Air Quality Assessment for Te Karearea Resource Recovery Park

Prepared for

Waste Management (NZ) Limited

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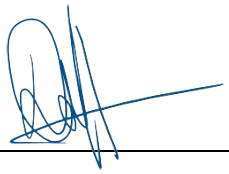
SIGNATURE 

Deborah Ryan

Limitations:

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1.0 Introduction

Waste Management (NZ) Limited (WMNZ) currently operates a waste transfer station and resource recovery facility at 27 Seaview Road, Lower Hutt. WMNZ is proposing to establish a new facility at the Te Karearea development at 30 Benmore Crescent, Lower Hutt, which will replace the existing site. The Te Karearea site will accept waste from domestic and commercial users and will sort and consolidate waste prior to it being transported to a designated facility. Saleable material recovered from the waste will be sold at an on-site shop.

Pattle Delamore Partners (PDP) has been engaged to prepare a technical assessment of the potential air quality effects associated with this proposal. This report provides an assessment of the potential air quality effects from the construction and operation of the proposed WMNZ site.

2.0 Proposed Activity

2.1 Construction

The WMNZ facility will be constructed in two stages. The first stage will entail the construction of the overall site, which includes general site earthworks to prepare the site and install underground services, and the establishment of buildings and structures onsite including:

- A Refuse Transfer Station (RTS);
- A Construction and Demolition (C&D) building;
- An office and administration building;
- A second-hand goods store and café;
- A weighbridge; and,
- Carparks, roads, and truck/bin wash bays.

The second stage will involve the installation of a Material Recovery Facility (MRF), additional EV charging stations, and any additional requirements to comply with conditions of consent or enhance site operation.

2.2 Description of Operations

The WMNZ site will accept waste materials from commercial and municipal waste collection operators, and also from individuals. Vehicles transporting waste will be weighed upon entry to the site at the weighbridge, at which point the loads will be given a preliminary inspection to ensure they do not contain hazardous, odorous, or dusty materials, or other materials not included in the waste acceptance criteria.

The vehicles will then be directed to the appropriate building within the site. General waste material will be transferred to the RTS building in trucks or skip bins and the contents will be transferred to the floor of the RTS building. The waste material will be transferred to hook bins, which when full, will be loaded onto a truck for transport to the landfill for disposal. The transfer process typically takes less than 15 minutes. There will be no sorting of wastes in the RTS building.

Green waste will likewise be taken to the RTS building and loaded into hook bins for transport to an offsite green waste composting facility. There will be no shredding of green wastes onsite.

Building and construction materials, including those from construction and demolition activities, will be directed to the B&C building where the contents will be deposited on the concrete floor. The material will be sorted, and reusable/recyclable materials removed for further processing in the MRF building. Non-recyclable materials will be consolidated for transport and disposal to landfill.

A layout diagram of the site is provided as Figure 1 below and shows the locations of the various buildings for waste reception and material recovery.

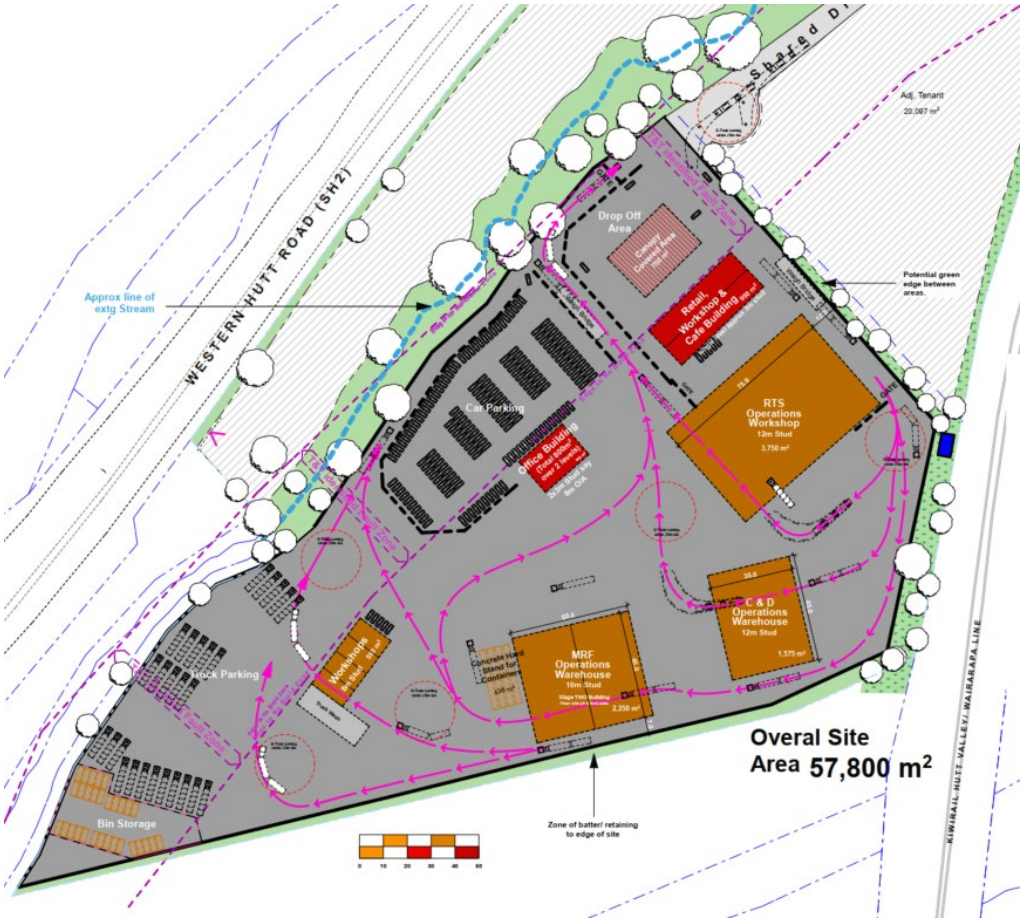


Figure 1 Te Karearea Site Layout Diagram

The residence time of waste at the site will be typically less than 24 hours for waste received from Monday-Friday, and 48 hours or less for waste delivered on Saturday. All doors to the process buildings will be closed when the transfer facility is not operating.

2.3 Operating hours

The WMNZ facility will be open to the public from 6:00 am to 6:00 pm, seven days per week. Mobile machinery within the site will generally operate between 7:00 am up to 5:00 pm.

2.4 Waste Acceptance Criteria

The proposed WMNZ facility will accept refuse from municipal, commercial, private operators and individuals, which will include:

- General wastes from the general public and from waste collection companies;

- Recyclable materials such as paper and cardboard, glass, plastic, aluminium cans, and ferrous and non-ferrous metals; and,
- Green wastes.

The company proposes waste acceptance criteria to exclude dusty and/or odorous loads, and hazardous or toxic materials including but not limited to:

- Asbestos;
- Volatile/liquid wastes;
- Agricultural chemicals;
- Explosives and fireworks;
- Animal by-products;
- Medical wastes; and,
- Compressed gases.

The waste acceptance criteria will be enforced by trained and experienced workers, and waste material not meeting the acceptance criteria will be rejected at the weighbridge inspection. WMNZ furthermore have signed agreements with commercial customers in which it is clearly stated that no highly odorous waste can be placed in the commercial bins. This is enforced by education of the commercial operators and if needed enforcement of contractual obligations if odorous wastes are discovered.

