



memorandum

TO Christchurch City Council FROM [REDACTED]
DATE 15/03/2023
RE Living Earth Odour Monitoring: 1st March NONC Review

1.0 Background

Living Earth Limited (Living Earth), owned by Waste Management, operates an organics processing plant and composting facility located at 40 Metro Place, Bromley, Christchurch (the LE Site). Living Earth's air discharges are subject to the conditions attached to air discharge consent CRC080301.1 ("the consent") from Canterbury Regional Council (CRC) to discharge contaminants (odour and dust) to air.

Specifically, Condition 27 of the consent states that:

"The discharges of air shall not cause odour or dust which is offensive or objectionable beyond the boundary of the site on which this consent is exercised."

While Living Earth operates the composting facility, Christchurch City Council (CCC) holds the consent.

Pattle Delamore Partners Limited (PDP) has been providing assistance to CCC and Living Earth regarding the assessment and management of odour effects from the site. This has included regular odour scouting. The objectives of the odour scouting are to:

- ∴ Correlate the intensity and characters of observed odour (where possible) to:
 - Odour sources in the Bromley area.
 - Specific activities and/or sources on the LE Site.
 - Meteorological conditions.
 - Time of day.
- ∴ Undertake FIDOL assessments to determine if offensive and objectionable odours are present beyond the site boundary.
- ∴ Corroborate the content of community (i.e., Smelt-It) complaints.

On the 1st March 2023, Environment Canterbury (ECan) issued a Notice of Non-Compliance (NONC) to Waste Management, citing:

"Odour observed in residential area downwind of site."

This memorandum provides PDP's summary and review of the NONC, and details of observations of off-site odour scouting undertaken by PDP staff on the 1st of March 2023.

2.0 Review of the 1st March 2023 Notice of Non-Compliance

2.1 NONC

The NONC was issued at 12:41 on the 1st March 2023. The NONC stated that the purpose of the inspection was in response to a complaint. On the 2nd March ECan provided the two odour complaint investigation forms that resulted in the issuing of the NONC¹. The odour complaint investigation forms are appended to this memorandum.

Both compliance officers ([REDACTED] - Scout 1 and [REDACTED] - Scout 2) undertook a 10-minute odour observation starting at 10:24 at Woburn Street.

Odours reported in the 10-minute assessments are summarised in **Table 1**. Character descriptions are not provided for each odour observation. In some cases, gaps between recorded descriptions of character are explicitly filled with ditto marks. In other instances, this is not made clear. Scout 1 does not provide an odour character for the first two minutes, despite weak (2) odours being identified (character is given for weak (2) odours elsewhere in the same assessment). Odour intensity and character has been summarised in the table below. For this reason, odour character has only been noted in **Table 1** when explicitly stated in the odour complaint investigation forms.

As ECan have assigned character to very weak (1) odours and haven't always assigned a character to weak (2) and distinct (3) odours in the assessment. This implies they are applying the odour intensity scale differently to PDP (Section 4.2). The ECan observations should therefore not be interpreted according to the PDP intensity definitions.

Table 1: PE234069: 10-Minute Odour Observations

Intensity	Scout 1		Scout 2	
	Frequency	Character (# of times recorded)	Frequency	Character (# of times recorded)
0	7%	n.d.	5%	n.d.
1	20%	n.d.	32%	3× compost 1× compost/sweet 1× diesel 14× not explicitly defined
2	28%	1× rotten sewer 16× not explicitly defined	57%	8× compost 1× compost/sweet 2× compost/rubbish 1× compost/silage 1× diesel 21× not explicitly defined
3	45%	6× compost	7%	2× compost

¹ ECan record: PE234069

Table 1: PE234069: 10-Minute Odour Observations

Intensity	Scout 1		Scout 2	
	Frequency	Character (# of times recorded)	Frequency	Character (# of times recorded)
		1× rotten 2× rubber 2× chemical 1× paint 1× industrial 1× rotten sewer 13× not explicitly defined		1× compost/sweet 1× compost/silage
4	0%	n.d.	0%	n.d.
5	0%	n.d.	0%	n.d.
6	0%	n.d.	0%	n.d.

Notes: n.d. denotes no odour character recorded against this intensity

Odour descriptors were predominately compost. Other descriptors (e.g., rubber, paint, chemical and industrial) were also identified by ECan. PDP (on other days) at Woburn St or along Maces Rd during proactive odour scouting have identified odours of a similar character, these are associated with other businesses in the industrial zone.

There appears to be a difference in how the investigating officers apply the intensity scale, with Scout 1 predominately categorising the odour as distinct (3) and Scout 2 as weak (2).

After completing the 10-minute assessment, both compliance officers also undertook a 360° assessment to ascertain whether the odours were originating from Living Earth. The observations of the 360° assessments are summarised in **Table 2**.

Table 2: PE234069: 360° Assessment Summary

Site	Location	Scout 1 - Summary	Scout 2 - Summary
1	Woburn St	2-3 compost odour	-
2	Maces Rd (#5 to #33)	0-3 compost and chemical odours	-
3	Dyers Rd (#187 to #265)	0-3 compost odour, sometimes sweet smelling	3 compost/soy sauce odours
4	Track between WW pond and LE Site	No compost odour, faint pond smell	-
5	North of Living Earth	-	1 pond/WWTP/sulphur
6	East of Living Earth	-	1 intermittent pond-type odours

Notes: Locations were not provided for two of Scout 2's observations, this is not expected to materially affect the review of the assessment.

In general, the compliance officers recorded highly variable odours (predominately compost in character). The odour was present downwind of the site, but not upwind indicating the LE site was the primary source.

The compliance officers were then present on the LE site from 12:47² on the 1st March to inspect the site, where they observed the main biofilter and stood downwind of the outdoor piles of unscreened compost, fines and tailings.

ECan’s observations are discussed further, along with other factors in Section 6.

2.2 Smelt-It

Four Smelt-it complaints were received on the day.

Table 3: Insert Table Title

Report	Time	Windspeeds	Wind Directions	Intensity	Character
1	09:26	5.2 - 6.3 m/s	NE - ENE	6	Compost, Silage, Herbal, Cut Grass, Faecal, Sickening
2	11:11	6.3 - 7.5 m/s	ENE - E	6	Compost, Silage, Herbal, Cut Grass
3	11:58	6.8 - 7.5 m/s	ENE - E	6	Compost, Silage, Herbal, Cut Grass
4	15:03	7.4 - 8 m/s	ENE - E	6	Rubbish, Compost, Silage, Herbal, Cut Grass

Notes: Windspeed and wind direction for the preceding hour as observed at the NIWA Bromley AWS site.

