HUME WASTE RECOVERY CENTRE

Noise Assessment

Prepared for:

Flexible Australia
Oaks Estate
101 Underwood Street
OAKS ESTATE ACT 2620

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BASIS OF REPORT

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
670.11038-R01-v1.0	10 February 2020	Matthew Bryce	Robert Hall	Matthew Bryce

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1 Introduction

SLR Consulting Australia Pty Ltd (SLR) has undertaken an assessment of noise emissions associated with Stage 1 of the proposed Resource Recovery Facility ("the Facility") to be located on land known as 36 Couranga Crescent (Block 11 Section 21), Hume in the Australian Capital Territory (ACT).

This report considers noise emissions associated with the Facility with regard to zone noise standards determined in accordance with the ACT *Environmental Protection Regulation 2005* ("the Regulations").

2 Project Site and Description

2.1 Locality

The project site and surrounds are shown in **Figure 1**. The surrounds of the site are largely unoccupied and undeveloped at the time of this assessment. Commercial/industrial receivers are located to the north east of the site and the closest residential receivers are located around 350 m west of the site beyond the Monaro Highway.

2.2 Facility Operations

The Facility will separate largely waste products from a variety of sources into 'fit for purpose' products for beneficial reuse in commercial markets. The waste may be in liquid or solid form comprised of a variety of materials including organic matter (leaves, twigs and grass clippings), gross pollutants (glass, aluminium cans, plastic, litter), sand, gravel and soil. It is sourced from:

- Street sweeping activities;
- Stormwater maintenance activities (GPT's);
- Golf course bunkers (bunker sand); and
- Hydro excavation activities.

Waste materials will be delivered directly to the site in pumper-type (for wet waste) and tipper-type trucks (for solid wastes). Those vehicles are weighed at a weighbridge prior to delivery to the waste receival areas.

Wet waste is deposited directly into processing plant through a mechanical transfer system contained in the waste receival pit. Solid wastes (such as from GPTs) will be unloaded into bunded receival bays within the building for inspection prior to loading fed directly into the first stage of the system by a loader.

Following processing the output materials such as sand and gravel are deposited into bunded bays for inspection and dispatch for reuse or transportation to landfill. Any waste generated from the facility will be stored in the waste and recycling bin area and recyclable materials such as metal, paper or plastics will be placed in dedicated skips for transfer to a recycling facility.

The planned layout of the site including the ingress, egress and movements of the trucks around the site is shown in **Figure 2**. The site perimeter will be surrounded with "colorbond" fencing (at least 1.8 m high) and landscaped.

The bulk of the processing will occur within a large building clad with “colorbond” metal sheeting with counter levered awnings. The building will be approximately 9 m high and approximately 65 m long and 20 m wide. There will be a large opening in the southeast-facing facade for access by the loader, together with a small opening for the conveyor between the waste receival pit and the internal processing area. There will also be small openings in the northwest-facing facade for the output conveyors.

2.3 Operating Hours

The Facility will operate Monday – Friday. Approximately 44 truck movements will occur between the hours of 7:00 am and 6:00 pm. No significant noise-generating work outside of these times is proposed.