3.0 Site and Surroundings

3.1 Location

The proposed site is located at 30 Benmore Crescent and is bounded by State Highway 2 to the west, the Hutt Valley railway line to the east, and the Hutt River to the south. A residential area lies to the east of the site on the other side of the railway line. The site is zoned General Rural under the Hutt City District Plan; however, it does not currently possess a rural character due to the presence of transport corridors (State Highway 2 and the Hutt Valley railway line), a residential zone immediately to the east of the site, and recreational facilities associated with the Hutt River Park.

An aerial image of the site and surrounding area is provided as Figure 2 below. The overall development site is outlined in red, and the WMNZ site is indicated by the hatched blue area. It is not known at this time what land uses will occupy the area within the development to the north and west of the WMNZ site.

Figure 2 Te Karearea Development area (within red boundary) with WMNZ site (blue hatched area)

3.2 Topography

The site is within the Hutt Valley, which runs in a roughly northeast-southwest direction. The area to the north, south and east of the site is generally flat at an elevation of around 15 metres above sea level, while to the west the ground rises steeply up to a height of around 250 metres above sea level.

Figure 3 Topographic Map of 30 WMNZ Site (elevation scale in metres)

3.3 Meteorology

The nearest full time meteorological station, which is the Birch Street Air Quality Monitoring Station operated by GWRC, is located about 6 kilometres to the southwest of the proposed WMNZ site. A windrose based on the Birch Street meteorological data for 2018-2022 is presented as Figure 4.

The Birch Street windrose indicates the winds are aligned with the Hutt River Valley, with the most commonly occurring wind directions occurring from the north/northeast and to a lesser degree from the south-southwest.

The area around the proposed site is subject to temperature inversions enhanced by katabatic drainage off the hills and down the valley during relatively calm and clear conditions, and during such periods atmospheric dispersion is typically limited. Radiation temperature inversions are generally more pronounced during autumn, winter and early spring, but they occur all year around when there are partially cloudy to clear skies with light winds during night-time.

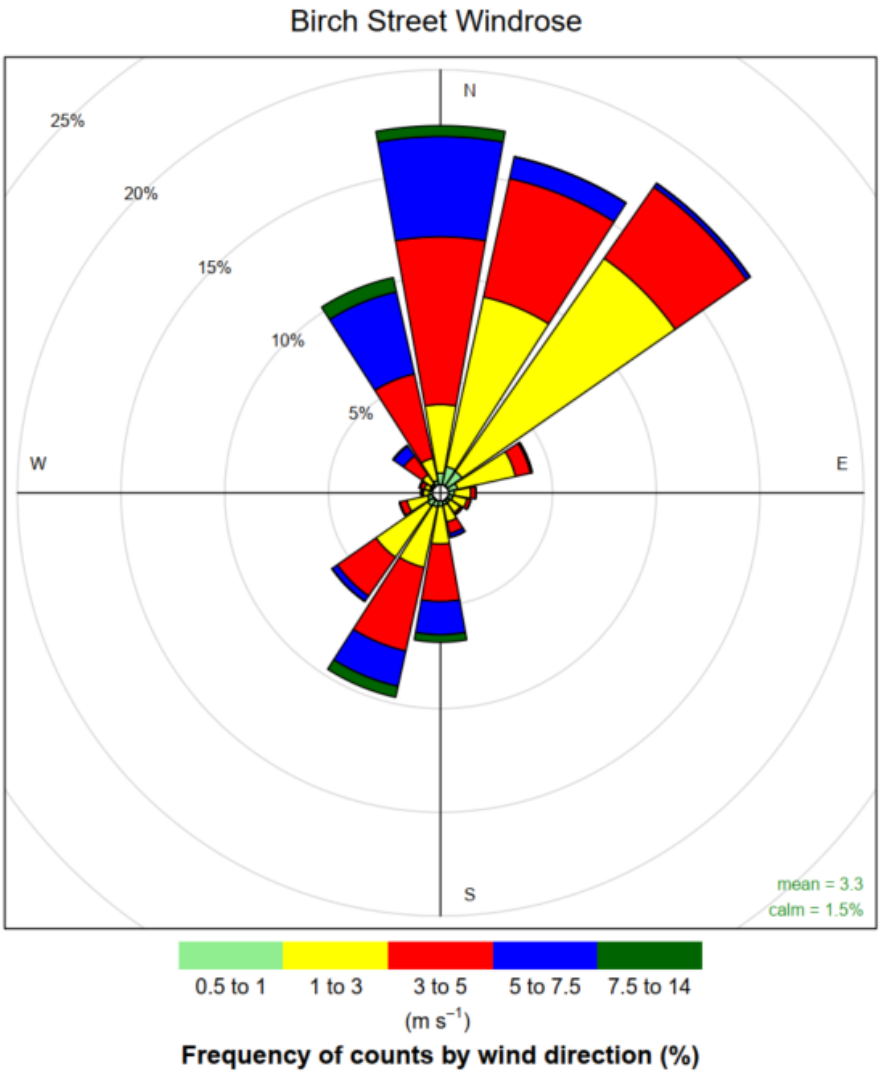


Figure 4 Birch Street Windrose – 2018 to 2022

Table 1 presents the distribution frequency of wind speed. The predominant low speed winds (less than 3 m/s) originate predominantly from the north, and to a lesser degree from the south. Calm winds (less than 0.5 m/s) are predicted to occur 1.5 percent of the time. Depending on the source characteristics, low wind speeds are considered more likely to result in odour effects due to reduced dispersion, particularly for ground level fugitive emissions.

The predominant stronger winds (greater than 5 m/s) are also from the northerly and southerly directions, and it is these wind speeds that are associated with pick up and transport of dust.

Table 1: Birch Street Wind Speed Frequency Distribution (2018 – 2022)				
Direction	Wind Speed (m/s)			Total (%)
	0-<3	3-5	>5	
North	2.9	9.0	5.5	17.4
North northeast	10.4	6.4	1.0	17.7
Northeast	14.6	4.3	0.2	19.1
East northeast	1.8	0.5	0.1	2.4
East	0.8	0.2	0.0	1.1
East southeast	0.7	0.2	0.0	0.9
Southeast	0.7	0.1	0.0	0.8
South southeast	1.0	0.5	0.2	1.7
South	2.0	3.2	2.3	7.5
South southwest	3.2	3.9	2.0	9.1
Southwest	3.7	2.3	0.2	6.1
West southwest	1.0	0.2	0.0	1.2
West	0.4	0.1	0.0	0.5
West northwest	0.3	0.2	0.0	0.5
Northwest	0.5	1.2	0.7	2.4
North northwest	1.0	4.5	5.3	10.8

3.4 Existing Air Quality

GWRC maintains two ambient air monitoring stations in the area for demonstrating compliance with the National Environmental Standards for Air Quality (NESAQ). The Lower Hutt (Birch Street) monitoring station is located 6 km to the southwest of the WMNZ site. The Upper Hutt monitoring station is located 10 km to the northeast of the site. Table 2 summarises the air quality monitoring data for fine particulate matter (PM_{10}) at both stations. The data indicate that air quality is generally good, and the national environmental standard for air quality (NESAQ) of 50 µg/m^3 as a 24-hour average, and the ambient air quality guideline (AAQG) value of 25 µg/m^3 as an annual average have not been exceeded.

