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Peer Review – Odour Impact Assessment

Dear Haydn

1. Introduction

Terra Talis Pty Ltd (Terra Talis) operate a manure bagging facility (the facility) in Oldbury, Western Australia, located approximately 45 kilometres (km) south of Perth. The facility produces 400 tonnes per annum (tpa) of manure and is proposed to expand its operation to produce 234 tpa of green waste.

Terra Talis have proposed the relocation of its operations from 290 Boomerang Road to across the road at 235 Boomerang Road. An Odour Impact Assessment (OIA) was conducted in October 2021 (Strategen JBS&G 2021) to support a Development Application submitted to the Shire of Serpentine and Jarrahdale (SSJ).

1.1 Purpose of this letter

GHD Pty Ltd (GHD) were engaged by SSJ to undertake a peer review of the OIA (Strategen JBS&G 2021).

2. Peer review

GHD carried out a peer review of the OIA (Strategen JBS&G 2021) for the Terra Talis facility. The peer review was based on the OIA's alignment with the Department of Water and Environment Regulation's (DWER) *Guideline: Odour emissions* document (the Guidelines; DWER 2019a). The Guidelines provide the preferred method for odour assessment for an existing or new facility. The purpose of the Guidelines "is to ensure odour data and information are provided to DWER when assessing odour impacts as part of an application under Part V of the *Environmental Protection Act 1986*" (DWER 2019a).

Under the Guidelines, an OIA is required to include a screening analysis and a detailed analysis (where required).

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2.1 Screening analysis

Strategen JBS&G (2021) undertook a screening analysis for the facility in line with DWER (2019a). This is based on the screening distance versus the sensitive receptor distance. GHD confirmed the screening distance for the facility (based on type of operations) is 200 metres (m) for *solid waste facility (100 tonnes or more per year)*. GHD confirmed the annual throughput for the facility to be 634 tonnes using the 2nd preferred method – estimation by volume from DWER (2019b, p. 13) to calculate the throughput of green waste. The equation used to confirm annual throughput from the facility is shown below.

$$X_{\text{annual}} = [(V_{\text{weekly green waste}} \times D) \times 52] + V_{\text{annual manure}}$$

Where:

X_{annual} is the annual throughput of green waste and manure

V_{weekly} is the weekly volume of green waste delivered to the facility

D is the density of the green waste (0.15 tonnes/m³) (DWER 2019a)

$V_{\text{annual manure}}$ is the annual throughput of manure

A review of the most recent available aerial imagery (GoogleEarth 2019) confirmed three sensitive receptors within 200 m of the facility. Therefore, a detailed analysis was required.

2.2 Detailed analysis

DWER (2019a) provide a number of tools that may be used to undertake the detailed analysis. Two tools are priority tools (must be used) and the remaining tools are optional. A summary of the tools available and those used by Strategen JBS&G (2021) are shown in Table 2.1.

Table 2.1 Summary of detailed analysis tools

Detailed analysis tool	Used	Comments
Source		
Operational odour analysis (OOA) (priority tool)	✓	Discussed in Section 2.2.1
Odour sources assessment (OSA)		Discussed in Section 2.2.4
Pathway and receptor		
Location review (priority tool)	✓	Discussed in Section 2.2.2
Odour field assessment (OFA)		Discussed in Section 2.2.4
Complaints data analysis	✓	Discussed in Section 2.2.3
Community surveys		Discussed in Section 2.2.4
Comparative dispersion modelling		Discussed in Section 2.2.4
Comparison with similar operations		Discussed in Section 2.2.4

Strategen JBS&G undertook an *Operational odour analysis* (OOA) (required under the Guidelines) and a *Location review* (highly recommended by the Guidelines) as part of the detailed analysis. A *Complaints data analysis* was also included in the detailed assessment.

2.2.1 Operational odour analysis

The OOA is based on normal operations only, with no abnormal operations foreseeable. GHD agree that due to the relatively simple practices at the facility, abnormal operations are not relevant. The OOA

sufficiently described the odour sources and emissions to be expected from the facility, demonstrating the applicants understanding of potential odour sources at their premises.

The process controls outline simple and achievable methods to control odour from the facility, including the use of an enclosed shed to receive and store manure. GHD understand that part of the shed will remain open during unloading of the manure from the truck, however the shed will be closed at all other times.

Triggers to initiate corrective actions include the detection of odour off-site. This trigger relies on either a complaint from off-site or a sniffing patrol. It is suggested that during the first few weeks, a sniffing patrol is carried out during delivery of manure and also during bagging of manure to ensure off-site odour impacts are negligible.

