



memorandum



TO Christchurch City Council

FROM



DATE

1 May 2025

RE Living Earth Odour Monitoring: 1st April to 30th April 2025 Summary

1.0 Background

Living Earth Limited (Living Earth) 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 to 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 or objectionable odours are present beyond the site boundary.
- ✧ Corroborate the content of community (i.e., Smelt-It) complaints.

This letter provides a summary of PDP's observations of off-site odour scouting for the period between 1st April 2025 and 30th April 2025. The stockpiles of the outdoor material, namely the unscreened compost, oversize stockpiles and screened fines have been cleared from the site since the 12th of January 2024.

2.0 Summary of Methodology

Odour observations are made by PDP odour scouts. To ensure consistency between scouts, PDP ensures 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, 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, P, and R are located in the residential zone around Bayswater Reserve. Sites E, L, O, and Q are located roughly along the residential-industrial boundary. In assessments, Sites E, O, D and Q are in the residential zone, while Site L is in the general industrial zone.



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 or 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 or 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. Results of all 10-minute odour observations, summarised by observation location, are appended to this memorandum.

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

Due to a change in meteorological data availability since October 2024, wind speed, wind direction and temperature data from the Bromley AWS is not as readily available post-scouting. Retrospective windspeed and wind direction data will not be reported for this monitoring window.

2.1 FIDOL Analysis

As per Ministry for the Environment's Good Practice Guide for Assessing and Managing Odour (MfE GPG), odours were assessed against the FIDOL factors to determine if they were offensive or objectionable. The FIDOL factors are:

- ✧ Frequency;
- ✧ Intensity;
- ✧ Duration;
- ✧ Offensiveness/Character¹; and
- ✧ Location.

Odour intensity is reported on a scale of (0-6) as per the MfE's GPG 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. |

¹ "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)

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.

3.0 Results Summary

Result summaries for each odour scout are reported below. Results of all 10-minute odour observations, summarised by observation location, are appended to this memorandum.

Scouts were present in the Bromley area on the:

- ∴ 11th April 2025;
- ∴ 17th April 2025; and
- ∴ 29th April 2025.

3.1 11th April 2025

██████████ and ██████████ were the PDP odour scouts. The scouts were present for approximately 30 minutes. The scout started near Site D, and then walked along the boundary of the industrial area towards Site M, before walking through the industrial area and returning to Site D. North-easterly winds were forecast. The objective was to undertake odour monitoring in the area downwind of the LE Site. The odour scout route (yellow dots) and key scouting locations are shown in **Figure 2**.



Figure 2: 11th April 2025 - Odour Scout Route

Results from the odour scout are shown below. Entries within **Table 1** that are highlighted blue denote locations within a residential zone and purple denotes locations within an industrial zone.

Table 1: 11 th April 2025 - Odour Scouting Summary		
Site	Time	Observations
D	13:25	No odour (0) detected.
E	13:28	No odour (0) detected.
F	13:32	Very weak (1) odours of an indeterminate character detected.
F to G		Weak (2) continuous compost odour to no odour (0) detected.
G	13:36	No odour (0) detected.
H	13:37	No odour (0) detected.
M to H		Intermittent very weak (1) odours of indeterminate character to no odour (0) detected.
M	13:41	No odour (0) detected.
H		FIDOL assessment completed. No odour (0) was detected 78% of the time. Very weak (1) odours of an indeterminate character were detected 22% of the time. Weak (2) fuel combustion odour from the road was detected 1% of the time. The odour was assessed to be neither offensive nor objectionable.
G	14:01	No odour (0) detected.
F	14:03	Very weak (1) odours of an indeterminate character detected.
E	14:08	No odour (0) detected.
D	14:11	No odour (0) to very weak (1) odours of indeterminate character detected.

No compost odour was detected in the residential or industrial area.

3.2 17th April 2025

██████████ and ██████████ were the PDP odour scouts. The scouts were present for approximately 30 minutes. Conditions were overcast, and it had previously rained earlier in the day. The scouts started near Site D, and then walked along the boundary of the industrial area towards Site M, before walking through the industrial area and returning to Site D. Following this, the scouts split up and undertook FIDOL assessments separately at Sites B, D, E and O. North-easterly winds were forecast. The objective was to undertake odour monitoring in the area downwind of the LE Site. The odour scout route (yellow dots) and key scouting locations are shown in **Figure 3**.