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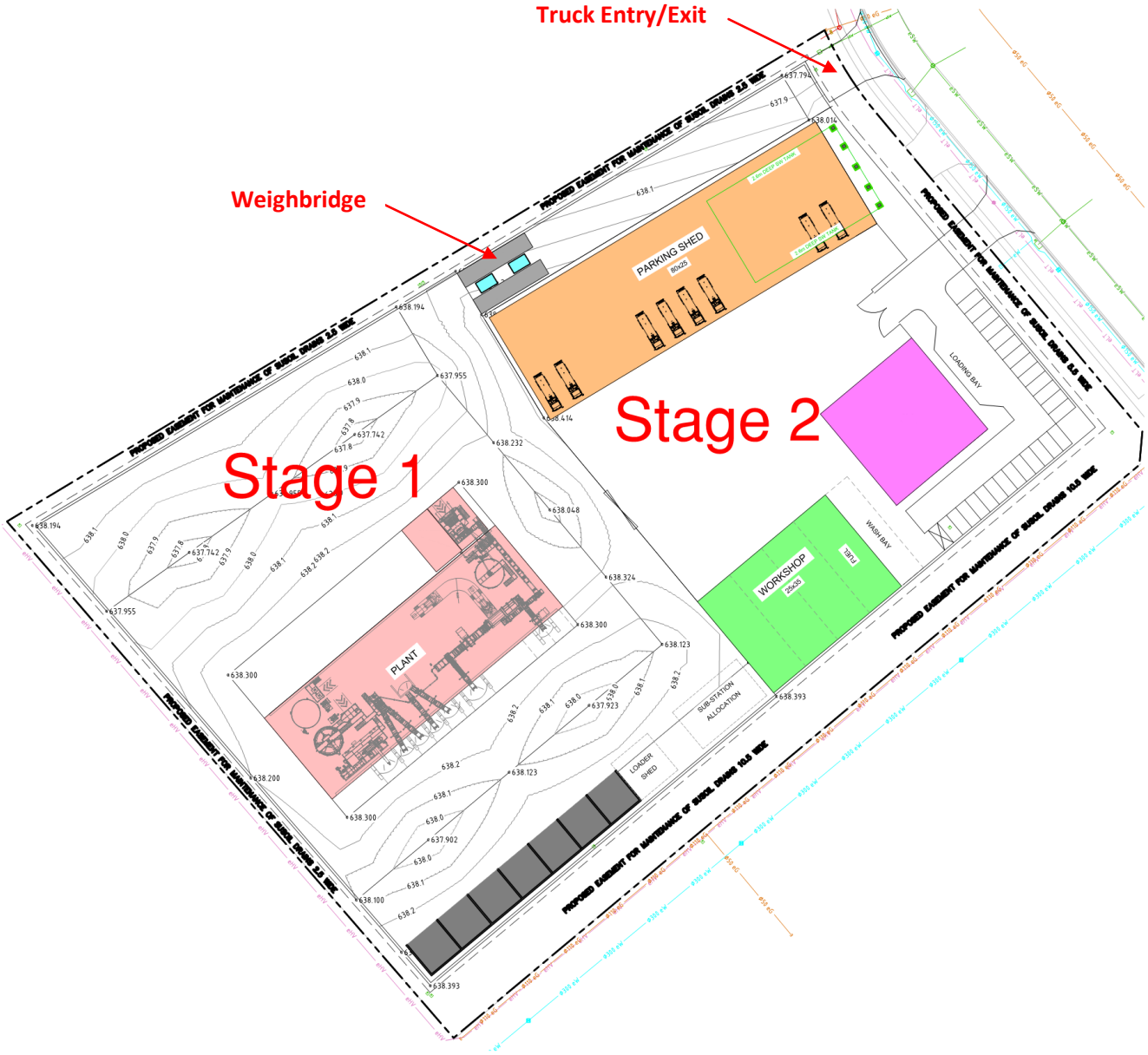
Site Location & Surrounds

FIGURE 1

Figure 2 Site Layout



3 Noise Criteria

3.1 ACT Zoning Noise Standards

With regard to noise, Part B – General Development Controls, Element 5: Amenity, Item 5.2 of the *ACT Industrial Zones Development Code* (effective 25 May 2018) states the following:

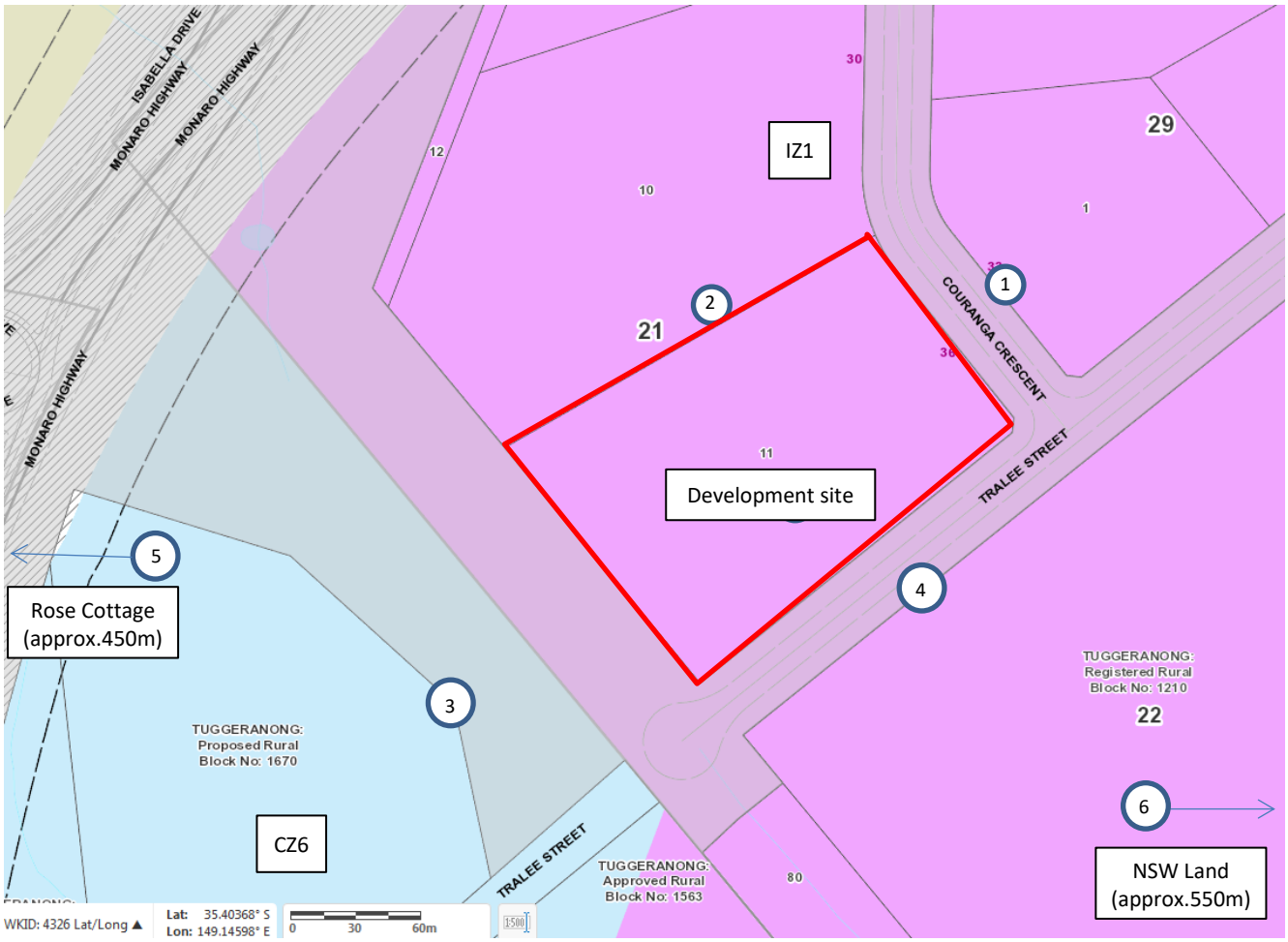
Rules	*Criteria*
There is no applicable rule.	*C33* *Where the proposed use is adjacent to, or is, a noise producing activity, noise attenuation measures are utilised to protect the amenity of the area and promote compatibility of uses.*
R34 *A Noise Management Plan, prepared by an accredited acoustic specialist who is a member of the Australian Acoustical Society, endorsed by Environment Protection is provided for the following uses:* *- club* *- drink establishment* *- hotel* *- industry (except light industry)* *- indoor entertainment facility* *- restaurant* *The Noise Management Plan details the design, siting and construction methods, which will be used to minimise the impact of noise on neighbours.*	*C34* *If an endorsed Noise Management Plan is not provided, the application will be referred to the relevant agency in accordance with the requirements of the* Planning and Development Act 2007.