Table 2: Ambient Monitoring Data Recorded at GWRC Monitoring Sites

Year	Maximum PM_{10} (24-hour average)		2nd Highest PM_{10} (24-hour average)		Annual Average PM_{10}	
	Lower Hutt	Upper Hutt	Lower Hutt	Upper Hutt	Lower Hutt	Upper Hutt
2017	31.1	30.0	30.4	26.9	11.3	10.5
2018	31.1	26.2	23.0	24.8	11.3	10.3
2019	35.6	35.7	29.9	25.7	11.7	10.9
2020	28.9	26.7	26.5	26.6	10.6	10.3
2021	36.0	29.2	31.1	22.0	10.6	10.0

There are no other significant sources of odour in the vicinity of the site. The surrounding area is consequently considered to be highly sensitive to new sources of odour from industrial or other activities.

3.5 Sensitive Receptors

Although the site is located in a rural zoned area, residential and recreational areas are adjacent to the site boundary. These areas have a high sensitivity to amenity effects.

PDP undertook a desktop study and visited the site to identify the locations of sensitive receptors nearby to the proposal.

Sensitive receptors are defined as a location where people or surroundings may be particularly sensitive to the effects of air pollution. Sensitive receptors include:

- Residential areas;
- Rural dwellings;
- Hospitals;
- Schools;
- Libraries; and,
- Public outdoor locations (e.g. parks, reserves, beaches, sports fields).

Selected sensitive receptors are summarised in Table 3 and their locations are shown in Figure 5. The nearest dwelling is located in the residential area to the east of the site at a distance of around 70 metres from the RTS building. While not every nearby receptor has been identified, the chosen receptors are considered to be represent the surrounding community and include those at the highest risk of experiencing effects from the discharges to air.

Table 3: Location of Receptors near the WMNZ Operations

Receptor ID	Address	Closest Distance to WTS (m)	Direction Relative to WTS
1	37 Mary Huse Grove	80	East
2	31 Mary Huse Grove	70	East
3	25 Mary Huse Grove	80	East
4	1404 High Street	260	Northeast
5	1397 High Street	260	South
6	1385 High Street	330	South-southwest
7	Hutt River Trail	60	South (at nearest point)
8	Manor Park golf course	300	Northeast (at nearest point)
9	State Highway 2	100	West (at nearest point)

Figure 5: Sensitive Receptors

4.0 Potential Discharges to Air

4.1 Dust

4.1.1 Dust from Construction

Dust during the construction of the WMNZ facilities has the potential to be generated from:

- Earthworks associated with site establishment;
- Wind erosion of exposed soil stockpiles and surfaces;
- Vehicular traffic on unsealed surfaces.

The construction phase of the project is anticipated to take place over a six-to-twelve-month period, and any effects dust effects would be limited to this period.

4.1.2 Dust from Operation of the Recovery Park

During the operational phase, dust discharges may occur from drop off and transferring of waste materials to bins within the RTS and B&C buildings, vehicle movements, and the sorting/loading of the refuse for offsite transport.

Dust control measures to manage and mitigate discharges of dust from the operation of the site are described in Section 8.1.2 of this report.

4.2 Odour

The main source of odour associated with the project will be from the receipt and processing of waste materials. Construction and demolition waste is unlikely to be a source of odour due to the nature of the materials, which will consist of inorganic or inert materials.

The main potential source of odour will be from waste taken to the RTS. The nature of this waste will vary but will at times include odorous material such as that associated with household refuse. The proposed RTS will be an enclosed building with roller doors to allow access. Mixed waste material and green waste material will be deposited on the floor of the RTS building, and then transferred to hook bins using front end loaders. The hook bins will be loaded onto trucks for offsite transport when full.

Odour control measures are described in Section 8.2 of this report.

5.0 Experience of odour at other sites

5.1 Seaview Waste Transfer Facility

PDP staff visited WMNZ's existing waste transfer facility in Seaview on 31 May 2023 to assess the potential nature and extent of odour that would be likely from the proposed new site.

The volume of waste currently accepted at the Seaview site is around 30,000 tonnes per year, which is similar to what is projected to be received at the new site. The waste transfer process at WMNZ's Seaview facility differs from what is proposed at the new site in that the waste material brought to the Seaview site is deposited in the pit, which is in a semi-enclosed building open to air on two sides. The waste is then transferred from the pit and into skip bins, which are then transported to landfill.

PDP considers that there is higher potential for odour from the Seaview site due to the semi-enclosed nature of the transfer building as compared with the fully enclosed building at the Te Karearea site. A photograph of the waste transfer activity at the WMNZ Seaview site is provided as Figure 6. In the photo, the waste is being dumped on the floor of the receival pit by the truck on the left, and the excavator in the right of the photo picks up the waste and transfers it to a skip out of frame to the right.

Figure 6 Waste transfer at existing WMNZ Seaview site

The new RTS at Te Karearea being fully enclosed (with the exception of the roller doors allowing entry and exit of trucks) will allow the odour to be more easily controlled.

During PDP's site visit to the Seaview site, a distinct waste odour was observed onsite and was also detectable downwind of the waste transfer activity. The waste odour was observable out to a distance of around 80 metres downwind of the waste transfer structure, although at this distance the odour was considered to be weak.

GWRC and WMNZ have confirmed that there have been no complaints of odour from the Seaview site over the duration of the existing consent. PDP notes, however, that the receiving environment of the Seaview site differs from the proposed site in that it is in an industrial area, and the nearest sensitive receptors are around 200 metres from the site. As such, the existing WMNZ site is less sensitive to odours than the area surrounding the proposed site.

PDP considers that the waste transfer activity as currently undertaken at the Seaview site would have a high risk of generating unacceptable levels of odour if the activity was undertaken in the same manner at the proposed site. However, based on experience at other waste transfer stations with similar process controls, PDP considers that the additional controls proposed for the new site (i.e. undertaking the waste transfer within a fully enclosed building, regular removal off site and use of odour suppression sprays) will manage the odour to avoid adverse odour effects at sensitive receptors.

5.2 Hamilton Resource Recovery Park

To assess the potential odour from the proposed new site, a PDP staff member, who is a trained odour scout, visited WMNZ's Hamilton Resource Recovery Park (HRRP) located at 16 Wickham Street on three occasions. The odour scout visited the site on the 7th, 26th, and 28th of July 2023.

The HRRP was chosen for odour observations because of the similarity of the operation with the proposed operation at Te Karearea, in particular: both the waste composition and building design and operation are similar to the Te Karearea proposal. PDP considers, therefore, that the odour scout observations undertaken at the HRRP will be reasonably representative of the likely levels of odour that will be observed from the Te Karearea site.

PDP understands that there have not been any odour complaints relating to the operation of the Hamilton site. However, the HRRP is in an industrial zoned area with a variety of other odour sources including a composting facility and an asphalt plant, and with the nearest sensitive receptors being over 200 metres from the HRRP. The HRRP is therefore considered to be located in a comparatively low sensitivity receiving environment.

5.2.1 Odour scouting

PDP staff used an odour scout monitoring methodology, which is a variation of the method described in the German Standard Verein Deutscher Ingenieure (VDI) 3940 "Determination of Odorants in Ambient Air by Field Inspections" (VDI Method). This method is recommended in the Ministry for the Environment (MFE) *Good Practice Guide for Assessing and Managing Odour in New Zealand* and is commonly used in Australia and Europe for odour assessment.

PDP used a single 'field odour scout' to observe odours around the HRRP. The observation locations were selected downwind of the HRRP waste transfer building in order to capture the worst-case odours near the site. The odour scout recorded observations of odour in air every 10 seconds for 10 minutes, giving a total of 60 samples per location for each occasion. The field odour scout also recorded the intensity of the odour, the odour character, the wind direction, the wind speed, any rainfall, and the time and date for each observation.