Should odour be a problem off-site, the corrective actions include an investigation of current site activities, however no mitigation measures are described beyond this. It is suggested the applicants include specific mitigation measures to be adopted should corrective actions be triggered.

2.2.2 Location review

The nearest meteorological monitoring station to the facility is the Bureau of Meteorology (BoM) Jandakot Aero site (site number 009172), located approximately 18 km north of the facility. This meteorological station is further from the facility than desirable. In addition, the land use characteristics surrounding the meteorological station vary significantly to those of the facility. The meteorological station is situated in an urbanised area. Comparatively, the land use characteristics surrounding the facility can be considered rural. This affects the level of heating at ground level and as a result affects the local wind patterns. However, in lieu of a closer, more representative meteorological station, wind roses from the Jandakot Aero station can provide an overview of annual wind patterns that may occur at the facility.

The wind roses included in the OIA (Figure 2.1) show dominant south-east to south-west winds over the year. Southerly winds occur most frequently (12 per cent of the time) and are mostly between 2 and 6 metres/second (m/s). Under these light wind conditions, odour is less likely to be dispersed and may become a nuisance. However, no residences are located directly north of the facility.

From the south-west direction (including south south-west to west south-west), winds occur a cumulative 28 per cent of the time. These winds are often stronger than the southerly winds between 6 and 8 m/s or more. Similarly, east and south-easterly winds occur a cumulative 16 per cent of the time and are often 6 to 8 m/s or above. The stronger winds can assist with the dispersion of odour, and it is therefore less likely odour will become a nuisance at the closest sensitive receptors.

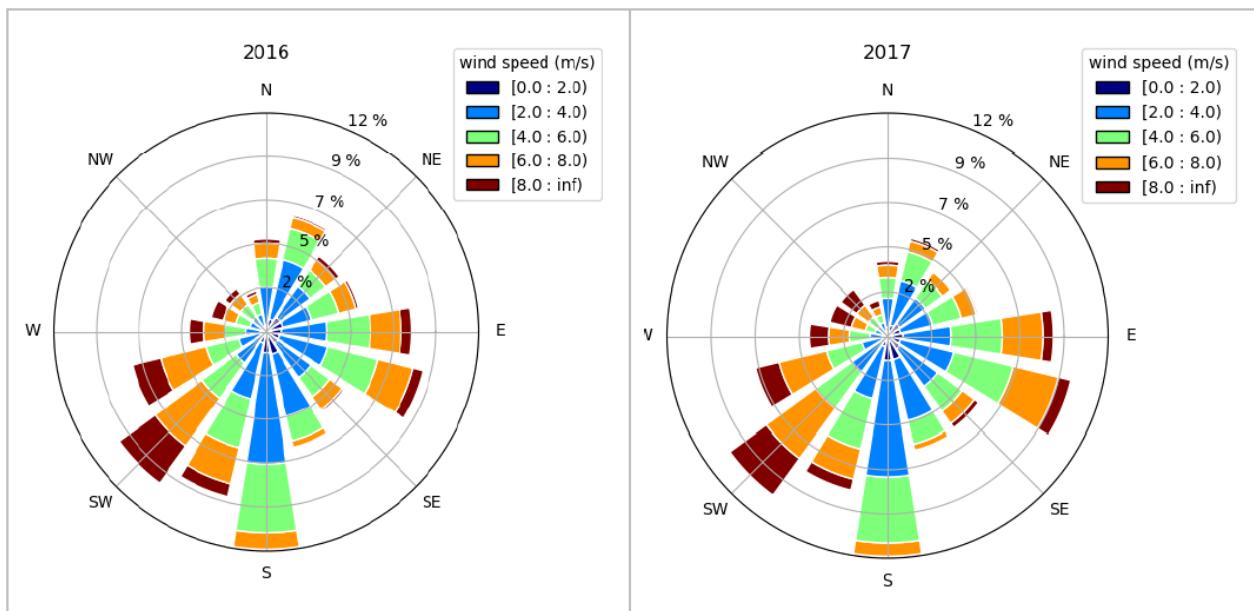


Figure 2.1 Annual wind roses for BoM Jandakot Aero (taken from Strategen JBS&G 2021)

2.2.3 Complaints data analysis

Complaints data analysis is the assessment of odour complaints received near the facility. Strategen JBS&G note that no odour complaints have been received in relation to the existing facility at 290 Boomerang Road. However, DWER (2019a, p.46) states “the absence of complaints does not necessarily indicate the absence of an odour”. It is GHD’s opinion the complaints data analysis is not a relevant assessment of potential odour impacts from the facility.