In relation to operational noise, there are no requirements relating to noise contained within the ACT *Hume Precinct Map and Code* or the objectives of the IZ1 *General Industrial Zone*.

To demonstrate that noise (from "industry") would not impact on neighbours, noise emanating from the facility should comply with the ACT *Environmental Protection Regulation 2005* (EPR) which provides criteria based on ACT land zonings.

The land zonings of the project site and surrounds as per the ACT Territory Plan have been shown in **Figure 3**.

Figure 3 Territory Plan Excerpt Indicating the Proposed Facility Site



Source: http://www.actmapi.act.gov.au/ (Territory Plan)

Based on the land zones, the EPR zone noise standards for the site and surrounds are provided in **Table 1**.

Table 1 Zone Noise Standards

Noise Zone	ACT Land	Zone Noise Standard, dBA $L_{A10,T}$			
		Monday - Saturday 7 am – 10 pm	Sunday and public holiday 8 am – 10 pm	Monday-Saturday 10 pm – 7 am	Sunday and public holiday 10 pm – 8 am
A	land in an industrial zone (IZ1)	65	55	65	55
F	land (other than land in the city centre, town centres and group centres) in — a leisure and accommodation zone (ie, CZ6)	Same as the noise standard for the adjoining noise zone with the loudest noise standard for the time period, ie			
		65	55	65	55
G	all other NSW land	45	35	45	35

The main assessment locations will be at the property boundaries described in **Table 2** and shown in **Figure 3**.

Table 2 Assessment Locations

Assessment Location	Description
Location 1	33 Couranga Crescent (Block 1 Section 29, IZ1)
Location 2	30 Couranga Crescent (Block 10 Section 21, IZ1)
Location 3	Block 1670 Tralee Street (Section 22, CZ6)
Location 4	Block 1210 Tralee Street (Section 22, IZ1)
Location 5	"Rose Cottage" (nearest residential use), Section 79, CZ6
Location 6	Residence on NSW land, Tralee

Based on the land zoning and the applicable zone noise standards, the zone noise standards that will be specific to this assessment are shown in **Table 3**.

Table 3 Assessment-Specific Zone Noise Standards

Assessment Location	Assessment-Specific Noise Standard, dBA L_{A10}			
	Monday - Saturday 7 am – 10 pm	Sunday, public hols 8 am – 10 pm	Monday-Saturday 10 pm – 7 am	Sunday, public hols 10 pm – 8 am
Location 1	65	55	65	55
Location 2	65	55	65	55
Location 3	65	55	65	55
Location 4	65	55	65	55
Location 5	65	55	65	55
Location 6[1]	55	45	55	45

1. The zone noise standard on the boundary between two or more noise zones is the average of the noise standards for the noise zones for the time when the noise is emitted, rounded up to the nearest dBA.

3.2 Construction Noise

Guidance for the assessment of construction noise in the ACT can be found in the *Environment Protection Guidelines for Construction and Land Development in the ACT*, issued by the EPA in 2011. That document refers to the requirements of the EPR which in Section 29 states:

> *Noise—other exceptions*
>
> *Under section 25 (1), noise is not taken to cause environmental harm in an affected place if it is noise mentioned in schedule 2, table 2.3, column 2 and the conditions (if any) mentioned in column 3 for the noise are met.*

In relation to construction noise, Schedule 2, Part 2.3 states:

Column 1 item	*Column 2 item*	*Column 3 conditions*
21	*noise emitted in the course of –* *(a) building work for which a building approval under the Building Act 2004, division 3.3.*	*(a) all of the following:* *(i) the noise is emitted from a place in noise zone A or B;* *(ii) all relevant noise reduction measures mentioned in AS 2436, as in force from time to time, are implemented;* *(iii) the noise is emitted between 6 am and 8 pm;*

This would mean that the noise zone standards may be exceeded between the hours of 6:00 am and 8:00 pm, provided all relevant noise reduction measures mentioned in Australian Standard (AS) 2436:2010 *Guide to noise and vibration control on construction, demolition and maintenance sites* (AS 2436), as in force from time to time, are implemented. The noise zone standards, as shown in **Table 1**, must be met at all other times.