The odour observations were undertaken over three separate days when wind speeds were low to moderate (3 - 6 m/s). During the odour observations, there was a constant flow of waste being delivered.

Where odour associated with the HRRP was detectable the odour was classified as "weak" to "very strong" and having a rubbish character (neutral to unpleasant in hedonic tone).

Figure 7 shows the locations where odour observations were taken. The strongest rubbish odour intensity was detected within 25 metres of the HRRP waste receipt building, with 'very strong' rubbish odour detected 20 metres downwind of the building on one occasion. The frequency of observable rubbish odour was highest within 25 metres of the building, being detected 39 percent of the time. The odour scout determined the odour to be originating from the doors of the waste transfer building. At 26 to 60 metres from the building, the rubbish odour was observed less frequently at 9 percent of the time and had an intensity of weak to distinct. The odour scout aimed to determine the extent of odour from the site and therefore the majority of observations were taken near to the HRRP building. Odour was not generally observed beyond 60 metres from the building, with only one observation detecting a weak odour around 5% of the time over the 10-minute observation. No odour from the HRRP was detected at greater than 100 metres from the waste receipt building.

A summary of the odour observations records at the HRRP is provided as Appendix A of this report.

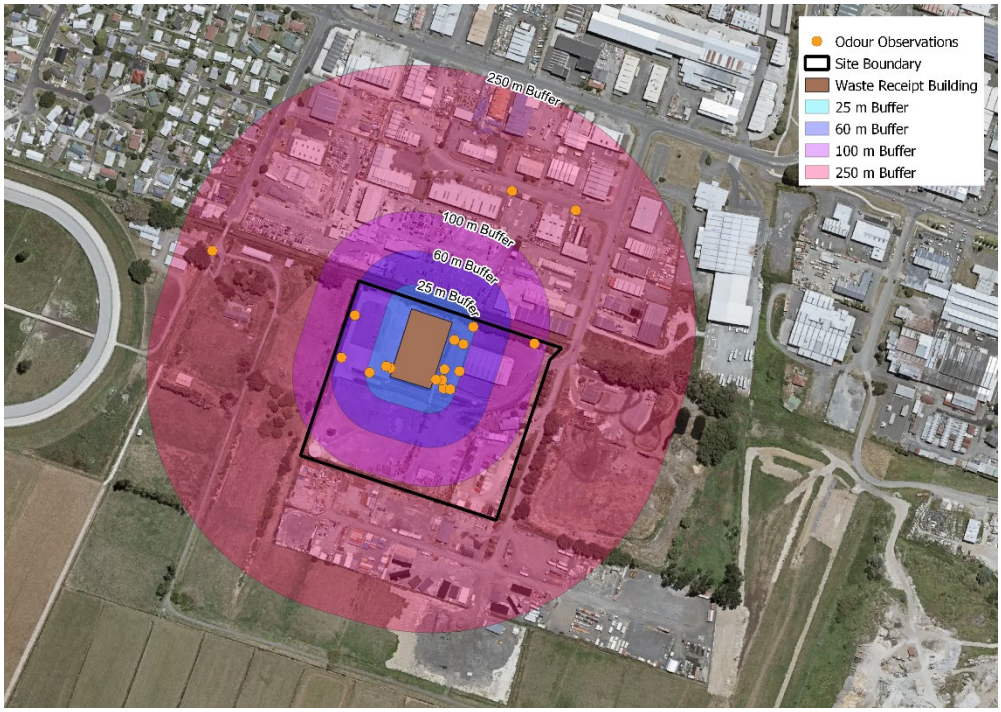


Figure 7: Odour Observation Locations

The odour observations from the HRRP were consistent with the level of odour PDP has observed at other similar facilities. PDP considers that the odour observed will be similar at the proposed RTS at Te Karearea.

6.0 Hutt City District Plan

The operation of the WMNZ's Te Karearea site is considered a permitted activity under the Hutt City District Plan, subject to conditions. The relevant conditions to the proposal are outlined in Rule 8B.2.1.1 of the District Plan which states:

> *"8B 2.1.1 Permitted Activities – Conditions*
>
> *(f) All outside areas shall be surfaced, or managed appropriately so that there shall be no dust nuisance at or beyond the boundary of the site*
>
> *g) All activities shall be carried out in such a manner so as to ensure that there is not an offensive odour at or beyond the boundary of the site.*

The District Plan defines odour as an offensive odour occurs when an odour can be detected and is determined to be offensive by one or more observers; including at least one council officer. The district plan defines dust nuisance as Dust Nuisance a dust nuisance shall occur if there is visible evidence of suspended solids in the air beyond the site boundary and/or there is visible

evidence of suspended solids from a dust source settling on the ground, building or structure of a neighbouring site, or water.

7.0 Assessment of Effects

7.1 Assessment Methodology

The main potential for effects on air quality from the WMNZ proposal is from the discharge of dust and odour from the storage, handling, and processing of waste materials on the site. Under the RMA, the primary concern with dust and odour is the ability to cause an effect that could be considered 'offensive or objectionable' to the extent that there is an adverse effect. Whether dust or odour is considered offensive or objectionable to extent that there is an adverse effect requires an overall judgement.

Good practice for assessing the potential effects of effects on amenity from dust and odour includes considering the FIDOL factors of frequency, intensity, duration, offensiveness/character, and location as described in Table 4.

Table 4: Description of the FIDOL Factors (MfE, 2016)

Factor	Description
Frequency	How often an individual is exposed to the odour.
Intensity	The strength of the odour.
Duration	The length of exposure.
Offensiveness/character	The character which relates to the 'hedonic tone' of the odour and may be on a scale of pleasant, neutral, or unpleasant.
Location	The sensitivity of the receiving environment based on the type of land use and nature of activities in the vicinity.

An assessment of the potential for adverse effects from odour and dust from the proposal can also be informed by experience with similar facilities elsewhere. In addition to the existing waste transfer facility in Seaview, WMNZ has an existing site in Hamilton, which is similar in nature to the proposal. Therefore, PDP has also considered the odour observations from these sites as part of this assessment.

7.2 Dust Assessment

Table 5 provides an assessment of the FIDOL factors for potential dust discharges from the proposed operations.

The sources of dust from the proposal considered in the FIDOL assessment are:

- Dust from the construction phase of the project;
- Dust from vehicle movements within the site; and
- Fugitive dust from the handling and processing of waste material.

Table 5: Assessment of the FIDOL Factors for dust from WMNZ's Te Karearea Site

Factor	Assessment
Frequency and duration	Wind speed and direction are the main factors which dictate the frequency and duration of exposure to a source of dust. Strong wind speeds (greater than 5 m/s) in particular are associated with conditions that can result in mobilisation and transport of dust. Strong winds at the Birch Street monitoring station occur relatively frequently around 51% of the time, predominantly from the northerly and southerly directions. The nearest residential receptors are located to the east of the site, and strong winds from this direction occur infrequently (less than 0.5% of the time). Strong winds toward sensitive receptors to the south occur more frequently at around 13% of the time, however, the nearest residences to the south are more than 250 metres away, and at this distance there will be no significant levels of dust from the proposal. Dust during the construction of the site could be significant if not appropriately managed. The duration of the construction phase is expected to be around 6 to 12 months.
Intensity	The intensity of dust generated during the construction phase of the project will be managed by procedures outlined in Section 8.1. Provided the dust management procedures are implemented, the intensity of dust offsite is expected to be at a low level. From the operation the site, the greatest potential for dust will come from the loading and unloading of waste within the transfer buildings. The proposed waste acceptance criteria exclude acceptance of dusty loads. In addition, the loading and unloading of dust will occur within fully enclosed buildings which will