Locations of the Smelt-It reports have not been made available by ECan on the basis of privacy. PDP are therefore unable to use wind data to assess the potential sources of the odour attributable to each complaint. Compost is identified as an odour character in all reports.

The odour intensity reported in the Smelt-It reports (6) was not observed by PDP or ECan staff on the day. While not invalidating the detection of odour by the reporter(s), the intensity reported may not be consistent with the scale adopted by PDP.

3.0 Site Activities on the 1st March 2023

An operational summary of the site during the period when ECan were investigating the odour is:

- ∴ Fines were being removed from the site;
- ∴ Hire screen 1 (outdoor screen) was operating;
- ∴ The main screen was being cleaned;
- ∴ Trucks were depositing kerbside organics (KSO) in the OPP processing hall; and
- ∴ Maintenance being done on the large biofilter (which treats the OPP air). The biofilter fan was off.

² This time was provided by Living Earth.

PDP were present in Bromley later in the day (approximately 16:50 to 18:15). An operational summary of the site during the period when PDP were undertaking proactive odour scouting is:

- ∴ Fines were being removed from the site (no change from earlier);
- ∴ Hire screen 1 (outdoor screen) was operating (no change from earlier);
- ∴ The main screen was being cleaned (no change from earlier); and
- ∴ Exposed areas of the biofilter had been covered with tarpaulins and the biofilter fan restarted since 15:00.

Living Earth have provided a summary of the work involved with the biofilter maintenance:

- ∴ When the biofilter fan is off, air is circulated through the tunnels by the tunnel fans and the small OPP axial extraction fan is still running. Water vapour builds up in the OPP;
- ∴ OPP extraction is very low (the axial fan cannot maintain the OPP at negative pressure). Doors are kept closed where practical; and
- ∴ The biofilter fan is switched on and off during the day to facilitate different activities during the biofilter repair process. At the time of the ECan visit the fan was off as work was occurring in the vents of the biofilter.

To summarise, during PDP's odour scout, site activities were similar to the window when ECan were present, with the exception of the activities occurring around the biofilter maintenance.

The site activities are discussed further, along with other factors in Section 6.

4.0 PDP Odour Scouting

4.1 General Methodology

Odour scouting is undertaken by PDP odour scouts. To ensure consistency between scouts, PDP undertakes the following:

1. Scouts periodically undertake parallel odour assessments with each other in the field.
2. Scouts periodically visit the LE Site and familiarise themselves with the character of the odour from the various onsite sources.
3. Scouts undergo nose calibration via direct dilution olfactometry according to the requirements of AS/NZS 4323.3:2001 Section 9.7.2.

During an assessment, scouts walk at a comfortable pace through the area downwind of the LE Site, making note of odours detected. PDP has defined a series of observation points in the area where the scout makes more detailed observations, these are shown in **Figure 1**. The exact route and observation points visited in an assessment depend on the meteorological conditions (wind speed and direction) and the odour (if any) detected by the scout on the route.

Sites H and M are immediately downwind of the site, located along Dyers Road with sites G and F. Sites I, J, K, and N are located in the heavy industrial zone. Sites A, C, B, D, and P are located in the residential zone around Bayswater Reserve. Sites E, L, and O are located roughly along the residential-industrial boundary. In assessments, Sites E and O are used to represent the closest (to the LE Site) downwind edge of the residential zone. Site L is located in the general industrial zone - Site D is used as the closest (to the LE Site) downwind residential monitoring point in this area.



Figure 1: Odour Observation Locations

In key areas where odour is detected, or at known sensitive areas, a full 10-minute odour observation is taken. Where 10-minute observations are taken at a site, a FIDOL assessment is completed by the scout and a determination made as to whether the odour is offensive and objectionable.

Determinations made are necessarily the opinion of the odour scout at that time to the conditions they encounter. They are based upon observations in the field but may also include consideration of wider factors such as meteorological conditions and patterns of site activity when considering the potential for offensive and objectionable odour over longer time periods.

Each scout makes their determination with reference to other determinations made, both within PDP, and more widely amongst the air quality profession.

Summaries for each odour scout are included in Section 3.0. Detailed analysis of specific observations is included, where necessary, in Section 4.0. Results of all 10-minute odour observations are appended to this memorandum.

This memorandum presents the results of the odour scouting undertaken. This report does not analyse odour observation trends across time.

4.2 FIDOL Analysis

As per Ministry for the Environment’s (MfE) guidance, odours were assessed against the FIDOL factors to determine if they are offensive or objectionable. The FIDOL factors are:

- ∴ Frequency;
- ∴ Intensity;
- ∴ Duration;
- ∴ Offensiveness/Character³; and
- ∴ Location.

Odour intensity is reported on a scale of (0-6) as per the MfE’s Good Practice Guide for Assessing and Managing Odour. PDP applies the following descriptions to each odour intensity to ensure consistency between scouts:

- | | |
|----------------------|--|
| 0. No Odour: | No odour. |
| 1. Very Weak: | Odour detectable but character not recognisable. |
| 2. Weak: | Odour detectable and barely recognisable. |
| 3. Distinct: | Odour readily recognisable. |
| 4. Strong: | Odour is strong but not causing discomfort to assessor. |
| 5. Very Strong: | The odour causes some discomfort; assessor can remain in area but will consider leaving/altering breathing patterns. |
| 6. Extremely Strong: | The odour causes assessor to feel nauseous or compelled to leave the area. |

When determining whether odour is having an offensive or objectionable effect, odour scouts make their determination with respect to the FIDOL factors. No regulatory standard exists for the specific combination of FIDOL factors that do or do not constitute an offensive or objectionable odour. However, as a broad litmus test when making determinations at the Living Earth site, PDP scouts consider intermittently distinct (3) or continuous weak (2) odours of a negative hedonic tone (such as compost) to be offensive or objectionable in a residential zone.

Within a heavy industrial zone, there is a lower expectation of amenity as it pertains to odour.

Based on PDP’s understanding, this approach is generally consistent with that used by other air quality professionals.

4.3 1st March 2023 Results

Results of all 10-minute odour observations are appended to this memorandum.

The weather was clear, with a temperature of 18 °C and an easterly wind ranging from 6.7 m/s to 7.3 m/s as a 10-minute average. [REDACTED] was the PDP odour scout. The scout started at Site L (Woburn Street) and finished at Bromley Road. Broadly, the object was to collect a full cross-section of the area downwind of the LE Site. The odour scout route (purple dots) and key scouting locations are shown in Figure 2.

