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SLR Project No.: 610.031958

**RE: Shellharbour FOGO
Odour Assessment**

1.0 Introduction

Re.Group Pty Ltd (Re: Group) has managed an organic waste reception and processing facility (the Facility) on behalf of Shellharbour City Council at 44 Buckleys Road, Dunmore (the Site) since 2017. The Facility primarily accepts residentially sourced food and garden organics (FOGO), which undergo decontamination, shredding, and loading into enclosed compost tunnels. Following this, the compost matures on an external pad before being stockpiled for distribution.

Re Group has proposed a s4.55(2) modification to the original consent DA523/2014 for the Facility, specifically proposing to increase the hours of operation for external and internal operations.

The Shellharbour City Council (the Council) in their pre-lodgement meeting advice (28 February 2024) has requested a report be accompanied with the modification application summarising the proposed changes and the resultant odour impacts. Specifically, the Council states (4[c] – Odour Control and Impact):

“The modification application as proposed would need to be supported by a report from a suitably qualified person to indicate the current odour impacts of the way the stockpile is managed and how that complies with the existing consent and EPA licence. The report will also need to include the additional odour impact of the new management of the stockpile and increased hours and consideration if these levels are acceptable against industry standards and recommendations to improve odour levels.”

The information contained in this letter presents a review of the implications of the proposed changes on the impacts from the Site the surrounding areas.

2.0 Background

In 2014, Wilkinson Murray Pty Limited prepared and an air quality impact assessment (hereafter the 2014 AQIA) (Wilkinson Murray, 2014) for the construction and operation of the Facility including the following scope of work:

- A review of the local meteorology and ambient air quality.
- A qualitative assessment of potential dust impacts associated with construction.
- A quantitative assessment of potential odour impacts associated with the operation.
- Provision of recommendations for appropriate dust and odour mitigation measures and management practices, where required; and
- Provision of a statement of potential odour and dust impacts.

2.1 2014 AQIA Methodology

Emissions from the Facility were modelled using the CALPUFF model. CALPUFF is a transport and dispersion model that ejects 'puffs' of material emitted from modelled sources, simulating dispersion and transformation processes along the way. In doing so, it typically uses the fields generated by a meteorological pre-processor CALMET. Temporal and spatial variations in the meteorological fields selected are explicitly incorporated in the resulting distribution of puffs throughout a simulation period. The primary output files from CALPUFF contain hourly concentration evaluated at selected receptor locations. The CALPOST post-processor was then used to process these files, producing tabulations that summarise results of the simulation for user-selected averaging periods.

The Project has a number of potential odour sources that have been assessed in the 2014 AQIA including the following:

- The bio-filter servicing the FOGO tunnel composting facility;
- The FOGO and garden waste composting windrows; and
- Odour generated from putrescible material received at the transfer station.

Odour emission rates from each source were estimated conservatively and were subsequently employed to model the 99th percentile 1-hour average odor concentrations at nearby sensitive receptors, in line with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2022). **Table 1** presents the specific odour emission rates used in the modeling study.

Table 1 Odour Emission Rates used in Dispersion Modelling

Source	Type	Odour Emission Rate (OU.m ³ /m ² /s)	Area (m ²)
Bio-filter	Area	3.50	200
Windrows	Area	5.65	3,848
Transfer station	Area	3.65	50

Source: (Wilkinson Murray, 2014)

It is important to note that all the three sources were modelled in the assessment as sources 'emitting continuously for the modelling period' (i.e. 24/7) (Wilkinson Murray, 2014).



2.2 2014 AQIA Findings

Potential off-site odour impacts from the potential odour generating sources were predicted and presented in the form of contour plots as shown in **Figure 1**. The dispersion modelling results indicate that the predicted ground level odour concentrations are unlikely to exceed the applicable assessment criteria at the nearby discrete receptors.

Figure 1 Predicted 99th percentile nose-response average ground level odour concentrations (OU)



The modelling report also recommended a range of odour mitigation and management strategies and good composting practices, to minimise any offsite odour impacts.

3.0 Description of the Changes

To enable staff at the Site to manage stockpiles efficiently and reduce the volume of material on the maturation pad, an extension to the existing hours of operation is proposed. The existing hours of operation, proposed hours of operation, and the difference is summarised in **Table 2**.

