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Lutana Resource Recovery Centre

Emissions Assessment

Prepared for

Southern Waste Solutions

Client representative

Nick Gifford

Date

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Rev 12

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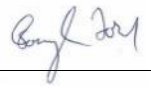
Appendices

Prepared by — Alex Seen, Douglas Ford		**Date —** 09/09/2025
Reviewed by — Douglas Ford		**Date —** 09/09/2025
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Executive summary

This emissions assessment has been prepared to support an Environmental Effects Report for the change of use of the existing Derwent Park Waste Transfer Station (WTS), operated by Southern Waste Solutions, located at 129 Derwent Park Road, to become an integrated waste transfer station and resource recovery centre.

The facility directly adjoins the northern edge of a “General Residential” zone with further residential zones to the east in Glenorchy, and a number of “Light” and “General Industrial” zones in the area. These include the Derwent Park industrial area.

The WTS currently consolidates various incoming mixed solid waste from local council and private contractors prior to being transferred to a final waste disposal site or recycling facility. The proposed change of use will allow for sorting and processing of various materials for recycling and diversion away from landfill.

Existing noise levels at two of the nearest residences were assessed by on-site noise logging from the 6th to 17th and the 25th to 29th of September 2023. Noise from existing industrial businesses in the area and local traffic noise, resulted in a measured weekday ambient noise level of 56dB(A) during this period.

Noise levels from the site including the proposed new activities were modelled using SoundPLAN environmental noise modelling software. Predicted noise levels at the nearest sensitive receivers were below both the recorded ambient, and background noise levels + 5 dB(A) and EPP guideline levels for day and night-time activities. As such, noise from the centre is unlikely to be distinguishable from the existing noise environment and will not result in a loss of amenity for the nearest sensitive receivers.

Dust emissions are expected to be well below levels capable of causing nuisance to the nearest residences.

Odour emissions from the facility are also expected to be minimal, as the majority of the waste material being received generally has a relatively low overall average odour generation potential. Some odorous materials including general municipal waste and FOGO will be handled. To demonstrate that worst case odour emissions from the upgraded facility will not cause an adverse impact on nearby residents, odour emissions have been assessed using air dispersion modelling, carried out in accordance with the Tasmanian EPA’s *Atmospheric Dispersion Modelling Guidelines* and conservatively assuming that that the tipping building is full of material with a similar odour emissions rate to general municipal waste.

The results of this modelling show that the ground level odour concentration at the boundary of the facility is well below the limit of 2 odour units, required by the *Tasmanian Environmental Protection Policy (Air Quality).*

On the basis of this noise and air assessment, it may be concluded that the proposed Waste Transfer Station change of use to a Resource Recovery Centre, will not cause an unreasonable loss of amenity or environmental nuisance.

1. Introduction

This emissions assessment has been prepared to support an Environmental Effects Report for the change of use of the existing Derwent Park Waste Transfer Station (WTS), operated by Southern Waste Solutions, located at 129 Derwent Park Road, to become an integrated waste transfer station and resource recovery centre. A development application was approved in April 2024, by the Hobart City Council, for the recent upgrade of the WTS. The primary scope of the upgrade was the construction of a new building to allow waste transfer and consolidation operations to be moved indoors. In addition, the scope included development of a new office building, carpark and general improvements including sealing of access roads, storm water management and landscaping.

The change of use, is for the approval of resource recovery processing on site, aimed at separating materials that can be recycled and diverting them to appropriate off-site processing facilities, thus reducing the volume of waste sent to landfill. Recovery of a variety of materials including metals, timber, plastics and concrete is proposed. Additional plant required includes a shredder.

This attenuation report was originally prepared to support the development application for the WTS upgrade. It has now been updated to include potential noise, dust and odour emissions from the additional resource recovery activities that will be established on site.

The site adjoins the northern edge of a “General Residential” zone, with further residential zones to the east in Glenorchy. There are a number of “Light Industrial” and “General Industrial” zones in the area, including the Derwent Park Industrial Area to the north. The location of the site and the surrounding area is shown in Figure 1, below.

Figure 1: Aerial photo of WTS site (Blue) and surrounding area, including residential zones (red) and industrial zones (purple).

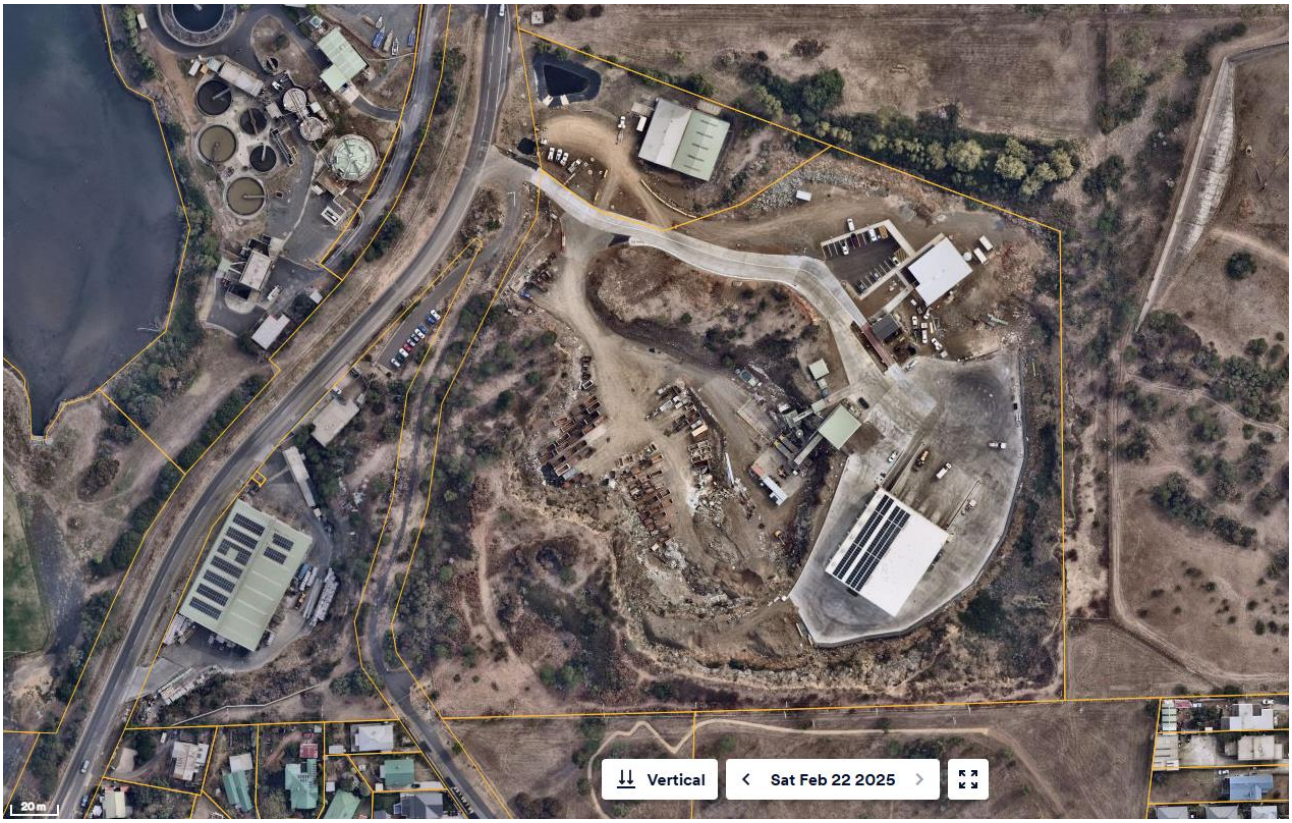

Figure 2: Recent Aerial Photo of the site (Image from nearMap)

2. Description of operations

The facility will continue to consolidate various incoming mixed solid waste from local council and private contractors prior to being transferred to the Copping landfill site or other final disposal site.

No major modifications are proposed to the recently constructed tipping building, where incoming loads are tipped, sorted, consolidated and temporarily stored, before being loaded for dispatch. Material handling on the floor and around the site will be carried out by a front-end loader. Waste that is not suitable for recovery, will be despatched by self-compacting garbage truck.

The facility is expected to receive up to 90,000 tonnes of waste per annum, including:

- Metals
- Mattresses
- Rubber and tyres
- Construction and demolition (C&D) waste including timber, plaster board, concrete and bricks
- Commercial and industrial (C&I) waste including cardboard, plastics and e-waste
- Food and organics (FOGO)
- Secure disposal (i.e. materials that cannot be sent to landfill for legal or safety reasons, such as old poker machines, expired drugs or surplus alcohol)
- General Waste

Co-mingled waste will be received on the tipping floor and then sorted either by an excavator with a claw / grab attachment. or manually by personnel. Some waste may be received pre-sorted. Sorted materials will be stored into piles within the building, or in a series of new external concrete bays, or in skip bins. All potentially odorous material including FOGO and general waste will be stored inside the building. FOGO and general waste will not be held on site for more than one to two days. The size of any material stockpile is not expected to exceed 2 trailer loads (total 170m^3) before removal. The height of the stockpile for materials stored on the upper level would not exceed 5m before removal.