Table 5: Assessment of the FIDOL Factors for dust from WMNZ's Te Karearea Site	
Factor	**Assessment**
	minimise the discharges of dust to air. The intensity of any residual dust will therefore be low.
Offensiveness/character	The offensiveness of dust impacts generated during the construction phase is determined by the nature of the dust being generated. For instance, dark coal dust is considered intrinsically more offensive than dust generated from inert soil or aggregate excavation. Potential dust emissions associated with construction activities are expected to be inert and indistinguishable from naturally occurring dust and therefore of low offensiveness.
Location	The proposed site is adjacent to highly sensitive areas which includes residential and recreational land uses. The nearest residences are at a distance of 70 metres to the east of the process buildings. State Highway 2 is located over 100 metres to the west of the process buildings. While currently undeveloped, the potential effects of dust in the remaining industrial area are expected to be acceptable for the location. Given the proximity of the residences to the site, mitigation measures for both construction and operation of the site are essential to limit the potential for dust nuisance effects. The proposed dust mitigation measures described in Section 8.1 are considered best practice for the nature and scale of the activities and if properly implemented will not result in adverse offsite effects.

Considering the FIDOL factors above, the construction of the proposed WMNZ has the potential to result in dust nuisance effects due to the proximity of the site to the nearest dwellings. The operation of the facility is, however, considered to have a low risk of nuisance effects due to the enclosed nature of the processes and the waste acceptance criteria. The overall risk of effects from dust is reduced due to the lower frequency of winds when the dwellings would be downwind on the site. In addition, management and mitigation measures are recommended in accordance with good practice, which will further minimise the risk of adverse effects from dust at sensitive receptors.

State Highway 2 is greater than 100 metres to the west from the WMNZ site boundary. PPD considers that this separation distance is sufficient so that any dust from the site will not result in significant deposition on the road or cause adverse effects on visibility or other nuisance. The management and mitigation measures proposed in Section 8.1 will further ensure that any effects on nearby roads from dust deposition is negligible.

On balance, considering the nature of the potential dust sources and the proposed mitigation, the construction and operation of the proposed WMNZ site will not result in offensive or objectionable effects from dust beyond the site boundary.

7.3 Odour Assessment

Table 6 provides an assessment of the FIDOL factors for potential odour discharges from WMNZ's proposed operations.

The sources of odour from normal operations are fugitive odour from the transport, processing, and transfer of waste material.

Table 6: Assessment of the FIDOL Factors for odour from WMNZ's Te Karearea Site

Factor	Assessment
Frequency and duration	Wind speed and direction are the main factors which dictate the frequency and duration of exposure to a source of odour. Light wind speeds (less than 3 m/s) in particular are associated with poor dispersion conditions that can result in odour detection near the site. Light winds as measured at the Birch Street monitoring station occur around 13 of the time, predominantly from the northeasterly and south-westerly directions. Light winds to the nearest residential area 70 m to the east of the site occur very infrequently (less than 2% of the time). Light winds to the nearest residences to the south of the site occur more frequently at around 14% of the time, however, the separation distance of the process buildings to the closest receptors is more than 250 metres. Odour observations downwind of the HRRP detected weak rubbish odours around 5% of the time at distances within 60 to 100 metres of the HRRP. The low frequency of observed odours at locations within this distance, combined with the low frequency of winds (<2%) blowing toward the nearest receptors

Table 6: Assessment of the FIDOL Factors for odour from WMNZ's Te Karearea Site	
Factor	**Assessment**
	70 m to the east of the RTS building, will result in very infrequent occurrence of odour at the nearest sensitive receptors.
Intensity	Odour from WMNZ's HRRP operation was observed to be weak to strong within 25 metres of the waste transfer building, and weak to distinct within a distance of 25 to 60 metres of the building. The intensity of odour from the HRRP within a distance of 60 to 100 metres of the building was observed to be weak. Given the above, the intensity of any observed odour from the site at the nearest sensitive receptors is expected to be at a low level.
Offensiveness/character	The nature of the material accepted for treatment at the site, which includes a mix of municipal and commercial waste, will have an associated odour that is generally unpleasant in character, particularly when strong odours are observed.
Location	The proposed site is adjacent to highly sensitive areas which includes residential and recreational land uses. The nearest residences are at a minimum distance of 70 metres to the east of the RTS process buildings. While currently undeveloped, the potential effects of odour on the remaining industrial area are expected to be acceptable for the location. Given the proximity of the residences to the site, mitigation measures for the operation of the site are essential to limit the potential for odour nuisance effects. The proposed odour mitigation measures described in Section 8.2 are considered best practice for the nature and scale of the activities and if properly implemented will have a low risk of adverse offsite effects.

In conclusion, the proposed activity is likely to generate some level of odour if not appropriately managed, and the nature of the receiving environment includes areas that are considered highly sensitive to odours associated with handling of waste.

There is a potential that weak odours may be detected within the residential area 70 to 100 metres from the RTS building, however, these will be a low level and are expected to be very infrequent given the low frequency of light wind conditions when the nearest residential area is downwind of the site.

Undertaking waste transfer in an enclosed building is considered to be best practice for managing the odour and operational procedures to minimise odour be adopted as are described in Section 8.2. Procedures to manage odour at the site are documented in the site Odour Management Plan (OMP). Provided that the proposed mitigation measures are followed and given the very low frequency of winds when the nearest dwellings are downwind, PDP considers that the risk of offensive or objectionable odour to the extent that there would be adverse effects from odour at or beyond the site boundary of the site is low.

8.0 Mitigation

8.1 Dust Controls

8.1.1 Construction Dust

WMNZ has proposed a condition to develop a Construction Management Plan (CMP) and an Earthworks Management Plan (EMP) to be submitted to GWRC for approval at least 10 working days prior to any work commencing. Together, the CMP and EMP will provide management procedures to mitigate the potential for adverse effects of dust from the construction phase of the project on sensitive receptors. The plans will include the following information:

- Duration and timing of construction activities;
- Volume and frequency of heavy vehicle movements;
- Complaints response procedures;
- Covering of soil and other material leaving site;
- Cleaning procedures for all vehicles leaving the site to remove dust;
- Spill response procedures; and,
- Visual dust monitoring procedures.

8.1.2 Operational Dust

Mitigation measures to reduce the risk of adverse effects of dust from the proposed WMNZ operations include:

- Limiting vehicle speeds within the site to 15 kph;
- The site will be kept clean and free of waste material and dust by way of regular sweeping of the transfer areas and routes, and hosing down of clear floor areas in the transfer buildings at the end of each day;

- All handling of waste material will occur within the enclosed RTS and B&C buildings;
- Waste acceptance criteria will exclude dusty loads from the site, and excessively dusty loads identified at the weighbridge inspection will be rejected.
- Potentially dusty loads will be dampened down with water prior to unloading and/or during storage.