³ “It is preferable to refer to the character of an odour, rather than its ‘offensiveness’ to avoid confusion between the inherent characteristics of an odour (i.e., whether it is pleasant or unpleasant) and whether there is an ‘objectionable or offensive’ effect occurring as a result of exposure to odour.” (MfE GPG: Odour)



Figure 2: 1st March Odour Scout Route

Results from the odour scout are shown below. Entries within Table 4 that are highlighted blue denote locations within a residential zone and purple denotes locations within an industrial zone.

The scout was present in the area for just over an hour.

Table 4: 31st January Odour Scouting Summary

Site	Time	Observations
L	16:51	No odour detected.
L to E		No odour detected.
E		Weak (2) marine odour with a positive to neutral hedonic tone detected.
E to F		No odour detected.
G	17:01	FIDOL assessment completed. Very weak (1) odours of an indeterminate character were present 3% of the time. Weak (2) compost odour was present 33% of the time. Distinct (3) compost odour was present 63% of the time. Odour assessed as not offensive or objectionable.
G to H		Weak (2) to distinct (3) compost odour detected.

Table 4: 31st January Odour Scouting Summary

Site	Time	Observations
H	17:12	FIDOL assessment completed. Very weak (1) odours of an indeterminate character were present 47% of the time. Weak (2) compost odour was present 48% of the time. Weak (2) rubbish odour was present 2% of the time. Weak (2) cigarette smoke odour was present 2% of the time. Distinct (3) compost odour was present 2% of the time. Odour assessed as not offensive or objectionable.
H to I		No odour (0) to weak compost odour (2) detected.
I	17:29	FIDOL assessment completed. No odour was present 32% of the time. Very weak (1) odours of an indeterminate character were present 28% of the time. Weak (2) compost odour was present 37% of the time. Distinct (3) compost odour was present 3% of the time. Odour assessed as not offensive or objectionable.
I to N		Localised distinct (3) solvent odour detected.
N to I		Localised distinct (3) solvent odour detected.
I to J		No odour (0) to weak compost odour (2) detected.
J to K		No odour (0) to weak compost odour (2) detected.
K	17:43	FIDOL assessment completed. No odour was present 2% of the time. Very weak (1) odours of an indeterminate character were present 32% of the time. Weak (2) compost odour was present 20% of the time. Weak (2) odour of a negative hedonic tone resembling soil or manure was present 45% of the time. Distinct (3) odour of a negative hedonic tone resembling soil or manure was present 2% of the time. Odour assessed as not offensive or objectionable.
K to L		No odour (0) to weak compost odour (2) detected.
L to D		No odour detected.
D to Bromley Rd		No odour (0) to weak compost odour (2) detected.
Corner of Maces Rd & Bromley Rd	18:02	FIDOL assessment completed. No odour was present 78% of the time. Very weak (1) odours of an indeterminate character were present 8% of the time. Weak (2) compost odour was present 13% of the time. Odour assessed as not offensive or objectionable.

Except for the area around the corner of Maces Rd and Bromley Rd, compost odour was not detected in the residential zone. Intermittent, weak (2) compost odour was detected around the corner of Maces Rd and Bromley Rd. This intermittent odour was not offensive or objectionable.

Distinct (3) compost odour was detected through the industrial zone, typically with a frequency below 10%. The highest frequency of distinct (3) compost odour was found at Site G. Being in a heavy industrial zone, this odour was not offensive or objectionable for the location.

At Site K, the weak (2) to distinct (3) soil/manure smell encountered was unfamiliar to the scout and did not match the character of odours observed from the LE site previously. It was not observed along Dyers Rd or at Site N so may reflect another odour source in the industrial zone.

The character of the compost odour matched PDP’s experience with the odour generated by the outdoor material, namely the unscreened compost, oversize stockpiles and screened fines. The odour did not match PDP’s experience with the odour from the processing hall or associated biofilter.

The odour scout observations are discussed further, along with other factors in Section 6.

5.0 Meteorology on the 1st March 2023

The meteorology, as measured at NIWA’s Bromley EWS (on a 10-minute basis) for the day of the 1st March 2023 is presented in **Figure 3**.

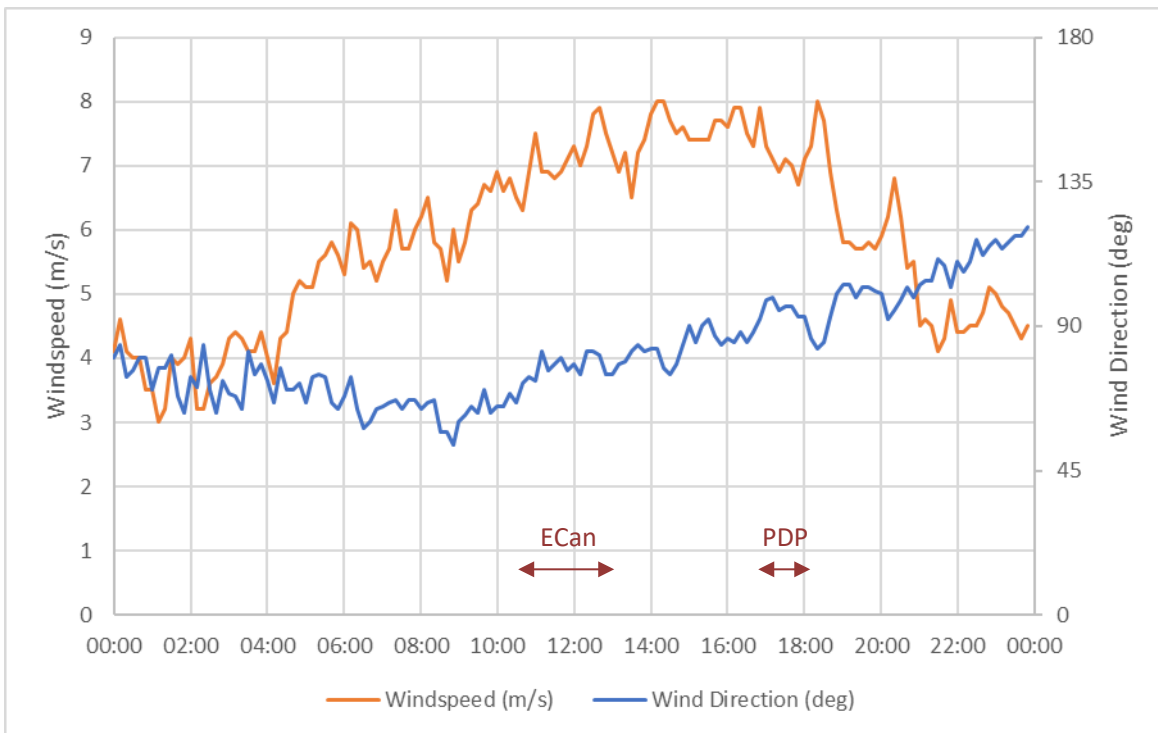


Figure 3: 1st March 2023 - Bromley EWS Meteorology

Windspeeds were fairly consistent over the course of the day:

- ∴ Ranging between 5.5 m/s and 8 m/s during daylight hours, and
- ∴ Approximately 4 m/s in the early morning and late evening.

