emissions on the daily log forms must be undertaken. This is to help assess if control measures are effective and to define appropriate corrective or preventative actions if adverse effects occur.

7.0 Roles and Responsibilities

7.1 Site Manager and Staff

The Site Manager has the day-to-day responsibility for implementing the DOMMP. The Site Manager has the responsibility to ensure that:

- The conditions of the CARP permitted activity rules are complied with at all times;
- The dust control and mitigation measures and procedures outlined in the DOMMP are implemented effectively;
- There are adequate personnel and equipment on site at all times to implement the dust control measures;
- The meteorological and dust monitoring programmes are carried out if and as required, including recording of daily observations;
- If odour is identified then the appropriate mitigation measures are put in place.
- Any complaints received are investigated and resolved as far as practicable; and
- All records are kept and are available to the relevant regulatory authorities.

All personnel working on the site have responsibility for following the requirements of the DOMMP and reporting to the Site Manager on these issues.

7.2 Staff Training

Successful dust and odour management depends on appropriate actions by site personnel in day-to-day operations of the site. Environmental training for all staff will be undertaken as part of the site induction programme. The environmental induction will include the following information specific to this DOMMP:

- Information about the activities that may cause dust and odour discharges within the site with the potential to impact neighbouring areas;
- Permitted activity requirements;
- Dust and odour mitigation procedures;
- Description of dust, odour and meteorological monitoring for the site; and
- Complaints management procedures.

Staff training records will be maintained on site. The records will include:

- Who was trained;
- When the person was trained; and
- General description of training content and whether follow up/refresher courses are required at a later date.

8.0 Implementation and Operation of DOMMP

The Site Manager is responsible for implementing the DOMMP including to:

- Identify key staff responsible for dust and odour management and assign roles;
- Undertake staff training focusing on the objectives, responsibilities and actions defined by the DOMMP;
- Establish daily processes and scheduling activities;
- Implement a daily briefing meeting; and
- Undertake regular debriefs and reviews of the DOMMP.

9.0 DOMMP Review

The DOMMP will be reviewed each month and when needed updated throughout the course of the Peel Forest Landfill remediation to reflect changes in dust and odour management techniques, or changes to the receiving environment.

Condition 18 requires any amendments to the DOMMP will require recertification under conditions 16 and 17 of resource consent CRC244188. Any certified DOMMP prevails over a plan in the process of recertification.

The CRC review will take into consideration:

- Any significant changes to dust or odour management activities or methods;
- Key changes to roles and responsibilities;
- Changes in industry best practice option for dust or odour controls;
- Results of inspection and maintenance programmes, logs of incidents, corrective actions, internal or external assessments; and
- The outcome of investigations into any adverse effects caused by the discharges of dust or odour from the site.

The Site Manager is responsible for reviewing the effectiveness of the DOMMP and if necessary, revising it to improve management and mitigation measures to reduce any dust or odour impacts.

Reasons for making changes to the DOMMP will be documented and version tracking will be recorded in the 'Document Control' register at the start of this report. A copy of the original DOMMP document and subsequent versions will be kept for the project records and marked as obsolete. Each new/updated version of the DOMMP documentation will be issued with a version number and date.

10.0 Dust and Odour Complaints

Dust and odour complaints will be recorded on the relevant Complaint Form (Appendix B and Appendix C) and promptly investigated to identify and resolve the cause of the complaint. A record of complaints received is required under condition 19 of resource consent CRC244188. Requirements and procedures for complaints are detailed below.

10.1 Receipt Procedure

The Site Manager is responsible for responding to and following up all complaints regarding dust, odour or any other air quality matters, and to ensure that suitably trained personnel are available to respond to complaints at all times.

Following the receipt of a complaint the Site Manager must, as soon as practicable (in accordance with resource consent CRC844188 condition 20), respond as follows:

- Undertake a site inspection. Note all dust and odour producing activities taking place and the mitigation methods being used, take photographs for reference as appropriate. If the complaint was related to an event in

the recent past, where possible, note any dust and odour producing activities taking place at that time and review weather records and daily log;