8.2 Odour Controls

Odour mitigation and management procedures will include:

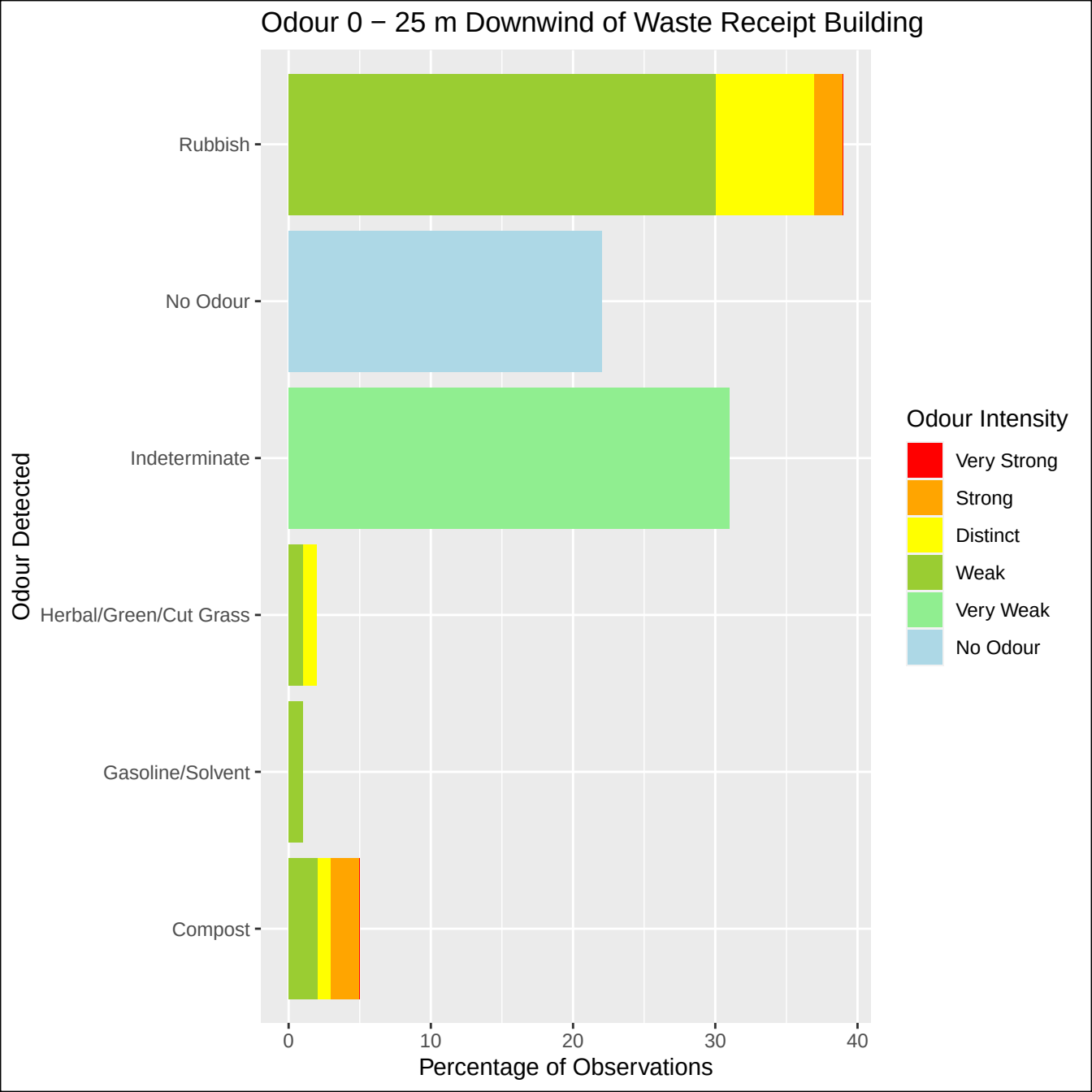
- Non-acceptance of odorous loads from the site. Signs specifying this will be clearly posted at the entry to site. Account customers are required to sign a Waste Acceptance Policy;
- The weighbridge operator scrutinises all incoming loads for odour content. Loads which, in the opinion of trained and experienced staff, are unacceptably odorous are not permitted entry;
- Odorous material, which is inadvertently received, will be covered with soil or other inert material and removed from site as soon as possible;
- Wash down water (or trade waste) will be stored within underground storage pits onsite, and cleaned out on a regular basis;
- Working floors within the buildings will be swept clean on a regular basis.
- Use of overhead deodorant sprays or odour cannon within the RTS building;
- Waste from the RTS building will be removed from the site within 24 hours Monday to Friday, and within 48 hours for waste accepted on Saturdays. Waste will be removed within 72 hours when landfill operating hours prevent this (e.g. public holidays on Christmas New Year's Day, and Good Friday);
- Empty waste containers will be washed and if necessary, will be treated with a deodorising chemical;
- Trucks and bins removing refuse from site will be covered; and,
- In the event that an odour complaint is received the site supervisor will undertake an odour investigation of the site using the in-house incident report system.

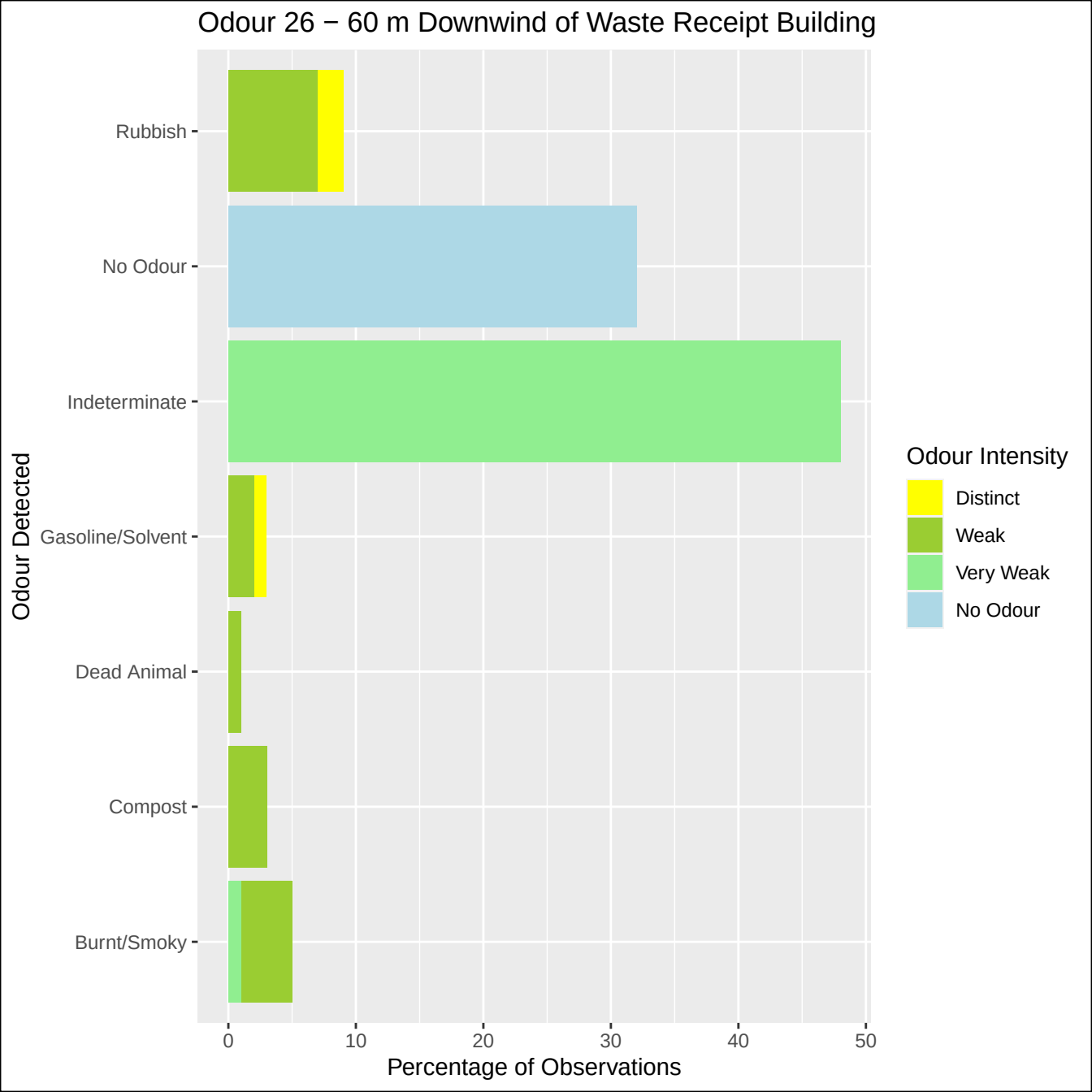
WMNZ has prepared a draft OMP documenting the procedures that will be followed to ensure that the potential for effects of odour is adequately managed at the site. A copy of the draft OMP is provided in Appendix B.