The wind started from an ENE direction (approx. 70°) and gradually shifted towards ESE over the course of the day.

While ECan were present in the Bromley area, conditions were approx. 7 m/s ENE winds.

While PDP were present in the Bromley area, conditions were approx. 7.5 m/s E winds.

Meteorology is discussed further, along with other factors in Section 6.

6.0 Discussion

Several sources of information are available when reviewing odours in Bromley on the 1st of March, these include:

- ∴ Two odour complaint investigation forms completed by ECan compliance officers, and the subsequently issued NONC;
- ∴ Site operational summaries provided by Living Earth;
- ∴ Proactive odour scouting from PDP staff;
- ∴ Smelt-It reports; and
- ∴ Meteorological data from NIWA's Bromley EWS.

The odour complaint investigation forms identified a range of weak (2) and distinct (3) industrial and compost odours at Woburn St at approx. 10:30.

Four Smelt-It reports, between 09:30 and 15:00 reported compost odours in the Bromley area.

A range of activities were occurring at the LE site including:

- ∴ Routine operations such as maintenance of the main screen and loadout of fines; and,
- ∴ Non-routine operations such as outdoor screening and maintenance of the biofilter.

During biofilter maintenance the biofilter fan would have been switched on and off periodically, with potential for fugitive odours from the tunnels and processing hall. The biofilter fan was running continually by 15:00.

PDP odour scouting identified:

- ∴ Distinct compost odours up to 550 metres from the LE site within the industrial zone (as measured from the main screen);
- ∴ No distinct compost odours in the residential zone; and
- ∴ Intermittent weak (2) compost odour (not offensive or objectionable) in the residential zone at Bromley Rd.

The meteorology on the day (during the period of the complaints) was 7 to 8 m/s. During the period ECan were onsite, wind directions were ENE. During the period PDP were onsite, wind directions were E.

The shift in wind direction from ENE to E will have pushed the odour plume through the industrial area when PDP were on-site as opposed as towards Woburn St when ECan were present.

PDP observed intermittent distinct (3) compost odour (that might be offensive or objectionable in a residential zone) out to 550 metres downwind⁴ in the industrial zone. Bromley Rd is 1,090 metres from the site; PDP observed an infrequent weak (2) compost odour at that location. Woburn St is 920 metres from the site; if the wind direction was instead towards Woburn St, the odour levels would be expected to be similar to the odour levels observed at Bromley Rd.

⁴ Using the main screen as a fixed reference to measure distances from the LE site.

Therefore, the variance between ECan's observations and PDP's observations are unlikely to be solely the result of changing wind directions. Other causes include:

1. A difference in how PDP and ECan classify odour intensity; and,
2. The change in the stage of the biofilter maintenance (i.e., uncovered with intermittent fan operation vs covered with fans working normally).

As discussed in Section 2.1, ECan appear to assign odour intensity differently than PDP. Where ECan have recorded an odour character, the odour must be at least a weak (2) odour under PDP's classification scheme as the character can be recognised. Therefore, the odour frequency and intensity reported by ECan at Woburn St is likely to have been higher than observed by PDP at Bromley Rd.

The other cause is the potential for the strength of the odour discharge to have changed over the day. Considering the work on the biofilter that was occurring, it is likely that odour discharges from the site were varied over the course of the day.

ECan compliance officers note on several occasions a sweet descriptor to the compost odour, which could imply an element of biofilter⁵ odour in the odour detected offsite.

7.0 Summary

To summarise:

- ∴ PDP were not present during the window when the NONC was issued.
- ∴ PDP were present later in the day, by which time site activities had changed and the wind direction has shifted to an easterly.
- ∴ During the period PDP were present, odours in the residential zone and industrial zone (where detected) were not offensive or objectionable.
- ∴ During the period PDP were present, odours in the industrial zone that might have been considered offensive or objectionable in a residential zone were limited to within 550 metres of the LE site.
- ∴ ECan's observation of offensive or objectionable odour occurred approximately 920 downwind of the LE site at an earlier time.
- ∴ A range of industrial and compost odours were detected by the ECan compliance officers in the residential zone which they deemed offensive or objectionable.
- ∴ ECan may be applying the odour intensity scale different to PDP, as such PDP cannot directly review the robustness of their conclusions based upon their recorded odour intensities.
- ∴ The maintenance of the biofilter may have been a contributing factor (not the only source) to odour off-site and may explain the difference in odour experienced by the PDP scout and the ECan compliance officers.

PDP do not consider the NONC could be challenged on the basis of our observations later in the day. This is because the potential for variation in the strength of odour emissions from the site (between the periods ECan and PDP were in the area) is too high.

⁵ The biofilter has a sweet odour at times.

PDP do not consider the NONC could be challenged on the basis of the odour observations recorded by ECan compliance officers. This would involve establishing that PDP scouts would have made a different determination as to the offensiveness of the same odour. This fact cannot be established as the odour intensity scale is applied differently by ECan compliance officers and PDP scouts were not present concurrently.

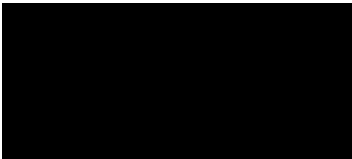
8.0 Limitations

This memorandum has been prepared by Pattle Delamore Partners Limited (PDP) on the basis of information provided by Christchurch City Council and Living Earth, who provided details about site activities. PDP has not independently verified the provided information and has relied upon it being accurate and sufficient for use by PDP in preparing the memorandum. PDP accepts no responsibility for errors or omissions in, or the currency or sufficiency of, the provided information.

This memorandum has been prepared by PDP on the specific instructions of Christchurch City Council for the limited purposes described in the memorandum. PDP accepts no liability if the memorandum is used for a different purpose or if it is used or relied on by any other person. Any such use or reliance will be solely at their own risk.