Figure 3: 17th April 2025 - Odour Scout Route

Results from the odour scout are shown below. Entries within **Table 2** that are highlighted blue denote locations within a residential zone and purple denotes locations within an industrial zone.

Table 2: 17th April 2025 - Odour Scouting Summary

Site	Time	Observations
D	13:40	Weak (2) highly intermittent compost odour to very weak (1) odours of an indeterminate character detected.
E	13:44	No odour (0) detected.
F	13:47	Very weak (1) odours of an indeterminate character detected.
F to G		Continuous distinct (3) compost odours detected.
G	13:51	Continuous distinct (3) compost odours detected.
H	13:52	No odour (0) to intermittent very weak (1) odours of an indeterminate character detected.
H to M		Distinct (3) rubbish to no odour (0) detected.
M	13:56	No odour (0) detected.
M to H		Distinct (3) rubbish odour to weak (2) compost odour detected.
H	14:00	Weak (2) continuous compost odour detected.
I	14:04	No odour (0) detected.
J	14:04	No odour (0) detected.
K	14:18	No odour (0) detected.
K to L		Weak (2) intermittent compost odour detected.
L	14:22	Weak (2) food smell detected near pie shop.
E	14:28	FIDOL assessment completed. No odour (0) was detected 100% of the time. The odour was assessed to be neither offensive nor objectionable. The scout noted that the wind appeared to be more easterly than north-easterly at this area, which would have resulted in the scout not being downwind of the Living Earth site
B	14:34	FIDOL assessment completed. No odour (0) was assessed 90% of the time. Very weak (1) odours of an indeterminate character were detected 10% of the time. The odour was assessed to be neither offensive nor objectionable.
D	14:43	FIDOL assessment completed. No odour (0) was assessed 88% of the time. Very weak (1) odours of an indeterminate character were detected 12% of the time. The odour was assessed to be neither offensive nor objectionable.
O	14:49	FIDOL assessment completed.

Table 2: 17th April 2025 - Odour Scouting Summary

Site	Time	Observations
		<p>No odour (0) was assessed 42% of the time. Very weak (1) odours of an indeterminate character were detected 23% of the time. Weak (2) compost odour was detected 35% of the time.</p> <p>The odour was assessed to be neither offensive nor objectionable.</p>

Intermittent, weak (2) compost odour was detected in the residential area, near Site D when the scouts first arrived in the area. 10-minute FIDOL assessments were undertaken at Sites B, D, E and O. While intermittent, weak (2) compost odour was detected during the assessment at Site O, it was not detected at the other locations, nor in the remainder of the residential area during the scout.

Distinct (3) compost odour was detected in the industrial area, between Sites F and M along Dyers Road, directly downwind of the Living Earth site. Weak (2), intermittent compost odour was detected further downwind in the industrial area, between Sites K and L. These observations corroborate the existence of an odour plume travelling from the Living Earth site to the residential area. A 10-minute observation was not made between Sites K and L in the industrial area however scouts noted that the odour was intermittent during the short window they were passing through.

The scouts concluded that the odour was not offensive or objectionable as it was weak (defined as just recognisable in character) and intermittent. Notably however, this present the strongest and highest frequency compost odour detected by the scouts in the residential area since the outdoor material was removed from the site.

Living Earth have stated that they were not unloading compost into trucks in the afternoon. A site visit by CCC confirmed that the activities at the Living Earth site had not deviated from the usual activities.

3.3 29th April 2025

██████████ was the PDP odour scout. The scout was present for approximately 30 minutes. Conditions were overcast, with light rain. The scout started near Site D, and then walked along the boundary of the industrial area towards Site M, before returning to Site D. North-easterly winds were forecast. The objective was to undertake odour monitoring in the area downwind of the LE Site. The odour scout route (yellow dots) and key scouting locations are shown in **Figure 4**.



Figure 4: 29th April 2025 - Odour Scout Route

Results from the odour scout are shown below. Entries within **Table 3** that are highlighted blue denote locations within a residential zone and purple denotes locations within an industrial zone.

Table 3: 29 th April 2025 - Odour Scouting Summary		
Site	Time	Observations
D	10:24	No odour (0) detected.
E	10:27	No odour (0) detected.
F	10:30	No odour (0) detected.
G	10:32	No odour (0) detected.
G to H		Weak (2) continuous compost odour detected.
H	10:34	No odour (0) to intermittent weak (2) compost odour detected.
H to M		Weak (2) compost to no odour (0) detected.
M	10:38	No odour (0) detected.
M to H		Weak (2) compost to no odour (0) detected.
H	10:41	Very weak (1) odours of an indeterminate character detected.
G	10:43	No odour (0) detected.
F	10:45	No odour (0) detected.
E	10:49	No odour (0) detected.
D	10:53	No odour (0) detected.