2.2.4 Other detailed analysis tools

There are a number of detailed analysis tools provided by DWER (2019a) that were not used by Strategen JBS&G. These tools and comment on their relevance are shown in Table 2.2.

Table 2.2 *Detailed analysis tools not used by Strategen JBS&G (2021)*

Detailed analysis tool	Brief description	Comments
Odour field assessment (OFA)	A program of targeted field surveys and analysis designed to characterise ambient odour for new and existing premises.	Targeted field surveys could have been undertaken during current operations as part of this OIA. However, as this is not a priority tool and the analyses carried out for the two priority tools do not show cause for concern, it is GHD’s opinion this detailed analysis tool can be omitted from the OIA.
Community surveys	Community telephone or door-to-door surveys and diary studies. The design, execution and analysis of surveys required highly specialised knowledge. Caution should be applied in designing survey questionnaires and interpreting results.	It is GHD’s opinion that the effort required for a community survey would be disproportionate to the nature of potential odour impacts, given the operations at the facility are considered minor and are constrained to well within the lot boundary.
Comparative dispersion modelling	The comparison of two or more modelling scenarios (e.g., using different pollution control equipment) without specific reference to air emission criteria.	Dispersion modelling would not add any value to the OIA, given operations at the facility are changing only slightly. It is GHD’s opinion the change in operations would result in a change in odour impact that is less than a model’s margin of error.
Odour source assessment (OSA)	A program of targeted source sampling and analysis designed to characterise odour sources at an existing premises. An OSA can provide odour emission rates to be used in comparative modelling or to establish a hierarchy at the facility to identify odour mitigation priorities.	As dispersion modelling is not required, an OSA would only be used to identify odour mitigation priorities. This is not required due to the simplistic nature of operations at the facility.

Based on the comments above, the detailed analysis tools omitted from the OIA are unlikely to add value to the assessment undertaken by Strategen JBS&G (2021) and are therefore not required.

2.3 Residual odour impact assessment

A residual odour impact assessment provides an odour impact potential rating based on the likelihood and consequence of odour from the facility impacting on sensitive receptors (DWER 2019a). The rating is based on the risk matrix below, taken from DWER’s *Guideline: Risk assessments* (2020, p. 10). Strategen JBS&G provided a consequence of “slight” and a likelihood of “unlikely”, resulting in an impact potential of “low”. It

is GHD's opinion that the likelihood could be upgraded to "possible" due to the uncertainty of the wind direction discussed in Section 2.2.2. However, the resulting consequence remains "low".

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Figure 2.2 Risk rating matrix (DWER 2020, p. 10)

3. Conclusion

GHD carried out a peer review of the OIA prepared by Strategen JBS&G (2021) for the Terra Talis manure bagging facility in Oldbury, Western Australia. The peer review was based on the OIA's alignment with DWER's *Guideline: Odour emissions* document (2019a).

The *Location* review undertaken as part of the OIA references a meteorological station that may not be representative of the facility. However, in lieu of a closer meteorological station, the Jandakot Aero station must be used to assess wind conditions at the facility. To accommodate this uncertainty, GHD suggest a likelihood of odour from the facility impacting on sensitive receptors to be upgraded from "unlikely" to "possible". However, coupled with a consequence of "slight" this does not change the overall odour impact potential rating of "low". Therefore, GHD have not identified any deficiencies in the OIA prepared by Strategen JBS&G (2021) that affect the findings of the assessment.

It is GHD's opinion the OIA is an acceptable and appropriate analysis of odour impacts associated with the proposed facility.

3.1 Recommendations

The trigger to initiate corrective actions included in the ODA relies on either a complaint from off-site or a sniffing patrol. It is suggested that during the first few weeks, a sniffing patrol is carried out during delivery of manure and also during bagging of manure to ensure off-site odour impacts are negligible.

It is suggested the applicants include specific mitigation measures to be adopted should corrective actions be triggered.

Kind regards

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References

- DWER 2019a, *Guideline: Odour emissions*, Joondalup, June 2019.
- DWER 2019b, *Proposed estimation/calculation methods for recycling and reprocessing facilities with an output of 1,000 tonnes or more of waste per annum under proposed amendment to the Waste avoidance3 and Resource Recovery Regulations 2008*, Joondalup, April 2019.
- DWER 2020, *Guideline: Risk assessments*, Joondalup, December 2020.
- Google Earth 2019, Satellite imagery situated at 396772.77 m E, 6429415.06 m S (UTM Zone 50 H), 2019, accessed 18 February 2022.
- Strategen JBS&G 2021, *Odour Assessment*, Report prepared for Terra Talis Pty Ltd & EXO Sustain Recycling Pty Ltd, October 2021.

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