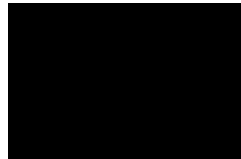
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Prepared by



Senior Environmental Engineer

Reviewed by



Technical Director

Appendix A: PE234069 - Odour Complaint Investigation Forms

Environment Canterbury - Odour Complaint Investigation Form

Site Being Monitored: <u>LEL</u>	Assessors Name: [REDACTED]
Location of Assessment: <u>Woburn St</u>	Date: <u>1/3/23</u>
PE Number: <u>PE234069</u>	Reason for Investigation: COMPLAINT / PROACTIVE

INITIAL IMPRESSIONS

Time of the initial impression: <u>10.17</u>	Character: <u>compost smell</u>
Odour intensity: <u>2</u>	General hedonic tone: <u>-1</u>
	Plume width (if known):

Complainant Location Assessment

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

Start time: 10:24

Intensity			Character/notes			Scale of Intensity	
1st min	0	1				6	Extremely strong
	10	1				5	Very strong
	20	0				4	Strong
	30	0				3	Distinct
	40	0				2	Weak
2nd min	0	1				1	Very weak
	10	2				0	No odour
	20	2					
	30	2					
	40	1					
3rd min	0	2					
	10	3	compost				
	20	3					
	30	3					
	40	3	rotten rubber				
4th min	0	3					
	10	1					
	20	0					
	30	1					
	40	3	chemical				
5th min	0	3	paint				
	10	2					
	20	1					
	30	1					
	40	3	compost				
6th min	0	3	compost				
	10	2					
	20	1					
	30	1					
	40	2					
7th min	0	3	industrial				
	10	2					
	20	1					
	30	2					
	40	3	compost				
8th min	0	3	"				
	10	3					
	20	3					
	30	3					
	40	3					
9th min	0	2					
	10	2					
	20	2					
	30	2					
	40	3	rotten sewer				
10th min	0	3	"				
	10	3					
	20	3					
	30	3	compost				
	40	3					

Weather Data	
Wind direction:	<u>NE</u>
Wind velocity:	<u>2-3m⁻¹</u>
Cloud cover:	<u>minor</u>
Temperature:	<u>18°C</u>

General Hedonic Tone	
-4	Extremely unpleasant
-3	
-2	
-1	
0	Neutral
1	
2	
3	
4	Extremely pleasant

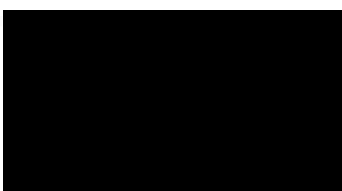
Based on your assessment on this occasion, which of the following applies:

- I did not detect any odour
- 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 not be objectionable, UNLESS 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. If not, detail reason:
- Aerial photo showing location of assessment attached
- Are there potential witness statements to obtain YES / NO

REMARKS:



Odour Plume and 360 Degree Assessment

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

Site 1: B Noburn Street

Wind direction: NE Wind strength: _____ Wind stability: _____ GPS Loc: _____

Odour intensity: 2-3 Odour character: compost

Comment: _____

Site 2: Maces Road N#5 to 33

Wind direction: NE Wind strength: _____ Wind stability: _____ GPS Loc: _____

Odour intensity: 0-3 Odour character: compost + chemical smell from 16 Maces Rd.

Comment: no odour at 5 Maces road - towards 33 compost + chemical smell.

Site 3: Dyers Road 187 to 265

Wind direction: NE Wind strength: _____ Wind stability: _____ GPS Loc: _____

Odour intensity: 0-3 Odour character: compost - sweet smelling at times

Comment: _____

Site 4: Track between water treatment pond & Metro Place

Wind direction: NE Wind strength: _____ Wind stability: _____ GPS Loc: _____

Odour intensity: no odour Odour character: No

Comment: could smell faint pond smell but not smell of report.

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: _____

Onsite Assessment

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

Source Identified: Living Earth, 40 Metro Place, Bromley

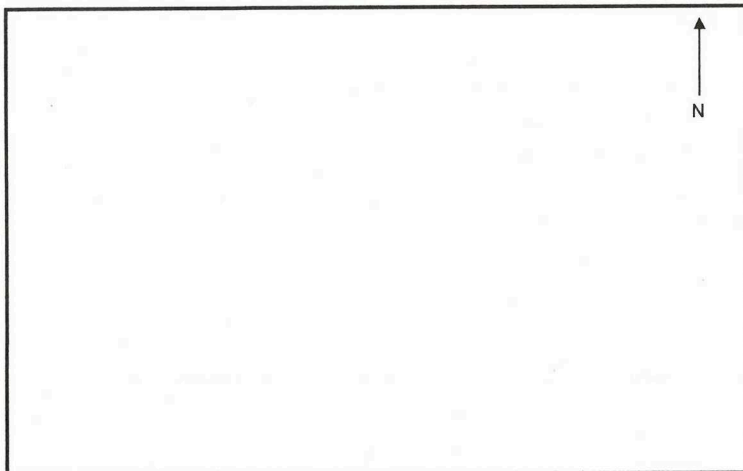
Staff spoken to: _____ Position: Branch Manager

Current site operations: Compost producing business from waste collected by CCL. organic

Reason/explanation given for odour: bio reactor is being changed/repaired started 27/2/2023.

Other comments: _____

When downwind of compost works can smell reported smell



Site Sketch (If Required)

Environment Canterbury - Odour Complaint Investigation Form

Site Being Monitored: LEL
 Location of Assessment: 3B Woburn
 PE Number: PE234075 & PE234069

Assessors Name: [REDACTED]
 Date: 1/3/23
 Reason for Investigation: COMPLAINANT / PROACTIVE

INITIAL IMPRESSIONS

Time of the initial impression: 10:17
 Odour intensity: Weak

Character: Compost/Rubbish/silage
 General hedonic tone:
 Plume width (if known): ~150m (determined on google maps at off. ce based on notes.)