Weak (2) compost odour was detected in the industrial area, between Sites G and M, directly downwind of the Living Earth site. No compost odour was detected in the residential area. The compost was determined to be neither offensive nor objectionable.

4.0 Summary

PDP undertook odour scouting on three occasions between the 1st of April 2025 and the 30th of April 2025.

Typically, PDP considers that intermittent distinct (3) or continuous weak (2) odours of a negative hedonic tone (such as compost) are offensive or objectionable in a residential zone.

Based on PDP's observations:

11th April 2025

- ∴ No compost odour was detected in the residential or industrial areas

17th April 2025

- ∴ Distinct (3) compost odour was detected in the industrial area, between Sites G and M. Weak (2) compost was detected in the residential area, at Sites D and O. The compost in the residential area was determined to be neither offensive nor objectionable.

29th April 2025

- ∴ Distinct (3) compost odour was detected in the industrial area, between Sites H and M.

The compost odour detected in the residential area on the 17th of April was the highest frequency of compost odour observed in the residential area since the outdoor material was removed. The cause of this odour was not established (Living Earth report no unusual activities, and CCC did not discover anything during a site visit). Unless further monitoring identifies a trend of increasing odour observations, this observation is likely an anomaly.

5.0 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. 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.

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Prepared by

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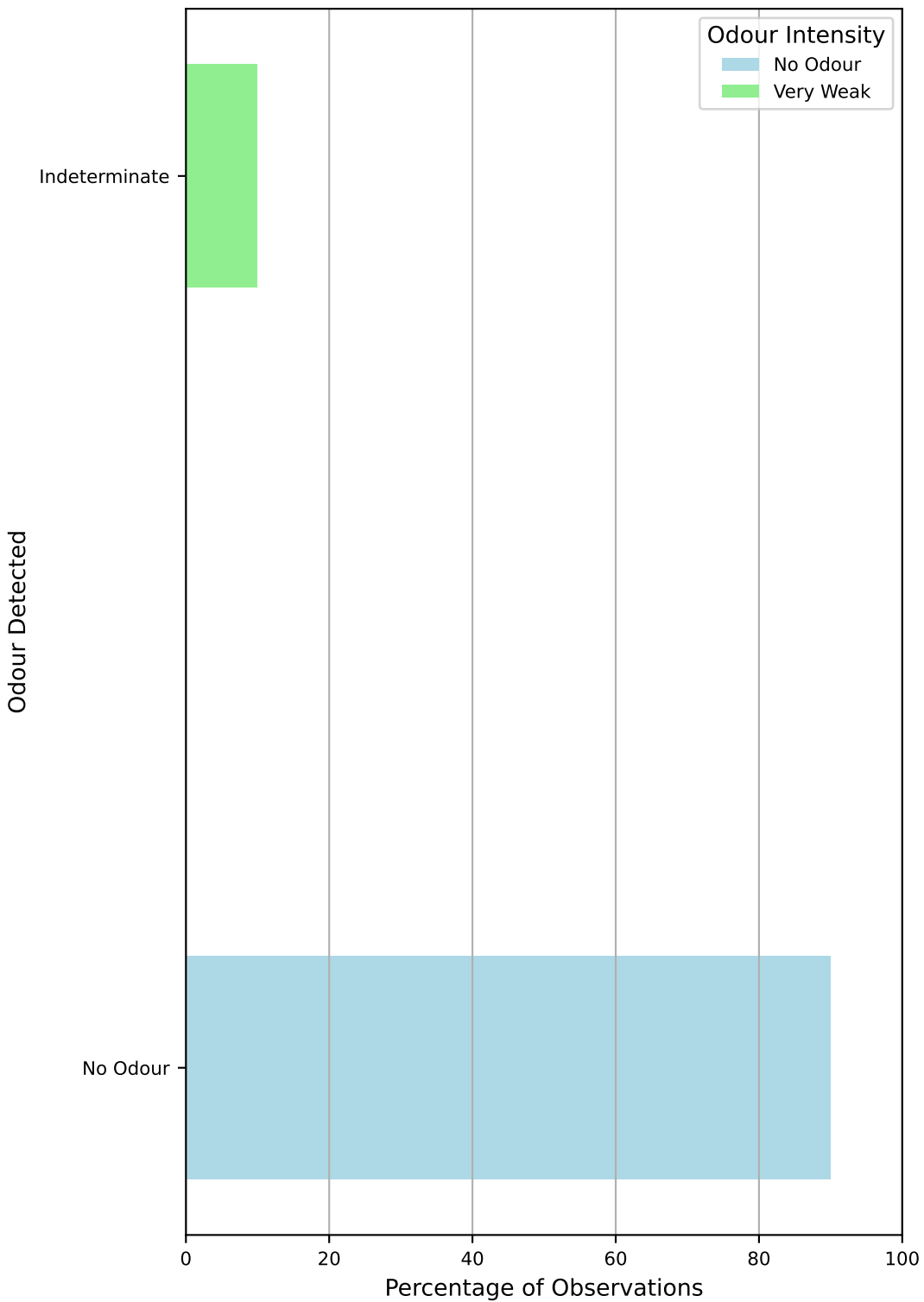
Reviewed by