- Initiate any remedial action necessary, which may include a stop work period;
- Note the time and date of the complaint/s and (unless the complainant refuses to provide them) the identity and contact details of the complainant. Ask the complainant to describe the discharge:
  - Is it constant or intermittent?
  - How long has it been going on for?
  - Is it worse at any time of day?
  - Does it come from an identifiable source?
- Review meteorological data from onsite weather station (if available);
- Note if the complaint has been referred to CRC. In accordance with resource consent CRC844188 condition 20, all complaints relating to the exercise of the consent must be notified to CRC immediately or the next working day;
- As soon as possible (within 1 hour, where practicable), visit the area from where the complaint originated to ascertain if dust is still a problem;
- If it becomes apparent that there may be a source of dust other than the contractors (for example, the riverbed), remediation activities causing the complaint, it is important to verify this, for example, photograph the source and emissions and/or make notes;
- As soon as possible after initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken; and
- If necessary, update any relevant procedures to prevent any recurrence of problems and record any remedial action taken.

10.2 Response Procedures

Following the receipt of the complaint, the following actions will be undertaken:

- Advise the CRC within 48 hours that a complaint has been received, what the findings of the investigation were, and any remedial action taken; and
- Call or visit the complainant to update them on the actions taken and to check that the issue has been resolved.

10.3 Record Keeping and Debrief Procedure

- Fill out the appropriate complaint form, attached as Appendix B or C to this DOMMP; and
- Advise site personnel as soon as is practicable that a complaint has been received, what the findings of the investigation were, and any remedial action taken.

11.0 Emergency Contacts

Internal and external contacts for the site in the event of an environmental emergency are provided in Table 7 and Table 8 below.

Table 7: Internal Environmental Emergency Contact Details

Role	Name	Organisation	Phone
Contract/Project Manager	Bryce Ranger	Rooneys	0276223346
HSE (Compliance) Manager	Nicole Duncan	Rooneys	0272103375
Site Foreman/Supervisor	Mig Bradley	Rooneys	0272322137

Table 8: External Environmental Emergency Contact Details

Role	Name	Organisation	Phone	Email
Project Lead	Jacky Clarke	Timaru District Council	036877258	jacky.clarke@timdc.govt.nz
Project Executive	Andrew Dixon	Timaru District Council		andrew.dixon@timdc.govt.nz
Engineer's Representative	David Hooke	Timaru District Council	0272205539	david.hooke@timdc.govt.nz

Appendix A: Daily Log Form

Daily Inspection Log

Date: _____ Time: _____

Inspection by: _____

Current weather conditions (e.g. sunny, cloudy, rainy): _____

Wind speed and direction (e.g. light, moderate, strong): _____

Weather forecast for next 24 hours (e.g. rainy, windy): _____

Area(s) inspected: _____

Scope of Inspection	Circle Relevant Item	Comments
Is there visible dust from site work activities, stockpiles, earthworks areas, or material disturbance areas or site access roads?	Y N N/A	
Are unsealed surfaces dry and need spraying with water?	Y N N/A	
Are any exposed earthworks or material disturbance areas visibly dry and need water spray?	Y N N/A	
Stockpiles covered/stabilised where needed?	Y N N/A	
Are there any signs of dust going off site as a result of site activities? (Inspect land adjacent to the site exits and adjoining roads for the presence of dust deposits)	Y N N/A	
If wind speeds are strong or forecast to be strong (over 5 m/s) are additional inspection and mitigation measures being put in place? (e.g. increase water application, restrictions on dusty activities)	Y N N/A	
Are watering systems (e.g. sprinklers) operating effectively to minimise dust?	Y N N/A	
Are trucks carrying loose (uncovered) material entering or leaving the site?	Y N N/A	
How frequently has water sprinkling/spraying been used today (i.e. number of sprinklers, time, area watered)		

Scope of Inspection	Circle Relevant Item	Comments
Note any dust control equipment malfunctions (and remedial actions taken as appropriate)		
Any unusual on-site activities today?		
Has any odorous material been exposed?	Y/N	
Has landfill gas been identified from on-site monitoring?	Y/N	
Complaints received/community feedback		

Appendix B: Dust Complaint Recording Form

DUST COMPLAINT & ASSESSMENT FORM

PART A: Complaint Details

Date: Time:

Complaint Received By:

Name:

Address:

Contact phone numbers:

Possible source:

Anonymous: Y/N

Is dust occurring now?

Complaint details (include impacts/effects experienced by complainant:

PART B: Complainant Location Assessment

Date: Time:

Assessors Name:

Person spoken to at complaint location:

Reason for investigation: COMPLAINT/PROACTIVE

Complaint details (include impacts/effects experienced by complainant:

INITIAL IMPRESSIONS:

Type of dust

Time of the intial impression:

Any visible dust deposits: Y/N

Plume width (if known):

VISIBLE DUST DEPOSITS

Describe approximate quantites and extent

When was surface last cleaned?