Some categories of waste will be processed on site to aid efficient onward handling. This includes:

- Shredding of timber, plastics, rigid plastics, plaster board and other building materials
- Dismantling of mattresses (either manually or by an excavator operating inside the building
- Bricks and concrete will be sorted, stockpiled and dispatched without any further onsite processing.

Various existing structures, that will no longer be used, are to be decommissioned and demolished, including the former waste compaction system and clinical waste facility. The existing weighbridge will be retained.

A preliminary site layout, including the location of the proposed new activities is shown in Figure 3 below.

Current hours of operation will not be significantly changed and are 5am to 4pm (weekdays), 6am to 12pm (Saturdays) and 5am to 1:30pm (public holidays) with no operations on Sundays.

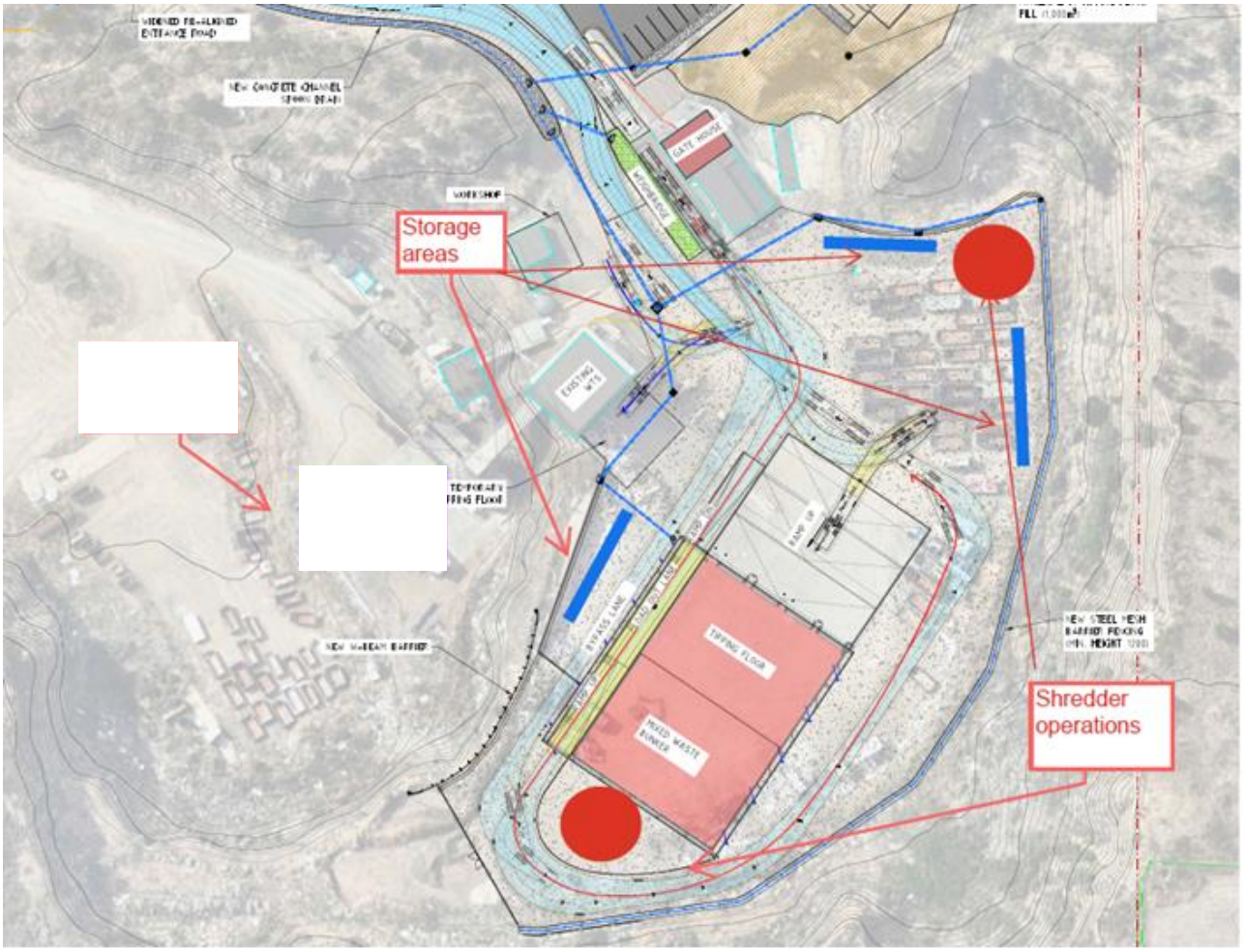

Figure 3: Preliminary Site Layout Indicating Location of New Activities.


Figure 4: Photos of the recently constructed main tipping floor building

3. Noise Assessment

3.1 Environmental Protection Policy (Noise)

The Tasmanian *Environmental Protection Policy (Noise)* 2009 (the EPP) has general provisions for the regulation of proposed commercial / industrial noise sources with the objective of protecting environmental values. In summary, it requires:

- Best practice environmental management to be employed to reduce noise emissions, to the greatest extent that is reasonably practical
- Dominant or intrusive noise characteristics of noise emissions to be reduced to the greatest extent that is reasonably practical; and
- That a "reserve capacity" in the acoustic environment is retained at any location, such that the combined noise from a number of activities does not prejudice the protection of environmental values at that location.

The EPP also provides acoustic environmental indicator levels for various noise sensitive activities, based on World Health Organisation research. These indicators relate to the total ambient noise levels at a sensitive receiver – not just the noise from the industrial source being assessed. Indicators relevant to this noise assessment include:

- Outdoor Living Areas (Serious annoyance, daytime and evening) 55 dB(A) $L_{eq,16hours}$
- Outdoor Living Areas (Moderate annoyance, daytime and evening) 50 dB(A) $L_{eq,16hours}$
- Outside Bedrooms (Sleep disturbance, windows open, night-time) 45 dB(A) $L_{eq,8hours}$, 60 dB(A) L_{max}
- Inside Bedrooms (Sleep disturbance, night-time) 30 dB(A) $L_{eq,8hours}$, 45 dB(A) L_{max}

L_{eq} is the "equivalent continuous noise level" which can be thought of as the average noise level over a specific period of time[1]. L_{max} is the maximum noise level recorded in a specific period of time.

Intrusiveness criteria

A commonly used measure of the level of impact of noise from a new industrial activity is that if the noise level from the new activity is more than 5 dB(A) higher than the existing background noise level, L_{90}, it is considered to be "Intrusive". This measure has been adopted in the NSW industrial noise policy and in various planning schemes, although it has not been specifically incorporated in Tasmanian state noise policy.

The background noise level is defined as the L_{90}, which is the noise level that is exceeded 90% of the time during a noise measurement period.

[1] Noise levels measured in decibels are averaged logarithmically.

3.2 Existing noise environment

Noise logging was carried out at two of the nearest residential dwellings to the site, as shown on Figure 1 above, in order to characterise the existing noise environment. One of these was at 144 Bowen Road, on the southern boundary of the site, between the 6th and 14th of September. The second logging location was at the northern end of Lennox Avenue, between the 14th and 17th of September and again between the 25th and 29th of September. Noise measurements were made using a Ngara noise logger, setup and operated in accordance with the DEPHA *Noise Measurement Procedures Manual, 2008*.

Weather conditions during the logging were obtained from the Bureau of Meteorology Hobart weather station on Ellerslie Road. The weather was generally fine with temperatures ranging from 2 to 23°C. Wind speeds above 18km/h were recorded, for several periods on the 6th, 8th to 11th, 13th,15th and 27th to 29th of September. 13mm of rainfall was recorded on the 16th over a 21 hour period, with several other periods of minor rainfall, less than 1mm on other days.

Aggregated L_{Aeq}, L_{A90} and L_{Amax} noise logging results, excluding these periods of adverse weather are presented in Table 1 below. Figure 5 shows a plot of the entire logging period with periods of adverse weather shaded in blue.

Existing ambient noise in the area is affected by noise from various commercial, industrial and road traffic sources. Significant noise emissions were noted from the nearby Cleanaway recycling sorting facility. Industrial noise is generated by various facilities in the area, along with moderate levels of traffic noise from the Brooker Highway and local roads. More minor noise sources include residential activities and natural environmental noise from animals, birds and wind blowing through vegetation. On collection of the noise logger at Bowen Road a crane was observed operating at the nearby TasWater Sewage Treatment Plant, creating some additional noise on that day. Generally, the noise levels recorded follow a typical urban daily pattern, rising from around 5am to peak during the day then diminishing from about 6pm to quite low levels overnight.