[REDACTED]
[REDACTED]
[REDACTED]

Approved by

[REDACTED]
[REDACTED]
[REDACTED]

Site B



Site D

Odour Detected

Indeterminate

Odour Intensity

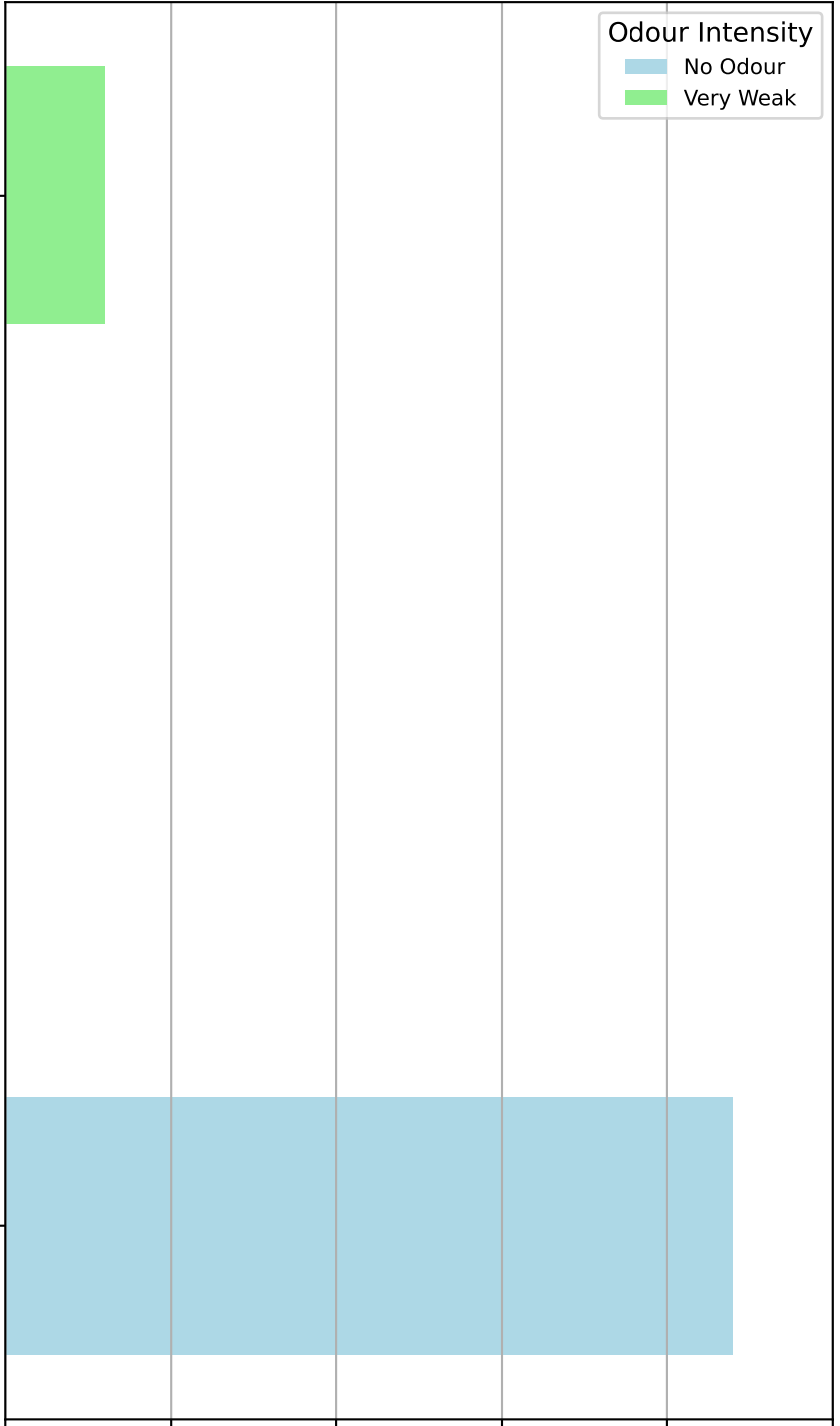
No Odour

Very Weak

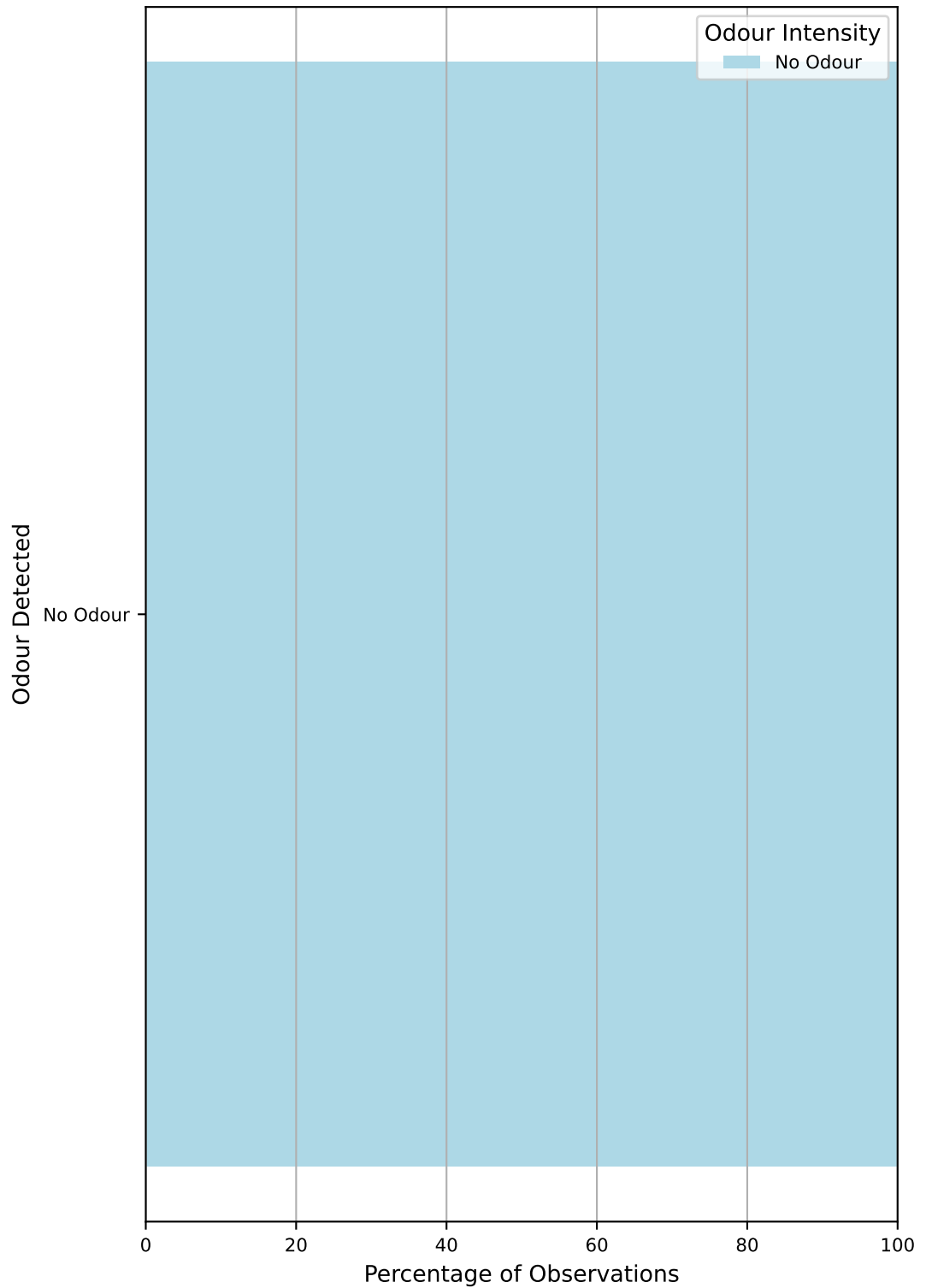
No Odour

0 20 40 60 80 100

Percentage of Observations



Site E



Site H