3.3 Vibration

There are no standards or guidance for vibration associated with the construction or operation of an activity or development that apply specifically in the ACT.

The operational activities at the proposed facility are not expected to generate perceptible levels of vibration at the assessment locations, however some construction activities may generate significant levels of vibration.

The effects of vibration can be divided into three main categories:

- Those in which the occupants or users of a building are inconvenienced or possibly disturbed;
- Those where the contents of a building may be affected; and
- Those in which the cosmetic exterior or the integrity or the structure of a building or an object may be affected.

As the surrounds of the site are largely unoccupied and undeveloped the most appropriate criteria will be those relating to cosmetic damage. Australian Standard (AS) 2187: Part 2-2006 *Explosives - Storage and Use - Part 2: Use of Explosives* and its referral document British Standard (BS) 7385 Part 2-1993 *Evaluation and measurement for vibration in buildings Part 2* contain structural damage vibration limits.

Those standards provide frequency-dependent vibration limits related to cosmetic damage, noting that cosmetic damage may be minor in nature, may be readily repairable and does not affect the structural integrity of the building/structure.

The recommended vibration limits for transient vibration for minimal risk of cosmetic damage to residential and industrial buildings are shown in **Table 4**.

Table 4 Transient Vibration Guide Values – Minimal Risk of Cosmetic Damage

Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
	4 Hz to 15 Hz	15 Hz and Above
Reinforced or framed structures. Industrial or heavy commercial buildings	50 mm/s at 4 Hz and above	

4 Construction Noise Assessment

Construction noise associated with the project is understood to be exempt from compliance with the zone noise standards as all works occur between 6:00 am and 8:00 pm.

Notwithstanding, an indicative assessment of construction noise was undertaken to identify potential noise emissions and particularly noisy activities at the development in order to inform the development of the construction environmental management plan during later design stages (post-approval).

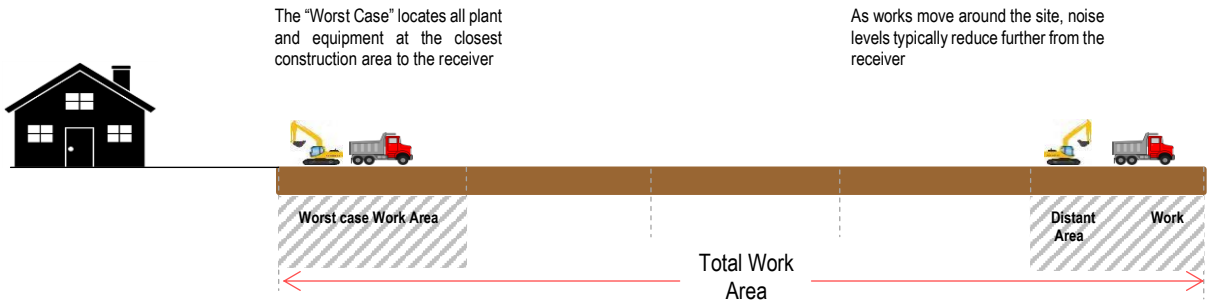
This assessment provides a 'realistic worst case' noise assessment for construction scenarios based on proposed works within a 15-minute period. This is typically associated with works located nearest to a particular receiver.

In reality, at any particular location, the potential construction noise impacts can vary greatly depending on factors including the following:

- The position of the works within the site and distance to the nearest sensitive receptor
- The overall duration of the works
- The intensity of the works
- The time at which the works are undertaken
- The character of the noise emissions.

Noise levels at sensitive receivers can be significantly lower than the worst-case scenario when the construction works move to a more distant location in a works area. This concept is shown in **Figure 4**.

Figure 4 Conceptual Illustration of Work Areas



4.1 Construction Hours

Construction works would be undertaken during the standard hours prescribed in the EPR of 6:00 am to 8:00 pm any day. No works on Sundays or Public Holidays are proposed.

In the event that construction works are required to be completed outside those hours, a separate Out of Hours Works (OoHW) assessment would be completed. Noise emissions would be assessed on a case-by-case basis as required.