Complainant Location Assessment

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

Start time: 10:24

	Intensity	Character/notes
1st min	0	2 low post/dt compost
	10	1 "
	20	1 "
	30	2 "
	40	2 "
	50	1 "
2nd min	0	2 sweet/sickly compost
	10	2
	20	1
	30	2
	40	1
	50	3 Compost
3rd min	0	2
	10	2
	20	2
	30	2
	40	3 burnt compost
	50	2 Compost
4th min	0	2
	10	1
	20	0
	30	2 Diesel odour
	40	1 " "
	50	0
5th min	0	1 Compost/sweet
	10	1
	20	2 Compost
	30	2
	40	2 Compost/rubbish
	50	2 " "

	Intensity	Character/notes
6th min	0	2
	10	1
	20	1
	30	1
	40	1
	50	0
7th min	0	1
	10	2 Compost/silage
	20	2 Compost
	30	2
	40	3 Compost/silage
	50	2
8th min	0	2
	10	1
	20	2
	30	2
	40	2
	50	2
9th min	0	1
	10	1
	20	1
	30	2
	40	2 Decomposing grass
	50	3 Sweet sickly compost
10th min	0	2
	10	1
	20	2
	30	2
	40	2
	50	2 Compost

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

Weather Data	
Wind direction:	<u>NE</u>
Wind velocity:	<u>2-3 ms⁻¹ fairly consistent.</u>
Cloud cover:	<u>minimal clouds.</u>
Temperature:	<u>18°C</u>

General Hedonic Tone	
-4	Extremely unpleasant
-3	
-2	
-1	
0	Neutral
1	
2	
3	
4	Extremely pleasant

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

- I did not detect any odour
- 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 not be objectionable, UNLESS 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. If not, detail reason:
- Aerial photo showing location of assessment attached
- Are there potential witness statements to obtain YES/ NO

REMARKS:

Odour Plume and 360 Degree Assessment

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

Site 1: 187 Dyers Road

Wind direction: ~ NE Wind strength: ~ 3-4 ms⁻¹ Wind stability: stable GPS Loc: 43°32'30.35"S 172°42'2.83"E

Odour intensity: 3 Odour character: Compost/Sweet almost soy sauce type smell.

Comment: Steady breeze & consistent odour.

Site 2:

Wind direction: ~ NE/E Wind strength: Steady breeze Wind stability: Stable GPS Loc: 43°32'12.67"S 172°42'6.65"E

Odour intensity: No odour detected Odour character: NA

Comment:

Site 3: Nook of living earth.

Wind direction: ~ NE/E Wind strength: Steady breeze Wind stability: stable GPS Loc: See map on notes

Odour intensity: V weak Odour character: Pond/wastp/sulphury

Comment: intermittent pond type small came and went

Site 4: East of living earth

Wind direction: ~ NE/E Wind strength: Steady breeze Wind stability: Stable GPS Loc: see map.

Odour intensity: V weak Odour character: intermittent pond type odours.

Comment: as site 3

Site 5: ~ NE/E

Wind direction: ↗ Wind strength: Steady breeze Wind stability: Stable GPS Loc: See map.

Odour intensity: V weak Odour character: Pond/sulphury/stale water.

Comment:

Site 6:

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

Odour intensity: Odour character:

Comment:

Onsite Assessment

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

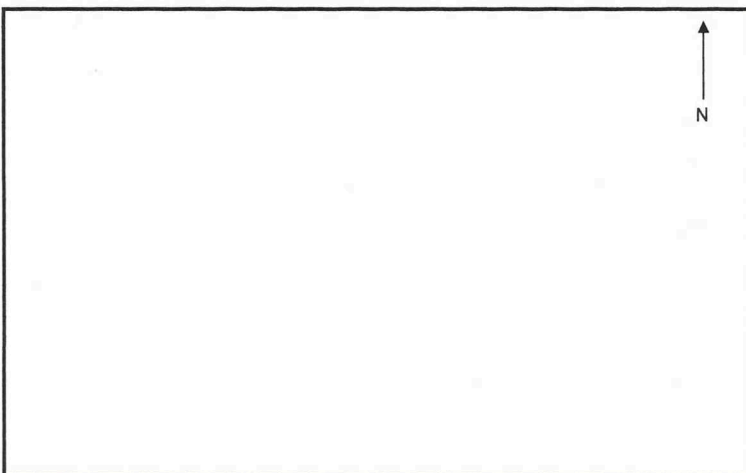
Source Identified: living Earth.

Staff spoken to: [REDACTED] Position: Branch manager.

Current site operations: Biobfilter remediation works underway as well as usual processing underway.

Reason/explanantion given for odour: possibly to do with remediation work otherwise normal operation

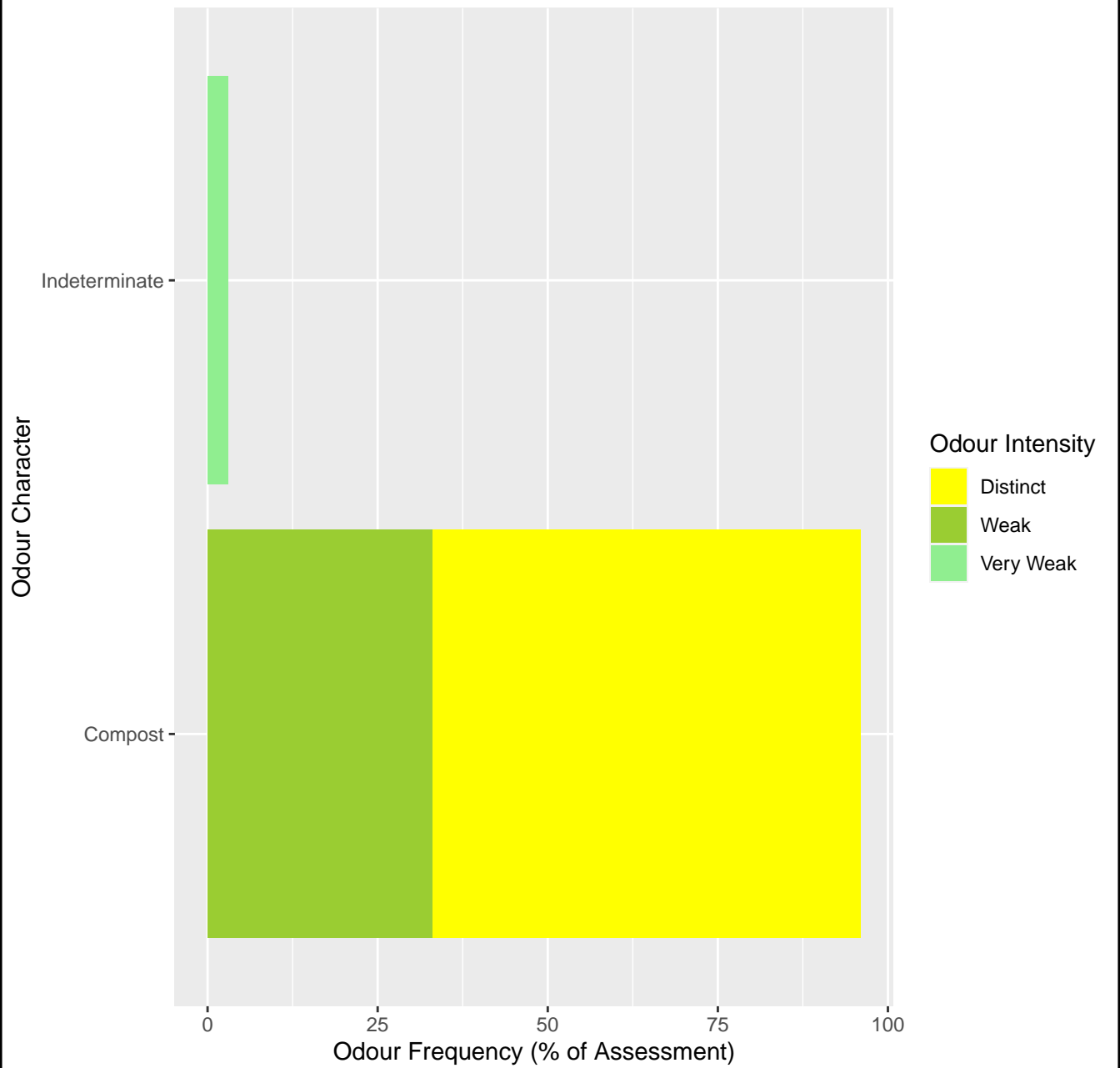
Other comments:



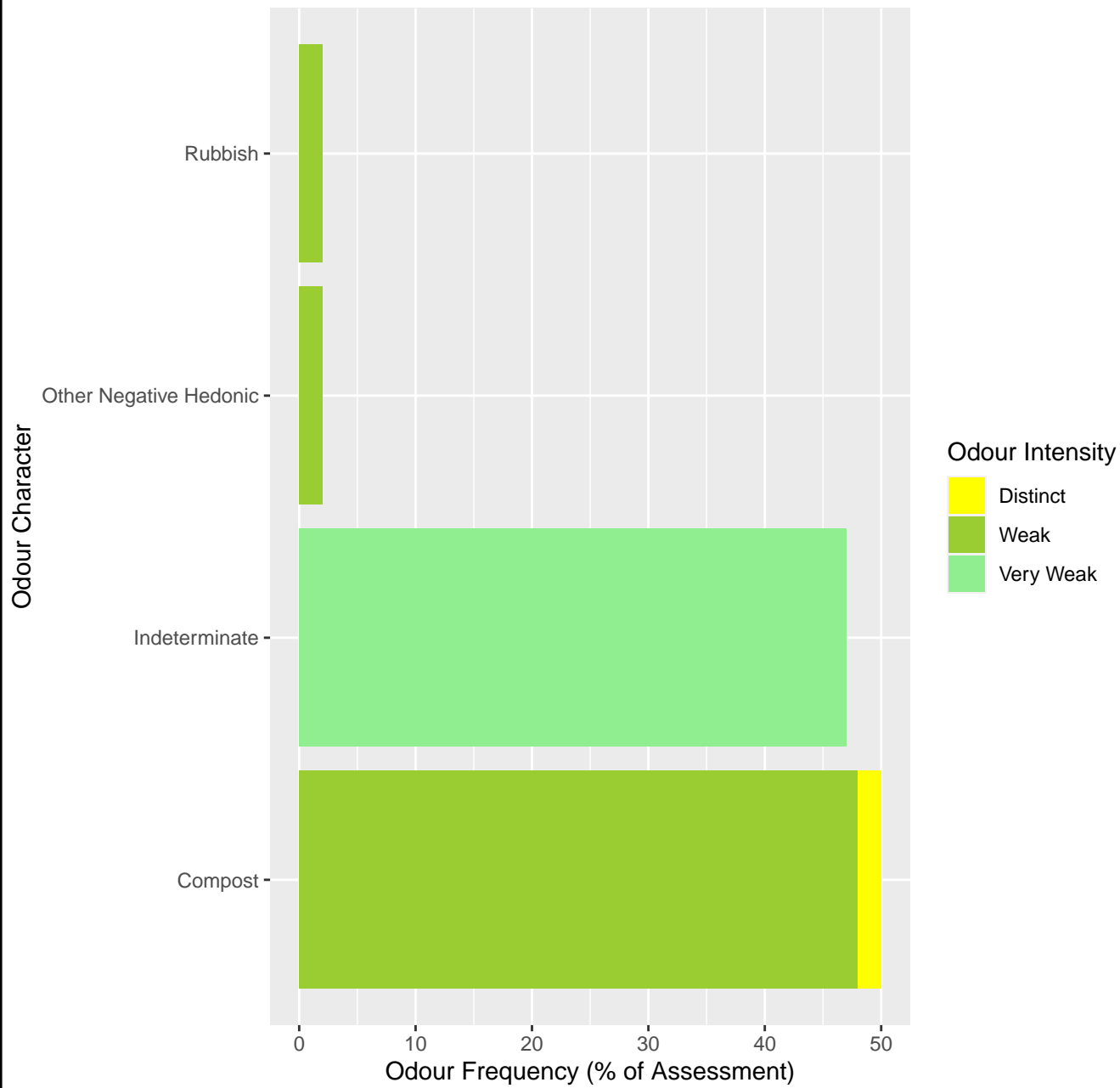
Site Sketch (If Required)