The recorded evening and night-time noise levels on weekdays and Saturdays at Bowen Rd exceed the EPP guideline level for avoiding sleep disturbance, with weekday daytime noise levels at Bowen Road and Lennox Avenue exceeding the daytime guideline level for avoiding “serious annoyance” and all other noise levels exceeding the daytime level for avoiding “annoyance”.

Table 1: Unattended Noise Logging Results at Bowen Rd and Lennox Ave.

Time Period	Weekdays – dB(A)			Saturday – dB(A)		
	L_{eq}	L_{90}	L_{max}	L_{eq}	L_{90}	L_{max}
Bowen Road						
Morning (5am – 7am)	48.1	37.8	78.0	47.2	40.6	58.3
Day (7am – 6pm)	56.2	47.8	87.9	52.7	45.1	76.3
Evening (6pm – 10pm)	49.0	43.3	72.8	48.9	43.4	68.9
Night (10pm – 7am)	46.2	36.2	78.0	49.9	39.0	73.8
Lennox Avenue						
Morning (5am – 7am)	47.8	43.7	70.4	48.7	40.4	67.5
Day (7am – 6pm)	52.8	41.8	96.8	51.2	46.4	77.5
Evening (6pm – 10pm)	53.4	38.1	88.5	50.3	43.6	69.6
Night (10pm – 7am)	50.0	46.3	84.3	53.6	44.2	69.9

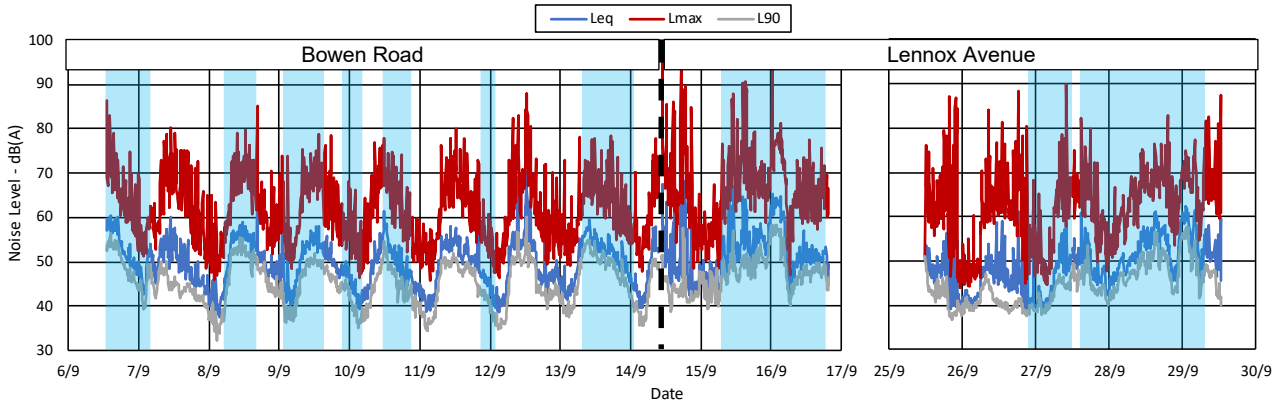

Figure 5: Noise Logging Results at 144 Bowen Road and Lennox Avenue. Periods of inclement weather shaded blue.

3.3 Project Assessment Criteria

No quantitative noise limits were specified for the proposed activity within the project specific guidelines. The guidelines require consideration of the existing background noise levels and the Tasmanian *Environmental Protection Policy (Noise)* 2009.

On this basis, limiting noise emissions from the site to background (L_{90}) + 5 dB(A) is recommended. Using the lowest noise monitoring $L_{90,}$ these limits would be:

- Morning, 5am to 7am: 37.8+ 5 = 42.8 dB(A)
- Daytime, 7am to 6pm: 41.8 + 5 = 46.8 dB(A)

3.4 Noise sources

Noise sources for the site include waste trucks offloading waste material, semi-trailers collecting consolidated waste, a Komatsu WA150 or WA180 wheel loader and a 15T excavator used for moving waste material on the tipping floor and loading outgoing waste into trucks, and a telehandler used for moving material and waste bins around on site.

Shredding of timber, plastics, plasterboard and similar materials will be done using a mobile *Komptech* shredder.

6 ventilation fans are mounted along the northern edge of the shed roof and 4 air intake fans mounted approximately 2 metres above ground level on the southern wall of the tipping building. Manufacturer's sound power data including single octave band spectra, has been used to characterise noise emissions for these fans.

Manufacturer's data was not available for the shredder, so sound power levels from similar sized mobile crushing equipment, measured on other sites has been used. Other mobile equipment has been characterised with reference sound power levels obtained from the SoundPLAN noise source reference library or pitt&sherry's in-house noise database of noise source measurements.

Noise source details are outlined in Table 2 below.

All sound power levels indicated are the anticipated maximum sound power level, that would be generated by each item of equipment while operating on site. This includes the effect of unloading material, reversing beepers and other related noise that would occur during operations.

Table 2: Equipment Sound Power Levels used in the Modelling

Equipment		Quantity	Height above Ground Level – m	Sound Power Level $L_{eq,10min}$– dB(A)
S01	15T Excavator	1	1.5	82.5
S02	Komatsu WA180 Wheel Loader	1	1.5	92.7
S03	Telehandler	1	1.5	82.5
S04	Waste Collection Trucks (Incoming)	2	1.5	61.0dB(A)/m
S05	Semi-Trailers (Outgoing)	1	1.5	61.0dB(A)/m
S06	Roof Mounted Fan	6	9.6	88.3
S07	Wall Mounted Fan	4	2.0	100.1
S08	Komptech Terminator 6000S Shredder	1	2.0	109.2

Truck volumes

Existing onsite truck movements were obtained from weighbridge data from between 2nd January 2022 and 7th August 2023. Average hourly truck movements for weekdays and Saturdays are shown in Figure 6 below. The peak level of truck movements recorded was 10 trucks per hour, resulting in an average of around 85 truck movements per weekday and 13 per Saturday). Weighbridge data recorded in 2025 averaged 80 trucks per hour. The traffic impact assessment prepared for the facility, allows for a 10% increase in vehicle movements. Noise modelling has been conducted, conservatively assuming 15 trucks per hour, which could result in 3 trucks moving on site simultaneously.

Trucks will not access the site outside of the facilities opening hours which are listed in section 2, above.

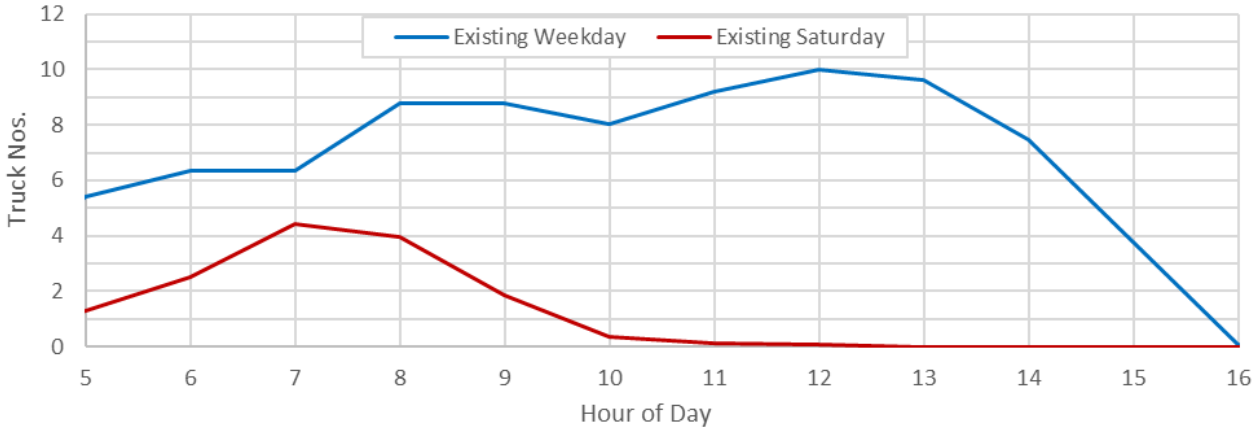

Figure 6: Average Weekday and Saturday truck numbers.