4.2 Construction Activities

The plant/equipment likely to generate significant noise emissions during the excavation and house construction stages, together with their associated sound emission levels are outlined in **Table 5**.

Table 5 Construction Stages and Equipment

Stage/Scenario	Plant/Equipment	Number	Sound Power Level[1], Lw dBA
Clearing / Grubbing	Tilt tray truck	1	103
	Bobcat	1	95
	CAT scraper	1	113
	Semi-trailer	1	108
	Water cart	1	107
Excavation	CAT scraper	1	113
	Tipper	2	110
	Excavator (20t)	1	100
	Semi-trailer	1	108
	Water cart	1	107
Site Compaction	Smooth drum roller	1	107
	Padfoot compactor	1	113
Concrete	Concrete agitator	150	109
	Concrete pump	20	108
	Backhoe	1	100
Material Delivery	Flatbed Hi-AB truck	10	103
	Tipper	80	110
Site Watering	Semi-trailer	1	108
	Water cart	1	107
	Tipper	1	110
Shed Construction	Padfoot compactor	6	98
	Semi-trailer	20	109
	Flatbed Hi-AB truck	20	103

1. Based on sound data published in Transport for NSW *Construction Noise and Vibration Strategy* (CNVS) and AS 2436.

4.3 Predicted Construction Noise Levels

Predicted construction noise levels for the "noisy" items of plant and equipment are shown in **Table 6**. The predictions assume that the plant/equipment operates continuously for at least 15 minutes, which for many items will be a conservative assumption.

The prediction levels represent a "worst case" situation, where the plant/equipment operates at the same location, rather than a more common situation where the plant/equipment operates at greater distance from the neighbouring receptors.

Table 6 Predicted Construction Noise Levels

Distance	Predicted Noise Level, dBA L_{A10}						
	Clearing / Grubbing	Excavation	Site Compaction	Concrete	Material Delivery	Site Watering	Shed Construction
25	73	74	72	70	69	71	68
50	67	68	66	64	63	65	62
75	64	65	62	60	59	62	59
100	61	62	60	58	57	59	56
150	58	59	56	54	53	56	53

As noise from construction activities are exempt from complying with the zone noise standards during the daytime, the assessment would only apply to works during the non-standard hours of 8:00 pm – 6:00 am.

Notwithstanding, it can be in **Table 6**, it can be seen that the predicted construction noise levels would comply with the daytime zone noise standard (65 dBA) where the activity occurs 75 m or more from the nearest assessment location. It is expected that the bulk of the construction activities would occur at that distance or greater from the assessment locations.

Some exceedances of the daytime zone noise standard would occur where the construction activity in close proximity to the assessment location, ie very close to the site boundary. However, it is important to note that it is common and often unavoidable for the standards to be exceeded, often by a large margin, in situations where construction activities occur in close proximity to receptors.

Nonetheless, the proponent should undertake reasonable and feasible mitigation measures in accordance with Australian Standard (AS) 2436:2010 – *Guide to noise and vibration control on construction, demolition and maintenance sites* (AS 2436) to minimise construction noise from the site as far as practicable.

4.4 Construction Noise Mitigation

Construction often requires the use of heavy machinery that can generate high noise levels at nearby buildings and receivers. For some equipment, there is limited opportunity to mitigate the noise and vibration levels in a cost-effective manner and hence the potential impacts should be minimised by using feasible and reasonable management techniques.

If additional activities or plant that will emit noise significantly exceeding those assumed for this assessment are found to be necessary, these will, if required, be assessed by an Acoustical Consultant and appropriate mitigation measures will be implemented.

It is not common for noise-related complaints to occur during the construction of industrial premises in an industrial-zoned precinct, particularly if construction occurs during standard hours and worker behaviour is reasonable.

Guidance and best practice for construction noise management are included within AS 2436. All feasible and reasonable mitigation measures should be implemented where possible to minimise and manage noise emissions from the construction works in accordance with the procedures detailed in **Table 7**.