Appendix B: PDP Odour Observations - 1st March 2023

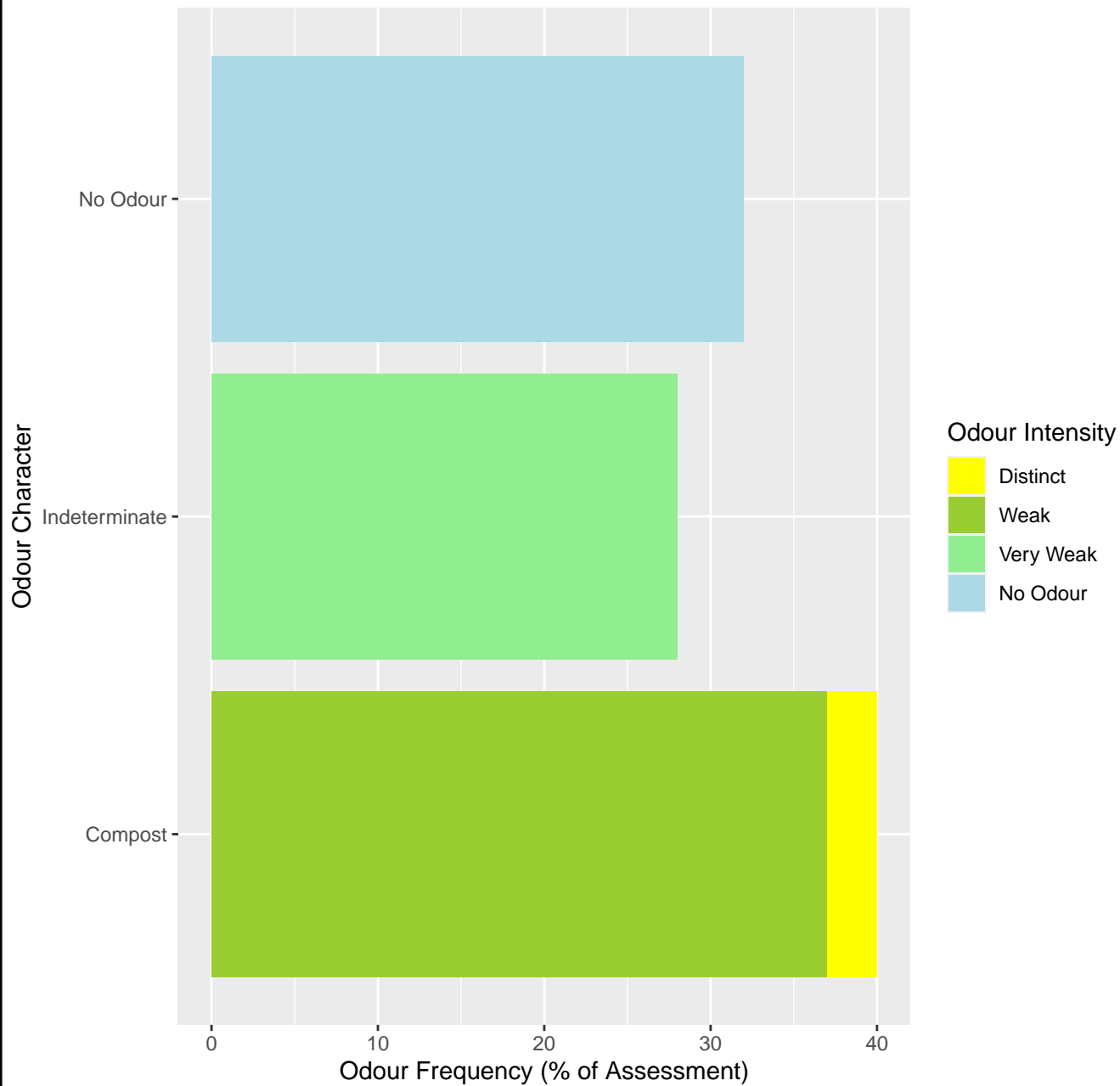
Site G: Odours Observed 2023-03-01 17:01:00



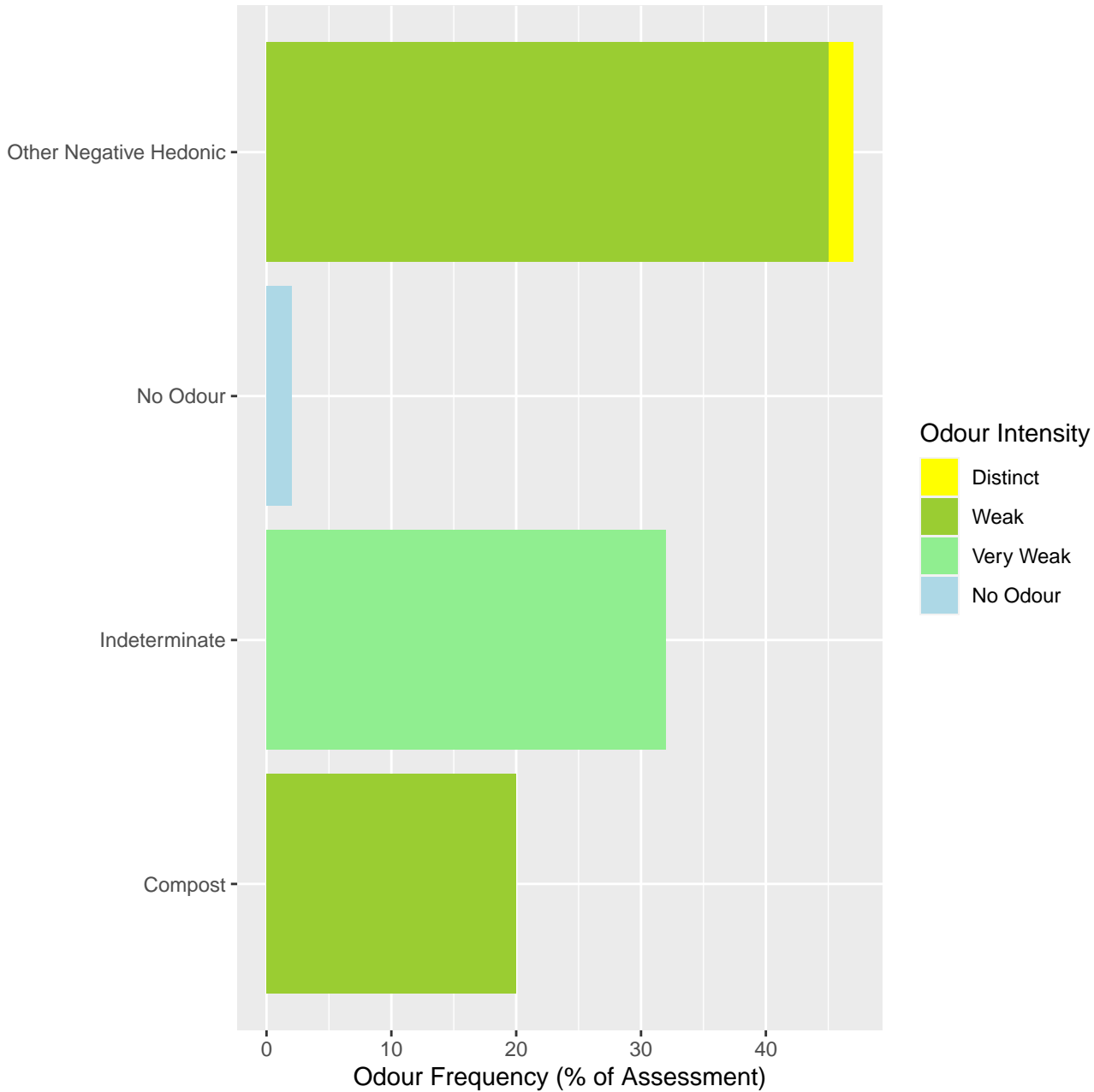
Site H: Odours Observed 2023-03-01 17:12:00



Site I: Odours Observed 2023-03-01 17:29:00



Site K: Odours Observed 2023-03-01 17:43:00



Corner Maces & Bromley Rds: Odours Observed 2023-03-01 18:02:00