3.5 Methodology and assumptions

Noise modelling was carried out in accordance with the Tasmanian DEPHA *Noise Measurement Procedures Manual*, 2008. Noise level calculations were implemented using SoundPLAN 8.2 environmental noise modelling software. Modelling assumptions and settings include:

- The ISO 9613-2 noise calculation standard was used within SoundPLAN, as specified in the *Noise Measurement Procedures Manual*. This noise prediction standard incorporates “worst case” meteorological conditions for noise propagation, including a light breeze from source to receiver and a well-developed moderate inversion.
- Existing terrain topography was obtained from 2 metre elevation data sourced from the ELVIS online elevation database
- Existing buildings, roads and other permanent structures and features were included within the model. All building footprints were sourced from theList. Temporary structures and property fences were not included in the modelling.
- A ground absorption factor of G = 0 (100% reflective/hard) was used for water and industrial sites. A factor of G =

0.6 (60% absorbent/soft and 40% reflective/hard) was used for the remainder of the area, reflecting the combination of sealed and unsealed surfaces

- The tipping building was modelled using noise walls and a floating screen. Openings were made along the northern side, where the roller doors accessing the shed are located and on the southern side, at the exit to the loadout lane. This is a conservative representation, as the shed is fitted with fast acting roller doors which will normally be closed.
- The wheel loader and the telehandler will rarely both operate at full power for a full 10 minute period, so operation of both units is represented in the model by just the wheel loader (the louder of the two) operating at full power for the entire 10 minute period.
- It has been assumed that the wheel loader and telehandler will predominantly (80% of the time) be operated inside the shed. Time weighted corrections have been applied to the noise sources in the model, to reflect a $L_{eq,10min}$ result.

Several scenarios were modelled:

- Scenario 1: A base scenario with two waste collection trucks unloading waste, one semi-trailer collecting waste, the excavator operating within the shed and the telehandler and front wheel loader operating between the shed and the stockpiling bunkers.
- Scenario 2A: Operation of the shredder in position “A” in addition to Scenario 1.
- Scenario 2B: Operation of the shredder in position “B” in addition to Scenario 1.

Note that the shredder may also be used inside the tipping shed at times. This has not been modelled, as the resulting noise emissions will be significantly lower than the outside scenarios.

Figure 8, below shows the layout of the SoundPLAN noise model in plan view, including the locations of the noise sources, shown as blue dots for stationary noise sources and red lines for moving plant, and noise receiver locations as green dots. A 3D view of the model is shown in Figure 7.

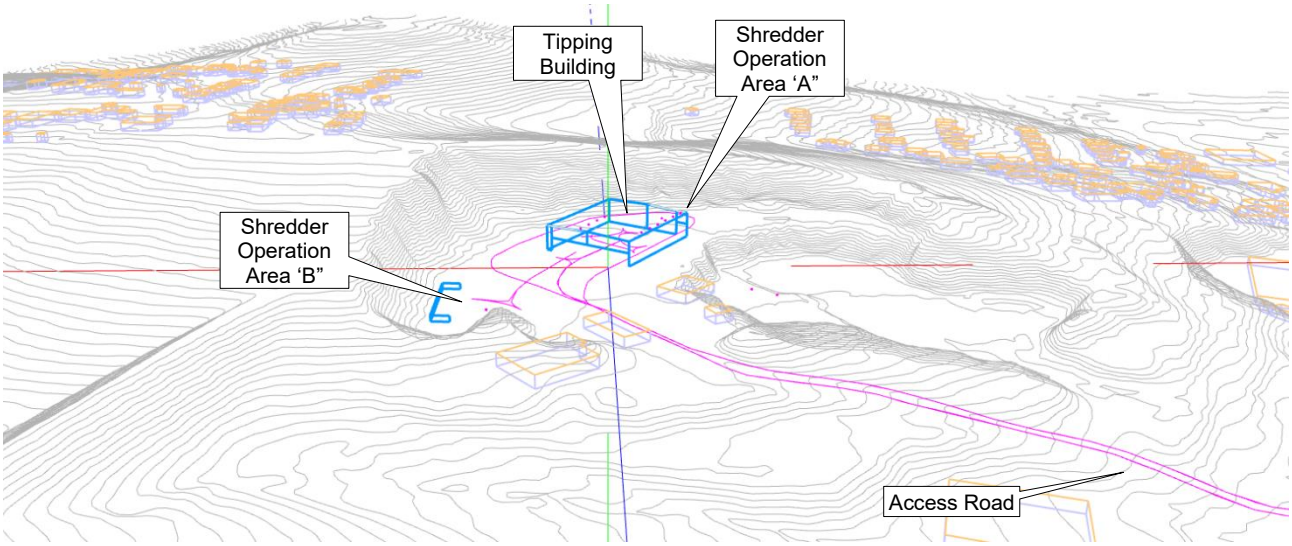

Figure 7: 3D View of SoundPLAN noise model, looking south.

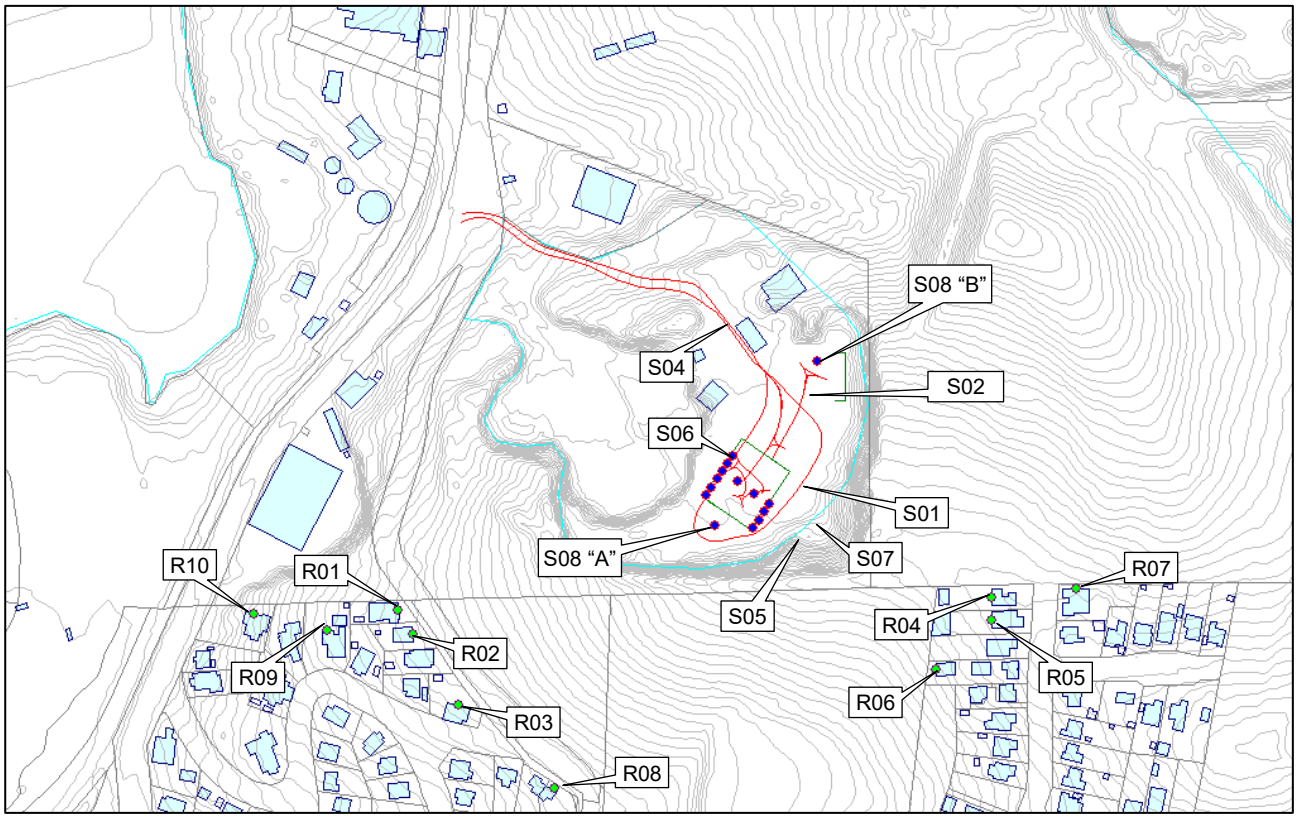

Figure 8: SoundPLAN Noise Model Layout with 2m ground contours.

3.6 Noise modelling results

The predicted $L_{eq,10min}$ noise levels from the facility at several of the nearest sensitive receivers (residences) are provided in Table 3 below. The results include a +5 dB(A) correction for low frequency noise where required, assessed using the one octave spectra results. Note that an effect of the low frequency correction test, is that Scenario 1 attracted a 5 dB(A) correction at most receivers, but Scenarios 2A and 2B did not, which is why the final results are quieter than Scenario 1, even though the raw results were louder. This is as a result of the shredders contributing more additional high frequency noise than low frequency noise.