It is noted that:

- there are no proposed changes to the material process operations aside from additional movement of finished compost stockpiles within the Site.
- no changes to the building form are proposed. The staffing level, number of shifts, and parking allocation at the Site would not change.
- no changes to the best practice management practice measures proposed for the Facility.



According to the Best Management Practice (BMP) Implementation plan prepared by Jackson Environment and Planning Pty Ltd (JEP) for the Facility (JEP, 2024), the following infrastructure and performance measures will continue to be implemented:

- Windrows will be shaped to a peak to direct runoff to drainage lines. During dry periods with low moisture (<40%), windrows may be flattened or made concave to promote infiltration but will still be maintained as windrows rather than large piles.
- Material on the pad must stay below 60% moisture content. Compost will be checked weekly and after heavy rain (>30mm) and confirmed with weighing and drying if necessary. Windrows exceeding 60% moisture will be turned, and drainage lines will be inspected and cleared.
- The maturation and storage area will accommodate 8 windrows up to 40m long, with a maximum height of 3m, width of 6.5m, and 0.5m gaps for aeration. The hardstand will be upgraded to ensure even drainage towards the leachate pond and avoid ponding. Screened products will be stored upslope from other materials, and high-traffic areas will be maintained for proper drainage.
- The maturation pad will be resurfaced with a cement-stabilised compacted road base to support material and machinery without damage.
- The annual quantity of organics processed should be based on current trends or production plans for the upcoming year.

Table 2 Proposed Changes to Hours of Operation

Day	Current hours of operation	Proposed hours of operation	Difference
Monday to Friday	Between 7:30am and 4pm, both internal and external	External operations: 7am to 6pm Internal operations: 6am to 6pm	Increase by 1.5 hours in the AM and 2 hours in the PM
Saturday, Sunday, and public holidays (excluding Christmas Day and Good Friday)	Between 8am and 4pm, both internal and external	External operations: 7am to 4pm Internal operations: 6am to 6pm	Increase by 2 hours in the AM and 2 hours in the PM

4.0 Implications of Changes on the Findings of Previous Assessment

The potential for odour emissions during the operation of the Facility is directly influenced by the nature of the activities conducted at any given time. Odour emissions from each identified source within the facility depend on several parameters outlined below:

- Odour emissions from the biofilter are influenced by airflow rate, temperature, moisture levels, retention time, and the type of biofilter media used.
- Odour emissions from waste composting windrows depend on the feedstock composition, moisture content, temperature, aeration practices, turnover frequency, and the size and design of the composting facility.
- Odour emissions from the transfer station vary based on the type and composition of waste, moisture content, temperature, ventilation effectiveness, handling and storage methods, and the duration of material storage.



It is noted that no changes are proposed to the waste volume, the waste types processed or the best management practice measures at the Facility, and that the proposed operational changes (ie extending hours of operation) are to facilitate efficient management of windrows.

Importantly, as discussed in **Section 2.1**, the dispersion modelling study was conducted representing these sources as emitting odour emission continuously (i.e. 24/7), therefore extending the hours of operations does not have implications on the predicted downwind odour impacts, and the conclusions of the odour impact assessment are still valid and additional mitigation measures are not warranted at this stage.

5.0 Conclusions

SLR was commissioned by Re Group to assess the implications of proposed changes to the operating hours of the Shellharbour FOGO facility on the offsite odour impacts. Considering that there will be no alterations to the waste intake volume, facility layout, material types, or processing procedures, and importantly the odour sources were modelled as sources emitting continuously, the findings of the 2014 Air Quality Impact Assessment (Wilkinson Murray, 2014) for the facility will remain largely unchanged following the proposed modifications. The 2014 dispersion modelling results concluded that the predicted offsite ground level odour concentrations were unlikely to be exceed the applicable assessment criteria at the nearby discrete receptors.

Given the above, it is concluded that extending operational hours is unlikely to increase the potential for odour emissions from the Facility.

If you require any further information, please feel free to contact the undersigned.

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6.0 References

- EPA. (2022). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. Environment Protection Authority NSW.
- JEP. (2024). *Best Management Practice Implementation Plan*. Sydney: Jackson Environment and Planning.
- Wilkinson Murray. (2014). *Dunmore Recycling Waste & Disposal Depot (DRWDD) Air Quality Impact Assessment*.