Frequency of cleaning:

Describe the appearance of the deposits:

Colour		Any odour	
Shape		Water soluble	
Size		Other	
Crystalline or powdery			
Hard, soft			

Weather Data (see over)

Wind direction:
Wind velocity:
Cloud cover:
Temperature:
Rainfall in past 24 hrs:

Photos Taken: Y/N

Samples taken Y/N

Diagram/description of where photos were taken.

Diagram/description of where samples were taken:

Sample collection: Use a small paintbrush (clean) to sweep samples of the dust onto a sheet of paper and then into a clean plastic bag. At least half a teaspoonful will be required for analysis. Lesser amounts may be colected on strips of clear cellotape, which should then be stuck onto sheets of clear plastic to preserve the samples. Label all samples and record date, time, location, etc on a separate sheet of paper if required.

Based on your assessment on this occasion, which of the following applies:

- [ ] I did not find any dust
- [ ] I did find dust and consider it would not be objectionable at any location for any duration or frequency
- [ ] I did find dust and consider it would be objectionable if it became continuous
- [ ] I did find dust and consider it would be objectionable if it occurred on a regular or frequent basis
- [ ] I did detect dust and consider it to be objectionable even in periods of short duration.

FINAL CHECKLIST

- [ ] Upwind assessment completed. Record details below. If not, detail reason: _____
- [ ] Aerial photo/sketch showing location of assessment and upwind assessment attached
- [ ] Are there potential witness statements to obtain YES/NO

REMARKS

PART C: Off-site dust and 360° assessment

Assess the dust upwind of the suspected source and if possible conduct a 360° sweep around the source assessing the odour at different points

OTHER POTENTIAL SOURCES **Time:** _____

Check for road works, ploughing, construction activities, burn-offs, unsealed roads, unsealed sites

Site 1:

Wind direction: Wind strength: Wind stability: GPS Loc:

Visible dust: Desciption of dust

Comment:

Site 2:

Wind direction: Wind strength: Wind stability: GPS Loc:

Visible dust: Desciption of dust:

Comment:

Site 3:

Wind direction: Wind strength: Wind stability: GPS Loc:

Visible dust: Description of dust:

Comment:

Diagram of Suspected source, dust assessment sites and dust plume:

N

COMMENTS

PART D: Source On-site Investigation

If source of dust identified, visit site, identify yourself and show warrant. Explain the findings of your investigation to staff.

Date: Time: Source Identified:

Staff spoken to:: Position:

Staff contact phone number:

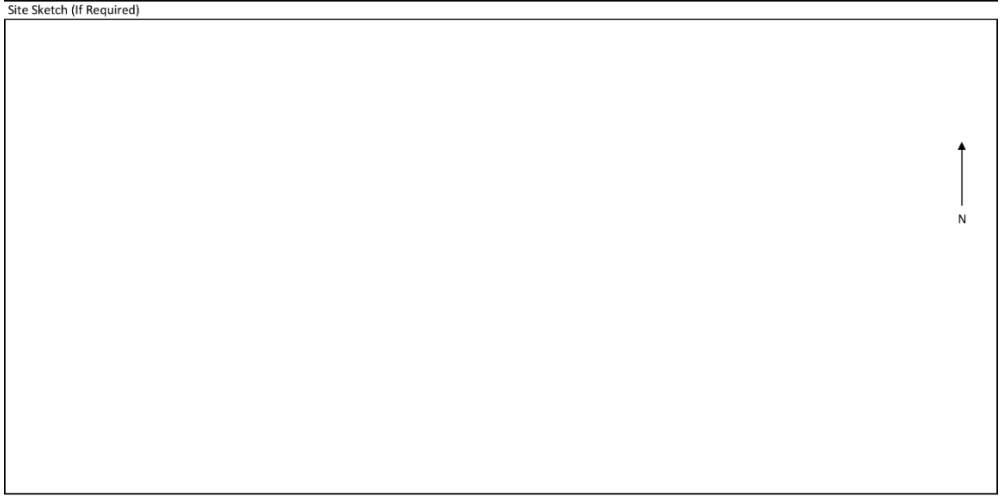
Current site operations:

Reason/explanation given for dust

Other Comments

Monitoring results/samples/other records

Site Sketch (If Required)



SIGNED BY ASSESSOR _____ DATE: _____

PART E: Dust Reference Sheet

Definitions

Objectionable The term objectionable is the term used in consent conditions and is an ingredient of any subsequent enforcement action. It is a subjective term and is open to interpretation. There is guidance from case law which defines objectionable as: unpleasant or offensive or repugnant; open to objection or undesirable or disapproved of; noxious or dangerous. A test will be applied by the court that the term objectionable will be as it applies to "the minds of a significant cross section of reasonable people in the community". The assessor must bear this test in mind when completing their assessment.

Frequency How often an individual is exposed to dust nuisance events

Intensity As indicated by dust quantity/concentration and the degree of nuisance

Duration The length of the particular dust event

Character How objectionable the dust is, having regard to the nature of the dust

Land Beaufort Wind Scale

B. No.	Description	How to Recognise
0	Calm	Smoke rises straight up
1	Light Air	Smoke drifts
2	Light Breeze	Wind felt on face; leaves rustle
3	Gentle Breeze	Flags flap; twigs move all the time
4	Moderate Breeze	Papers blow; small branches move
5	Fresh Breeze	Small trees sway
6	Strong Breeze	Large branches move, wind whistles
7	Near Gale	Whole trees sway

Measuring Temperature

Use descriptions below or obtain local meterological data, especially temperature from websites such as www.metservice.govt.nz

Cold
Cool
Mild
Warm
Hot

Measuring Cloud Cover

Okta No.	Description
0	Clear Sky
1	Sunny
2	Mostly sunny
3	
4	Half the sky is covered in cloud
5	
6	Mostly cloudy
7	Considerable cloudiness
8	Overcast
F	Fog / Mist

During the day the sun is always shining, so the amount of sunshine reaching the ground depends on the amount and duration of any cloud cover. The amount of cloud cover is usually given in units called oktas. Each okta represents one eighth of the sky covered by cloud.

Appendix C: Odour Complaint Recording Form

ODOUR COMPLAINT & ASSESSMENT FORM

PART A: Complaint Details

Date: Time: Complaint Received By:

Name: Address:

Contact phone numbers: Possible source:

Anonymous: Y/N Is odour occurring now?

Complaint details (include impacts/effects experienced by complainant:

PART B: Complainant Location Assessment

Date: Time: Assessors Name:

Person spoken to at complaint location: Reason for investigation: COMPLAINT/PROACTIVE

Complaint details (include impacts/effects experienced by complainant:

INITIAL IMPRESSIONS:

Character:

Time of the intial impression: Initial general hedonic tone:

Initial odour intensity: Plume width (if known):

Odour samples every ten seconds. The time between the ten seconds is disregarded (interval method). Breathe normally rather than sniffing.

		Intensity	Character/notes			Intensity	Character/notes
1st min	0			6th min	0		
	10				10		
	20				20		
	30				30		
	40				40		
	50				50		
2nd min	0			7th min	0		
	10				10		
	20				20		
	30				30		
	40				40		
	50				50		
3rd min	0			8th min	0		
	10				10		
	20				20		
	30				30		
	40				40		
	50				50		
4th min	0			9th min	0		
	10				10		
	20				20		
	30				30		
	40				40		
	50				50		
5th min	0			10th min	0		
	10				10		
	20				20		
	30				30		
	40				40		
	50				50		

Start time: _____

Weather Data (Part C)

Wind direction:
Wind velocity:
Cloud cover:
Precipitation:
Temperature:

General Hedonic Tone
Record at the end of the survey as an overall impression

Based on your assessment on this occasion, which of the following applies:

- ☐ I did detect odour and consider it would not be objectionable at any location for any duration or frequency
- ☐ I did detect odour and consider it would be objectionable, if it became continuous
- ☐ I did detect odour and consider it would be objectionable if it occurred on a regular or frequent basis
- ☐ I did detect odour and consider it to be objectionable even in periods of short duration.