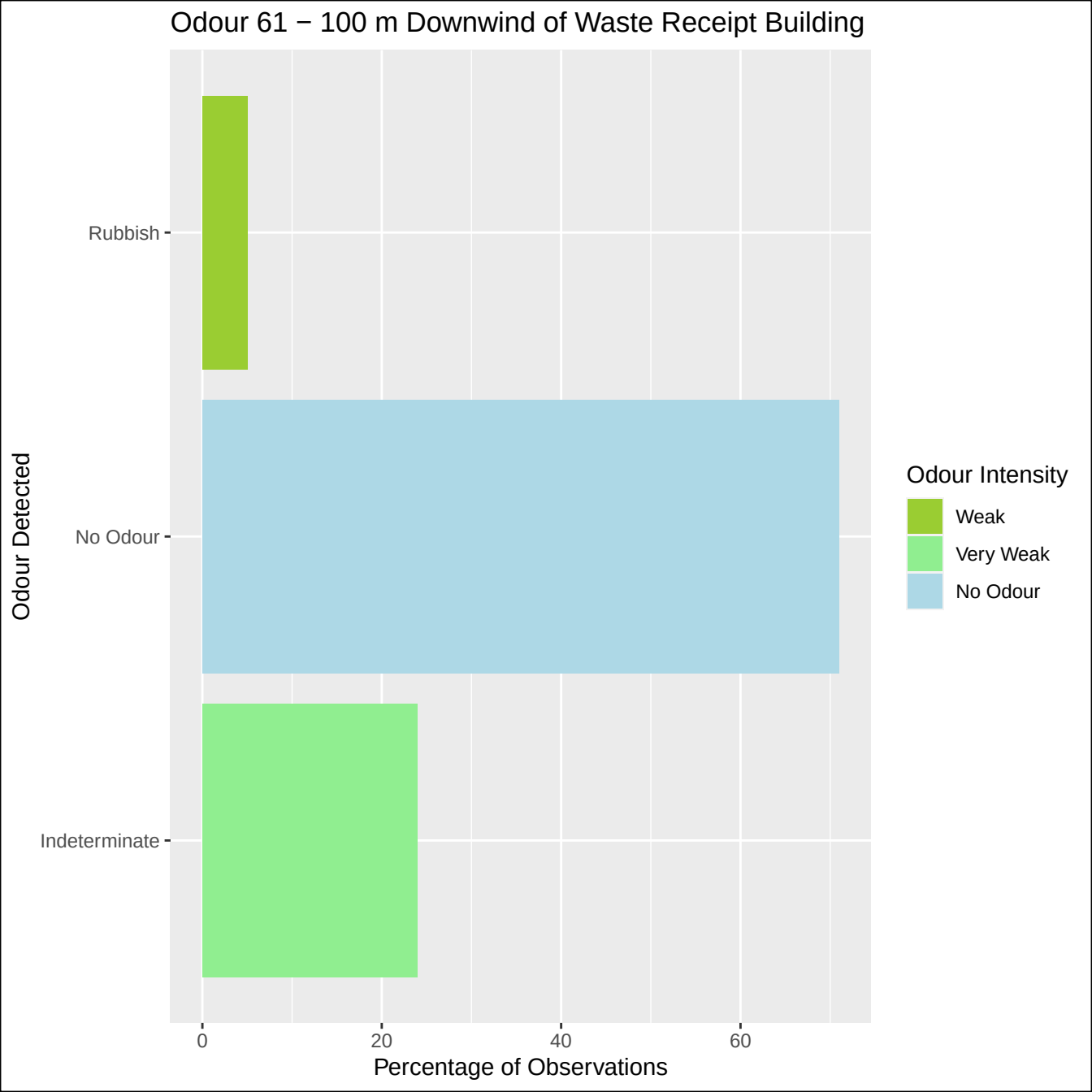
9.0 Conclusion

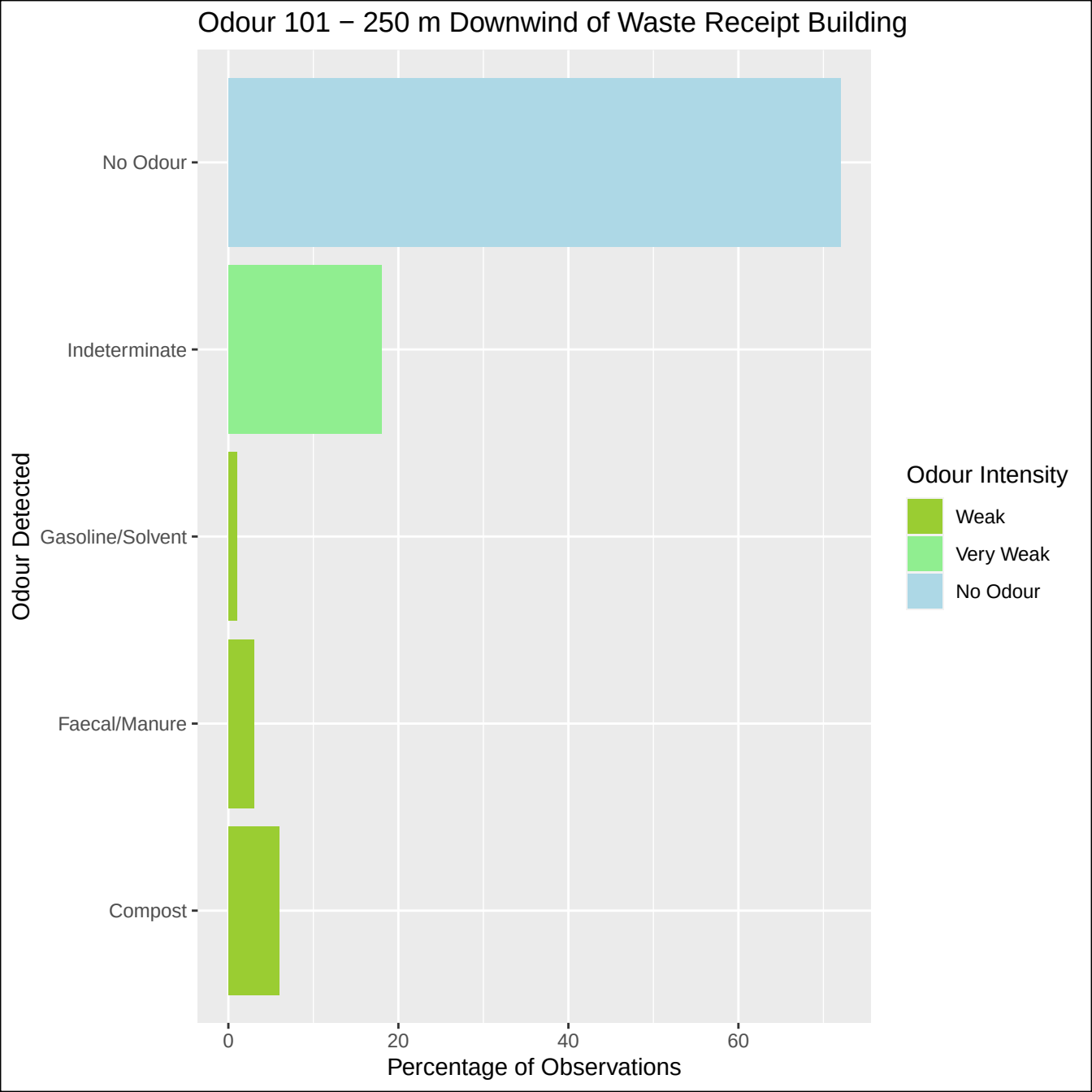
PDP has assessed the potential effects of dust and odour from the proposed WMNZ site within the Te Karearea development having regard to the FIDOL factors. Considering the proposed site management and mitigation for odour and dust, PDP concludes that there is a low likelihood that the construction and operation of the proposed WMNZ site will result in dust or odour beyond the site boundary that would be considered offensive or objectionable to the extent that there is an adverse effect. On this basis, PDP considers that the proposal will comply with the permitted activities of the Hutt City District Plan.