Odour Detected

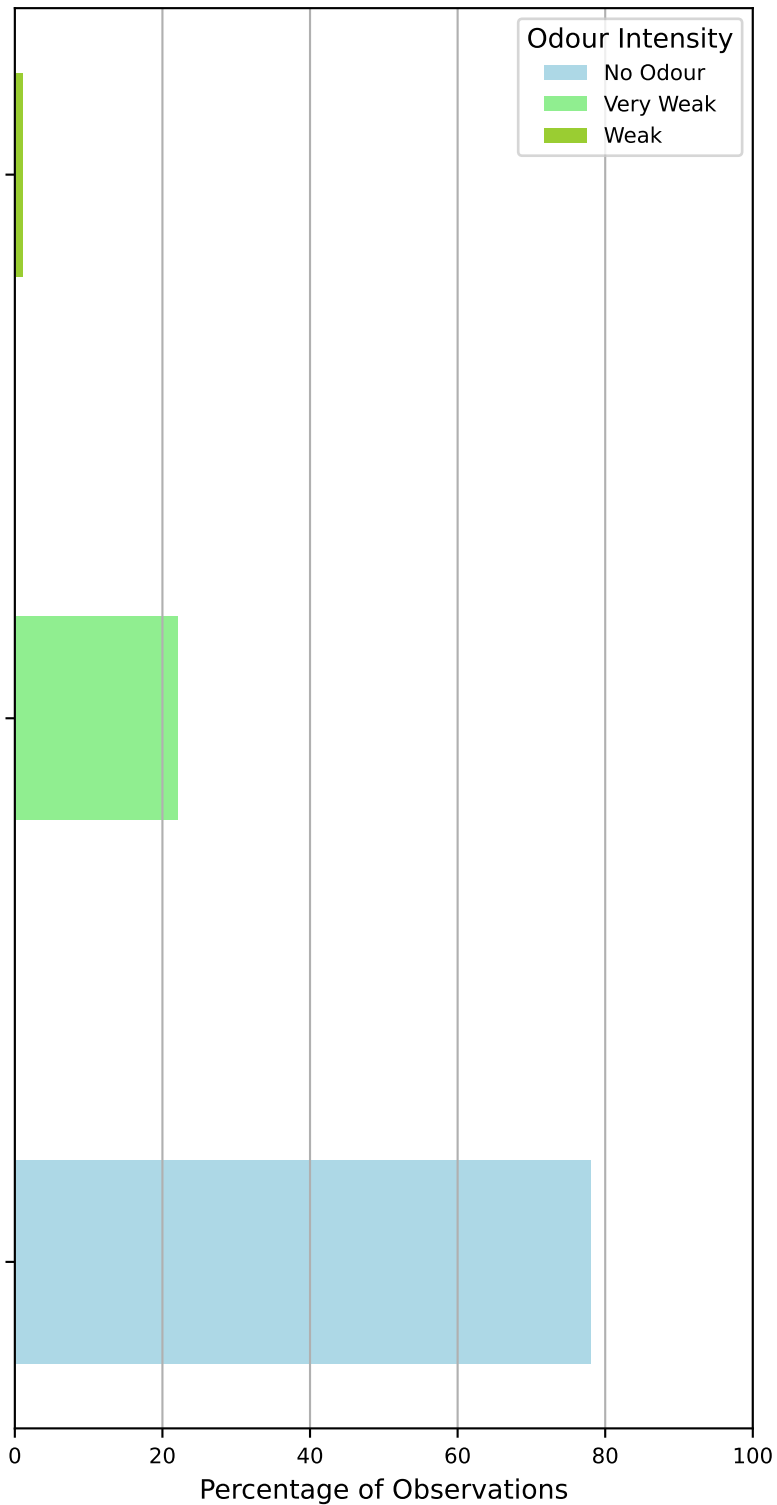
Other_please_describe

Indeterminate

No Odour

Odour Intensity

- No Odour
- Very Weak
- Weak



Site O