Table 3: Predicted $L_{eq,10min}$ noise levels at nearest residences to WTS in dB(A)

Receiver		Scenario 1 Truck and Loader Operation	Scenario 2A Scenario 1 + Shredder at 'A'	Scenario 2B Scenario 1 + Shredder at 'B'
R01	144 Bowen Rd	38.0	36.0	34.6
R02	142 Bowen Rd	38.0	35.9	34.9
R03	138 Bowen Rd	35.8	33.9	33.2
R04	116 Lennox Av	42.2	38.9	37.8
R05	114 Lennox Av	40.1	36.5	36.0
R06	110 Lennox Av	40.7	37.0	36.4
R07	145 Lennox Av	38.5	39.5	39.4
R08	132 Bowen Rd	29.0	32.7	30.6
R09	8 Cox Av	32.9	31.5	29.4
R10	125 Derwent Park Rd	32.9	30.7	29.6

Daytime

The lowest daytime L_{90} from the two logging locations (both weekdays and Saturdays) was 41.8 dB(A) giving a L_{90} + 5 dB(A) of 46.8 dB(A). The predicted noise levels for all scenarios are well below this level.

5am to 7am

The lowest L_{90} + 5 dB(A) level logged for the 5am to 7am period was 42.8 dB(A). The results for Scenarios 1, 2A and 2B are below this level.

EPP

As noted above, during the day, the existing ambient noise levels at nearby residences already exceed the EPP acoustic indicator *Outdoor Living Areas - Moderate Annoyance* of 50 dB(A) or in some cases the *Outdoor Living Areas – Severe Annoyance,* indicator of 55dB(A), as a result of significant traffic and industrial activities in the area. The predicted noise levels from the modelling are more than 10 dB(A) less than the existing ambient noise levels, so the change in ambient noise and the level of exceedance of the EPP indicator level, will be negligible.

For the 5am to 7am period, the sleep disturbance indicator of 45 dB(A) is already exceeded on all days that the centre operates. The additional noise has the potential to increase the existing ambient noise level by up to around 1 dB(A) on weekday and Saturday mornings. Given that the background + 5 dB(A) criterion is not exceeded, this will not make a significant change to the level of amenity of nearby residences

Note that no tonal corrections have been applied as one-third octave data for all noise sources was not available. The equipment used is typically quite broadband and does not contain significant tonal characteristics. All noise levels are sufficiently below the assessment criteria to allow for a small tonal correction to be applied, if needed.

Noise level contour maps for Scenarios 1, and the worst case scenario with the shredder operating (Scenarios 2A) are presented in Figure 9 and 10, below. Note that the noise maps do not include the low frequency corrections. The 45dB(A) contour is shown in bold. Due to limitations in the contour plotting process, the values in Table 3 above, take precedence where there is any discrepancy between them and the noise maps values.