Appendix A: Hamilton RRP Odour Observation Summary


Odour 0 − 25 m Downwind of Waste Receipt Building
Odour Detected
Rubbish
No Odour
Indeterminate
Herbal/Green/Cut Grass
Gasoline/Solvent
Compost
0
10
20
30
40
Percentage of Observations
Odour Intensity
Very Strong
Strong
Distinct
Weak
Very Weak
No Odour


Odour 26 − 60 m Downwind of Waste Receipt Building
Odour Detected
Rubbish
No Odour
Indeterminate
Gasoline/Solvent
Dead Animal
Compost
Burnt/Smoky
0
10
20
30
40
50
Percentage of Observations
Odour Intensity
Distinct
Weak
Very Weak
No Odour


Odour 61 − 100 m Downwind of Waste Receipt Building
Odour Detected
Rubbish
No Odour
Indeterminate
0
20
40
60
Percentage of Observations
Odour Intensity
Weak
Very Weak
No Odour


Odour 101 − 250 m Downwind of Waste Receipt Building
No Odour
Indeterminate
Gasoline/Solvent
Faecal/Manure
Compost
Odour Detected
0
20
40
60
Percentage of Observations
Odour Intensity
Weak
Very Weak
No Odour

Appendix B: Draft Odour Management Plan

Draft Odour Management Plan – Manor Park Resource Recovery Park

Version 1 – for internal review

Introduction

The purpose of this plan is to document how odour from the proposed Manor Park Resource Recovery Park will be minimised and managed so that it does not create nuisance off-site.

This plan is a draft document only. It will be finalised should Hutt City Council deem resource consent is warranted, to reflect relevant conditions of consent.

Prevention of Odorous Wastes

There are three potential sources of odorous waste,

- Waste from commercial customers
- Waste from municipal collection
- Waste that members of the public bring to the site.

At Source – Commercial Customers

Waste Management have signed agreements with all their commercial customers in which it is clearly stated that no highly odorous waste can be placed in the commercial bins. This is also followed up by continual education and if necessary reinforcement of contractual obligations if odorous wastes are discovered.

At the Weighbridge

If the driver or weighbridge operator suspects that the waste load from municipal collection or a load being dropped off by a member of the public is highly odorous, it is inspected before being off-loaded and if unacceptable is rejected and diverted to an approved landfill. If this option is not possible, for example,the landfill is closed, the waste is off loaded inside the refuse transfer station building, sprayed with odour suppressant, covered over with inert soil and kept secure until it can be taken directly to landfill.

Odour - Potential Sources & Controls

The potential sources of odour and control methods are summarised in the table below.

No	Odour source	Control methods
1.	Odorous waste loads	• Weighbridge operator (and/or driver) to assess odour from loads entering the site, and reject excessively odorous waste upon arrival at the weighbridge • Known odorous waste to be prioritised for immediate disposal

No	Odour source	Control methods
		• All putrescible waste to be covered over with inert waste if stored overnight • No odourous containers are to be left outdoors over night. • Customer agreements and education - no excessively odorous waste will be allowed. Customer to be informed and educated to prevent re-occurrence
2.	Odour generated from indoor tipping floors and wastes in the main buildings (MRF and RTS buildings).	• Minimisation of the retention time on the floor for all odorous waste • Wash away any standing water into the catchpits • Off-loading to take place as far as practically possible from the main building's open doors • Odour suppressant chemicals to be kept available on site at all times and used locally if and when required. • Odour cannon or overhead fog sprayers (or method that achieves a similar outcome) to be used within RTS building. • Rapid coverage of odorous waste with inert material and removal from site • Working floor to be swept clean on a continuous basis • Loading procedure in place to ensure truck haulage entry door remains closed unless truck is entering/exiting building
3.	Odour from wastes stored in containers stored inside the Transfer Station building	• Waste removed within 24 hours of receipt (or as soon as practically possible). In exceptional circumstances (ie. landfill closed over a long weekend) waste will be removed within 72 hours
4.	Odour overnight from filled transporters that are ready for removal in the morning	• Transport-ready bins will be parked inside the transfer station building overnight
5.	Empty waste bins	• Any empty waste containers that are found to be generating excessive odour will be treated with a deodorising chemical or transported off site to a consented facility to be washed out
6.	Stagnant water ponding on site	• Ongoing grounds maintenance
7.	Trade waste chambers, catchpits, screens and separator tanks	• Regular inspection and maintenance • Cleaned out regularly
8.	Odorous illegal waste loads	• Wastes will be intercepted at the weighbridge and not permitted to enter the site
9.	Fly-tipped material outside the gate	• Isolated loads of fly-tipped waste close to the gate that meets the acceptance criteria will be picked up disposed of

No	Odour source	Control methods
		• Hutt City Council will be notified of any waste that is unacceptable and will arrange for disposal to an appropriate facility
10.	Any other odour sources	• Prompt investigation of incident and corrective action
11	Spill Management	• In the event of a spill from trucks a water tanker will be available on site to washdown road spills and prevent odour from lingering. • Any spill will be picked up/ cleaned as soon as possible.

Odour Control Devices

A odour cannon and/ or an overhead fog system will be available for use in all buildings where odour may be present. A high-pressure fogging solution is used by the odour cannon. The odour suppression device creates a fog out of water and an odour neutralising chemical solution, encapsulating, or eliminating odour before it drifts off-site.

Monitoring

Waste Management shall ensure that there is no offensive or objectionable odour beyond the property boundary.

Odour issues are by their nature immediately apparent to staff who respond to this form of monitoring by implementing the 'control methods' as described above.

Reporting and Record-Keeping

Issue	Reporting Process	Record Keeping
Odour complaint	Company in-house incident report system	Company in-house recording and reporting of incidents
Odour equipment maintenance		Records to be kept of regular maintenance of odour cannons/ overhead fog systems. Rolling record to be kept of quantities of odour suppressant chemicals to ensure they are always on hand.

General Comment

It is not in WM's interests to store any waste or recyclable materials on site for any length of time. It is normal operating practice for Waste Management to remove all waste or recyclables from their transfer stations to landfill, cleanfill or the recycling market as soon as possible.