FINAL CHECKLIST

- ☐ Upwind assessment completed. Record details below. If not, detail reason:
- ☐ Aerial photo/sketch showing location of assessment and upwind assessment attached
- ☐ Are there potential witness statements to obtain YES/NO

REMARKS

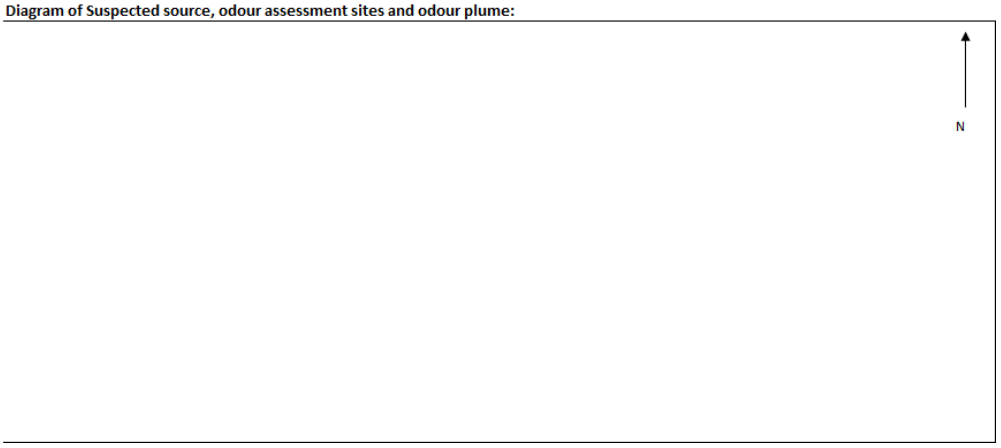
PART C: Off-site odour plume and 360° assessment

Assess the odour upwind of the suspected source and if possible conduct a 360° sweep around the source assessing the odour at different points

Site 1:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			
Site 2:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			
Site 3:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			
Site 4:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			
Site 5:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			
Site 6:			
Wind direction:	Wind strength:	Wind stability:	GPS Loc:
Odour intensity:		Odour character:	
Comment:			

OTHER POTENTIAL SOURCES: Note any other potential sources and any odour include character, intensity, hedonic tone

Diagram of Suspected source, odour assessment sites and odour plume:



PART D: Source On-site Investigation

If source of odour identified, visit site, identify yourself and show warrant. Explain the findings of your investigation to staff.

Date: Time:

Source Identified:

Staff spoken to::

Position:

Staff contact phone number:

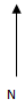
Current site operations:

Reason/explanation given for odour

Other Comments

Monitoring results/samples/other records

Site Sketch (If Required)



PART E: Odour Reference Sheet

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Intensity The strength of the odour (e.g. 3 'distinct')

Character What the odour smells like - describe the smell (e.g. fishy)

Hedonic Tone The degree to which an odour is perceived as pleasant or unpleasant (e.g.-4 'extremely unpleasant')

Scale of Intensity

6	Extremely Strong
5	Very strong
4	Strong
3	Distinct
2	Weak
1	Very weak
0	No odour

General Hedonic Tone

-4	Extremely unpleasant
-3	
-2	
-1	
0	Neutral
1	
2	
3	
4	Extremely pleasant

Measuring Temperature

Use descriptions below or obtain local meterological data, especially temperature from websites such as www.metservice.govt.nz

Cold
Cool
Mild
Warm
Hot

Measuring Cloud Cover

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4	Moderate Breeze	Papers blow; small branches move
5	Fresh Breeze	Small trees sway
6	Strong Breeze	Large branches move, wind whistles
7	Near Gale	Whole trees sway

Odour character descriptors

Code	Descriptor
1	Fragrant
2	Perfumy
3	Sweet
4	Fruity
5	Bakery (fresh bread)
6	Coffee-like
7	Spicy
8	Meaty (cooked)
9	Sea/marine
10	Herbal, green, cut grass
11	Bark-like
12	Woody, resinous
13	Medicinal
14	Burnt, smoky
15	Soapy
16	Garlic, onion
17	Cooked vegetables
18	Chemical
19	Etherish, anaesthetic
20	Sour, acrid, vinegar

Odour character descriptors

Code	Descriptor
21	Like blood, raw meat
22	Rubbish
23	Compost
24	Silage
25	Sickening
26	Musty, earthy, mouldy
27	Sharp, pungent, acid
28	Metallic
29	Tar-like
30	Oily, fatty
31	Like gasoline, solvent
32	Fishy
33	Putrid, foul, decayed
34	Paint-like
35	Rancid
36	Sulphur smelling
37	Dead animal
38	Faecal (like manure)
39	Sewer odour
40	Other – please describe