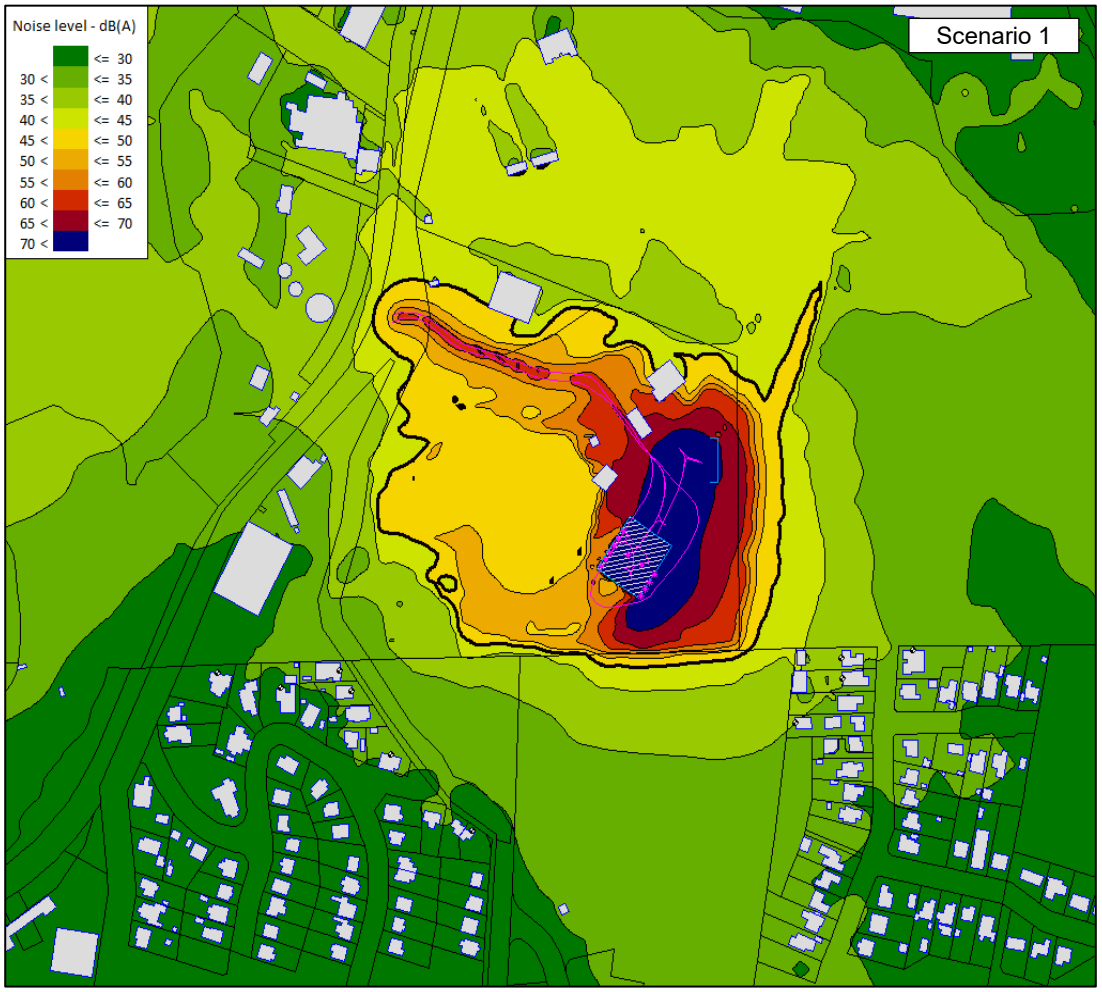

Figure 9: SoundPLAN Noise Contours for Scenario 1 - Truck and Loader Operation

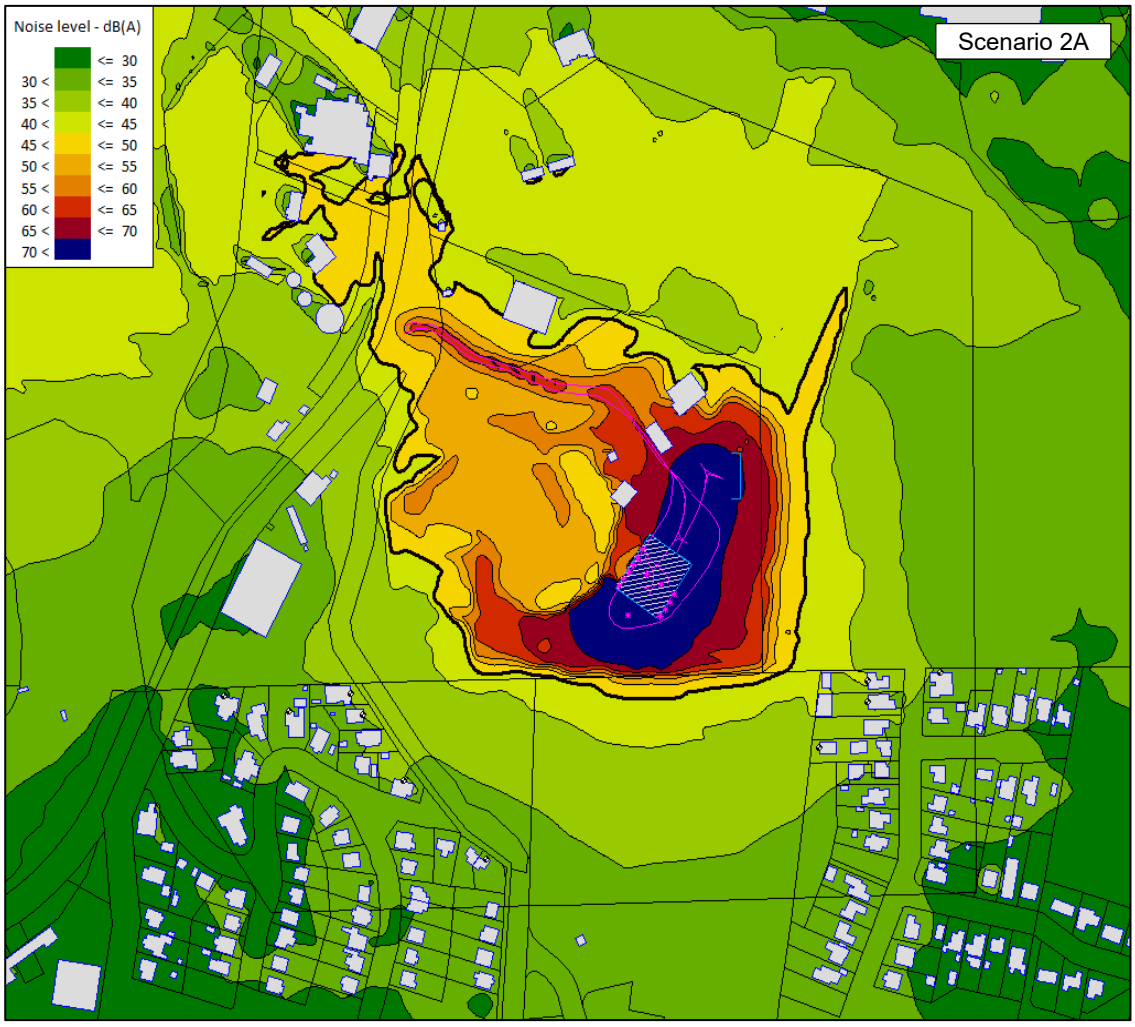

Figure 10: SoundPLAN Noise Contours for Scenario 2A - Truck and Loader Operation + Shredder at "A"

3.7 Noise mitigation measures

As the predicted noise levels are within acceptable limits, no specific noise mitigation measures are required. The following "good practise" noise mitigation measures will be adopted to ensure that noise emissions from the facility meet the calculated levels.

- All mobile plant and equipment should be maintained in good order at all times, especially noise control devices such as exhaust mufflers
- An on-site speed limit of 20km/h or similar should be observed to minimize vehicle noise
- All site-based vehicles will be fitted with reversing alarms that use broad band style reversing beacons
- Dropping of loads, such as skips etc should be avoided; and
- A rubber strip will be provided on the rim of the main loader bucket to enable it to "sweep" the tipping floor without causing undue noise.

4. Air Quality Assessment

The existing WTS and the proposed new resource recovery activities will have relatively limited impacts on air quality, with some potential to generate dust and odour emissions. There are no combustion sources or processes involving toxic chemicals on site. There are no recorded dust or odour complaints during the last five years, either made directly to SWS or received by SWS via the Hobart City Council.

Existing air quality at nearby residences is generally relatively good, although fine airborne particles generated by traffic, domestic wood heaters and industrial activities are present. The nearest EPA air quality monitoring station is at the State Hockey Centre in Newtown, about 2km to the south. During 2024, it recorded an average level of $PM_{2.5}$ particles in the air of 2.3 $\mu g/m^{3,}$ with no excursions over about 18 $\mu g/m^3$, which is considered "good".

Environmental Protection Policy (Air Quality)

The Tasmanian *Environmental Protection Policy (Air Quality) 2004* seeks to protect the ambient air environment in Tasmania by (in summary):

- Assessing air quality compliance with the National Environmental Protection Standards and where the standards are not met, pursuing a strategy to achieve compliance;
- Regulating industry so as to minimise the production of wastes from point sources that might be emitted into the atmosphere;
- Regulating industry to require the application of accepted modern technology to reduce emissions to the greatest extent practicable;
- Regulating polluters so as to maintain a reserve capacity in the airshed, to allow reasonable emissions from multiple activities, while still achieving acceptable standards of ambient air quality; and
- Providing specified methods for monitoring, measuring, modelling and managing emissions to air including products of combustion, solid particles, toxic gasses and vapours and odour.

Potential dust emissions and odour emissions are assessed in Sections 4.1 and 4.2 below. The dust assessment focuses on mitigation measures required to prevent significant emissions of dust leaving the site. The odour assessment assesses the potential level of odour emissions, in accordance with the methods specified in Section 14 and Schedule 3 of the EPP.

4.1 Dust Assessment

Shredder Operation

The shredder to be used is a Komptech *Terminator* 6000S mobile shredder, as shown in Figure 11 below. It will normally be used at the two outside locations indicated in Figure 3 above, but may also be used inside the tipping shed on occasion. It will typically be used to reduce the size of timber, plaster board, woody green waste, rigid plastics (such as old wheelie bins, old HDPE pipe etc) and mattresses (which typically contain wire and foam rubber) down to a target sizing of 100 to 250mm. This results in a more compact, easy to handle load for onward transport. None of these materials are expected to generate more than minor amounts fine particles or airborne dust. Plaster board being drier and more frangible, may generate some visible dust if large quantities are being shredded, in which case dust suppression measures such as a water spray will be used to contain any dust generated.

The shredder will be operated on a concrete slab, within a 6 to 8m exclusion zone. This area will be swept regularly to prevent the buildup of any debris from the shredding process. Some lower density materials may be susceptible to being blown by the wind, so shredding will not be undertaken if the onsite windspeed exceeds 20 kmh. It is also noted that the shredding locations are generally well sheltered from the wind by the old quarry walls and adjoining buildings. With these measures in place it is considered unlikely that shredded material will carried by the wind further than a few meters from the machine, and certainly will not reach the site boundary.

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Figure 11: Komptech Terminator *6000S Shredder (Image from manufacturer's website)*

General Site Dust

Some dust may be generated by loaders and trucks handling fine dry materials especially in dry, windy weather, however most of the waste materials being handled will have large particle sizes, with few fine particles that are likely to become air borne. Also, the majority of all material handling activities will occur inside the tipping building. Since the completion of the recent upgrade, the main onsite access and outdoor waste handling areas have been fully sealed.

The transmission of any dust generated, is significantly moderated by the distance to the nearest residences, the topography of the terrain, with the facility being located within a former quarry with steep side walls, the presence of trees and other vegetation, and shielding by intervening commercial buildings etc.

Dust monitoring and control measures will be included in the site management plans. These will include:

- Visual monitoring of the site will be undertaken to ensure that any dust generation that starts to occur, is promptly addressed. Any outdoor processes observed to be generating excessive visible dust will be paused until effective dust control measures have been put in place. The site manager will be responsible for ensuring adequate monitoring is carried out and acted upon when required;
- Maintenance and housekeeping of outdoor hard-stands and roadways will be kept up, to ensure that the potential for vehicles to generate dust is minimised;
- All vehicle loads entering and exiting the site will be covered by tarpaulins or contained in fully enclosed trucks;
- Fine, dry materials (i.e. materials with small enough particle sizes, to have the potential to raise dust under windy conditions) will not be stored on site for extended periods, without applying dust prevention methods such as covering or wetting down with sprinklers etc;.
- Water for dust control purposes will be sourced from the Taswater mains;
- Landscaping and vegetation on the periphery of the site and areas will be maintained; and
- Staff, supervisors and contractors will be trained in on-site dust control measures.

With these measures in place, dust levels sufficient to cause a nuisance to staff working on site, or to nearby residents, are not expected to occur.

4.2 Odour assessment

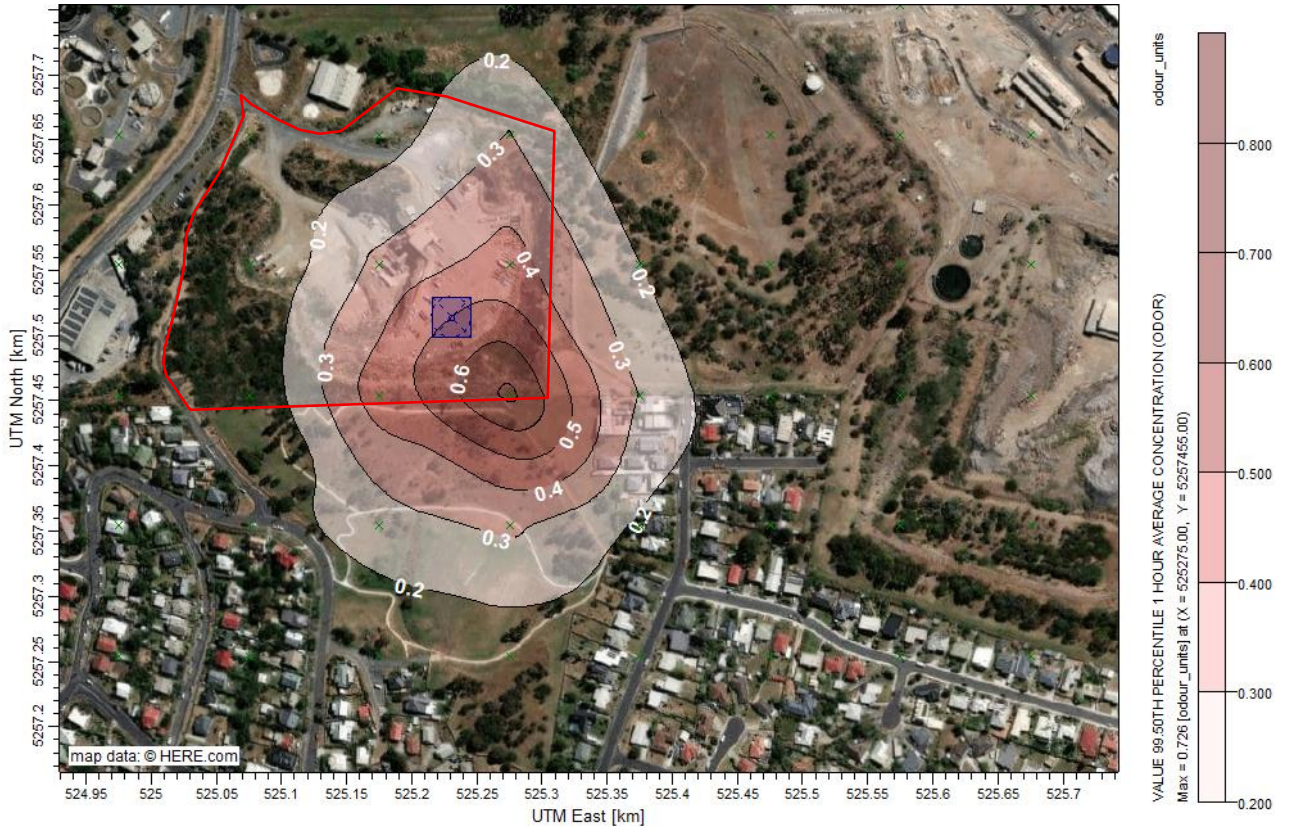
Odour emissions from the facility are expected to continue to be minimal, as the majority of the waste material being received will have a relatively low overall odour generation potential, as described in Section 2 above. Relatively small quantities of general municipal waste and FOGO which does have a significant odour generating potential will be handled.

Only very limited processing of incoming materials is undertaken on site, with no onsite processing of odorous materials. Most waste is only received, sorted, "bulked up" and loaded onto semi-trailers for dispatch, within 24 hours of arrival. All organic waste will be received and bulked up inside the tipping shed, further limiting any odour impacts to nearby residents. As described above, some materials are disassembled, or size reduced using a shredder. These are all inert materials without any significant odour generating potential.

To demonstrate that worst case odour emissions from the facility will not cause an adverse impact on nearby residents, odour emissions have been assessed using air dispersion modelling, carried out in accordance with the Tasmanian EPA's *Atmospheric Dispersion Modelling Guidelines,* October 2020. Air dispersion modelling allows the concentration of odour in the area surrounding the odour emissions source to be predicted, taking into account local weather conditions and topography. For this assessment it has conservatively been assumed that that the tipping building is full of material with a similar odour emissions rate to general municipal waste.

The results of this modelling are shown in Figure 12, below. The ground level odour concentration at the boundary of the facility is well below the limit of 2 odour units, required by the Tasmanian *Environmental Protection Policy (Air Quality).* On this basis it may be concluded that odour emissions from the upgraded facility, will not adversely impact on the amenity of nearby residents.

Full details of the odour modelling are provided in Appendix A.



Scenario: Normal Operations	**Pollutant:** Odour **Units:** ou	**Criterion:** TAS EPP (Air) 2ou **Maximum:** 0.8 ou (on boundary)
Location: Lutana Resource Recovery Centre	**Result:** 99.5th percentile **Averaging Time:** 1 hour	**Dispersion Model:** CALPUFF **Meteorology:** TAPM, CALMET

Figure 12: Predicted Ground Level Odour Concentrations (99.5th percentile, 1 hour averaged results in ou)

5. Conclusions

The predicted noise levels from the proposed Waste Recovery Centre, at nearby residences, are significantly less than the existing ambient noise levels and the background noise level + 5dB(A). As a result, the noise from the facility is unlikely to be distinguishable from the existing noise and will not result in a loss of amenity at the nearest sensitive receivers. The additional noise from the proposed activities will not cause the EPP guideline acoustic indicators for outdoor living or sleep disturbance to be exceeded.

Dust and odour emissions at levels sufficient to cause a nuisance to residents are not expected to occur.

On the basis of this noise and dust assessment, it may be concluded that the proposed change of use will not cause an unreasonable loss of amenity or environmental nuisance.

Odour Emissions Assessment Criteria and Methodology

Appendix A

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1. Assessment criteria and methodology

Criteria for the assessment of odour emissions are specified under Schedule 3 of the Tasmanian Environmental Protection Policy (Air Quality). Table 1 of Schedule 3 specifies a maximum ground level concentration of 2 Odour Units (ou) evaluated at or beyond the boundary of a facility. The odour concentration is required to be calculated by atmospheric dispersion modelling and the criteria assessed using a 1-hour averaging period and the 99.5th percentile result where local high quality meteorological and emissions data are available.

An odour unit is a unit of measurement for odour concentration, defined under AS/NZS 4323.3 Stationary source emissions – Determination of odour concentration by dynamic olfactometry. One ou corresponds to the typical human threshold of odour detection. Dynamic olfactometry involves establishing the threshold of detection by carrying out dilution trials. For example, a one cubic meter sample of odorous air with an odour concentration of 100,000ou would require 99,999 m^3 of odour free air (increasing the total volume of the sample to 100,000 m^3) to dilute the odour concentration to the 1 ou odour threshold.

This study uses TAPM, CALMET and CALPUFF environmental air dispersion modelling software to predict the dispersion of odour emitted from the STP. This software is widely used in Australia and internationally, for the prediction of the ground level concentration of air pollutants emitted from industrial sources. The modelling methodology used follows the Tasmanian EPA's Atmospheric Dispersion Modelling Guidelines, October 2020.

2. Meteorology

The distribution of wind speeds and directions experienced in the area of the plant greatly affects how emissions to air are diluted and distributed. As there is no weather station within several kms of the site, site specific meteorological data was modelled using TAPM and further refined for use in CALPUFF using CALMET. The year 2020 was selected for the assessment as the calendar year 2020 had a preponderance of "calms" and periods of very low wind speeds. Low wind speed conditions tend to result in higher ground level concentrations of odour, as odour dispersion and dilution does not occur as rapidly as it does in higher wind conditions. Selecting a year with lower than typical wind speeds enables a conservative assessment of the impact of emissions to air.

The predicted wind speed and direction distribution for the year 2020 at the site is shown in the wind rose in Figure 13 below. A wind rose graphs the percentage of the year that the winds blow from each sector (i.e. N, NNE, NE, ENE etc.) As a result of the site's position in the Derwent Valley and the proximity to the Derwent River, wind conditions on site are widely distributed in both strength and direction, although the prevailing wind direction is north westerly and wind from the southwest is rare. Lighter winds are also distributed across most directions, but more frequently from the north to northeast.

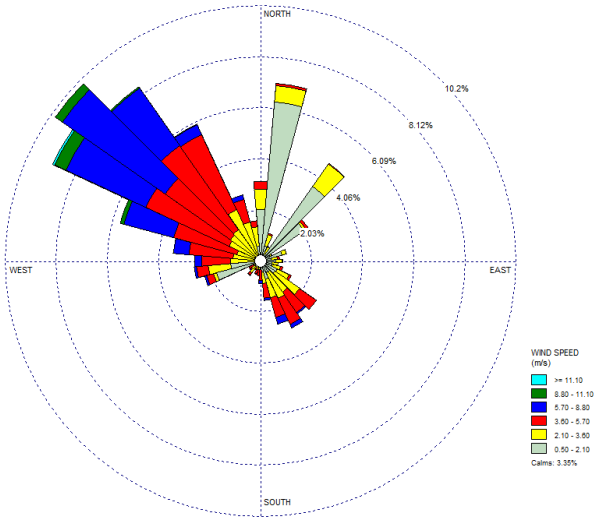

Figure 13: Wind Rose from the CALMET Weather data generated for the site

The wind rose compares well with the long term, 9am and 3pm wind roses from the Bureau of Meteorology (BOM) Hobart Ellerslie Road weather station, shown in Figure 14 below. While this is the nearest BOM weather station to the site that records wind observations, its location closer to the coast causes some differences in wind patterns including the greater frequency of SW winds.

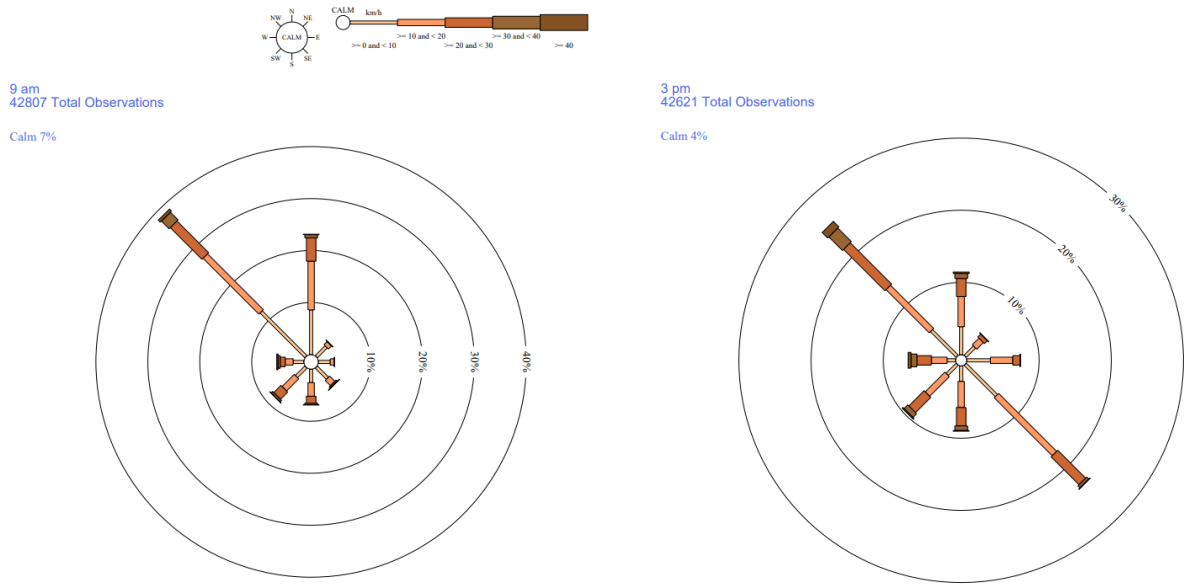

Figure 14: BOM Long Term Wind Roses for 9am and 3pm at Hobart (Ellerslie Road)

3. Odour source details

The CALPUFF model was set up to include an odour volume source corresponding to odour generated by waste being tipped, "bulked up" and transferred to dispatch trucks within the tipping shed.

Odour source details are listed in Table 4 below. The specific odour emissions rate (SOER) of 0.7 ou/s/m^2 used to characterise the rate of odour generation by material in the tipping shed is based on result published in an odour assessment for the Macs Reef Waste Transfer Station in NSW by SLR Consulting in 2011. It was derived from odour monitoring at a municipal waste landfill site. This is a conservative emissions rate as the presence of construction and demolition waste and commercial and industrial waste, lowers the overall average odour emissions intensity of the material, compared with a facility handling purely municipal solid waste.

Table 4: Odour Source Details

Source	Source Type	Nominal Area (m^2)	SOER ou/s/m2	OER ou/s	*Source Coordinates*	*Base Elevation (m)*	*Release Height Above Ground (m)*
Tipping Shed	Volume	900	0.7	630	525231E 5257514N	40	4

3.1 Modelling setup

The CALMET modelling domain is shown in Figure 15 below. The tipping shed odour source is shown as a purple square in the inset. Odour dispersion was calculated over a 2km x2 domain at a resolution of 100m. Also indicated is the terrain elevation. Additional modelling details are shown in Table 5.

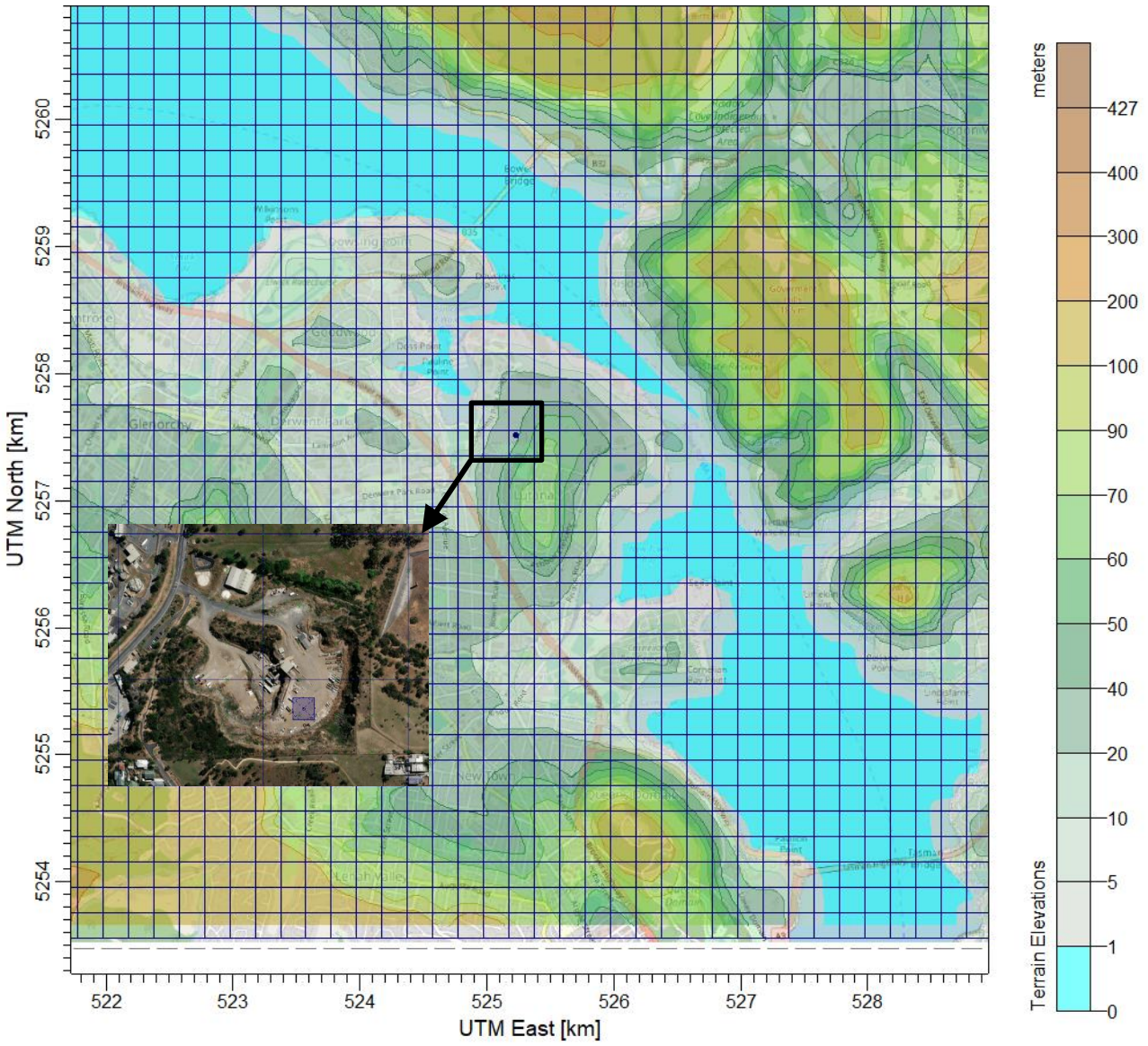

Figure 15: CALPUFF Modelling Domain showing Elevation, the Facility Boundary and Emission Sources.

Table 5: Additional Modelling Details

Parameter	***Value***
TAPM	
TAPM Version	4
Meteorological Data Period	1 January 2020 - 31 December 2020
Domain Centre	Latitude = S 42°50
	Longitude = E 147°18.5
Terrain Height	NASA STRM 9-Second (250 m)
Land use	RPDC 2003 TasSVLU (250m)
Sea surface temperature	Default database
Advance/experimental settings	Default
Number of Vertical Locations	30

Parameter	*Value*
Number of Easting Points	31
Number of Northing Points	31
Outer Grid Spacing	30,000 m × 30,000 m
Grids	4
Grid Resolutions	30km, 10km, 3 km, 1km
CALMET	
CALMET Version	6.5.0
Mode	No Observations
Domain Origin (SW Corner)	Easting: 521.2km
	Northing: 5,253.6km
Grid Resolution	200m x 200m
Domain Size	8km × 8km
Number of Vertical Levels	12
Vertical Levels (m)	20, 40, 60, 80, 100, 160, 320, 640, 1200, 2000, 3000, 4000
CALMET Settings	TERRAD = 5 km
	(All other settings left at default)
Terrain Data Source	NASA SRTM (90 m resolution)
Land use data source	Custom built using aerial photography from *TheList*
CALPUFF	
CALPUFF Version	7.2.1
Modelling Period	1 January 2020 -31 December 2020
Computation Grid Size	2km × 2km
Sampling Grid Resolution	100m x 100m
CALPUFF Settings	MDISP = 2 MPDF = 1 (All other settings left at default)

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Lutana Resource Recovery Centre
Emissions Assessment

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