The broad strategies to control construction noise are:

- Controlling noise at the source.
- Controlling the spread of noise (path).
- Controlling noise at the receiver.

Typically, fixed plant can be treated to reduce the noise emissions at the source by maximising source/receiver distance, using screens or enclosures.

In order to minimise potential for noise impacts, a combination of noise source treatment, pathway treatment and management controls are recommended in the following sections.

Table 7 Management Controls for Construction Noise

Item	Mitigation Measure
Scheduling	Undertake construction activities during standard daytime construction hours.
Project planning	Where possible, use alternative less noise intensive construction techniques.
	Undertake works and deliveries/removals between 6:00 am and 8:00 pm.
Site Layout	Position work compounds, parking areas and equipment and material stockpiles away from sensitive locations.
Training	Training to be provided to all personnel on noise requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.
Plant and Equipment Source Mitigation	Noisy plant or processes should be replaced by less noisy alternatives where possible.
	Operate plant and equipment in the quietest and most efficient way, including not idling vehicles or equipment unnecessarily. This includes trucks arriving to site early in the early morning.
	Maximise the distance between noisy equipment (ie compressors, generators, pumps, etc) and the nearest receptors, wherever possible. Orient plant so any vent outlets and noise emissions are directed away from receivers. Siting noisy equipment behind structures that act as barriers.
	Engines and exhausts are often the dominant noise sources on mobile plant such as cranes, excavators, trucks, etc. In order to minimise noise emissions, residential grade mufflers should be fitted on all plant utilised on site.
	Regular and effective maintenance of noise generating equipment, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.
	Avoid dropping materials from a height.
	Avoiding noisy plant working simultaneously close together.
	Non-tonal reversing beepers (or an equivalent mechanism) shall be fitted and used on all construction vehicles and mobile plant regularly used onsite and for any out of hours work. Consider the use of ambient sensitive alarms that adjust output relative to the ambient noise level.
	No queuing of trucks outside residential properties. Truck drivers should avoid compression braking.
	Ensure truck movements are kept to a minimum, ie that trucks are fully loaded on each trip.
Screening	Install purpose-built screening or enclosures around long-term fixed plant where possible.
	Site layout should take advantage of existing screening from local topography. Position site huts, maintenance sheds and/or shipping containers between noisy equipment and the affected receivers.
Monitoring	Conduct noise monitoring in response to any complaints received to verify that levels are not substantially above the predicted levels.
Community consultation	Notifications should be provided to the affected community where high impacts are anticipated (eg piling, rockbreaking) or where out of hours works are required. Notification should be a minimum of five working days.
	Where complaints are received, the work practices are to be reviewed and feasible and reasonable implemented to minimise any further impacts.

5 Construction Vibration Assessment

5.1 Vibration Generating Activities

Excavation and compaction are likely to be the most significant vibration-generating activities.

5.2 Guideline Safe Working Distances

The Transport for New South Wales "*Construction Noise and Vibration Strategy*" provides guidance regarding safe working distances for vibration intensive plant including those likely to be used on the project. The safe working distances relate to both "cosmetic" damage (refer to BS 7385:2 *Evaluation and Measurement for Vibration in Buildings Part 2: Guide to Damage Levels from Ground-borne Vibration*) are provided in **Table 8**.

Table 8 Recommended Safe Working Distances for Vibration Intensive Plant - Cosmetic Damage

Plant Item	Rating/Description	Safe Working Distance
Large Hydraulic Hammer	20t excavator	22 m
Smooth Drum Roller	> 18t roller	25 m

The safe working distances presented in **Table 8** are indicative as the actual distances will vary depending on the particular item of plant and local geotechnical conditions. They apply to addressing the risk of cosmetic (minor - easily reparable) damage of typical buildings and structures under typical geotechnical conditions.

It is unlikely that any receptors not related to the Facility would be within the minimum safe work distances for cosmetic damage in **Table 8**.

Therefore, no specific vibration mitigation measures are indicated to be required.

6 Operational Noise Assessment

6.1 Noise Modelling

In order to predict noise levels associated with operational activities, a SoundPLAN computer model was developed. SoundPLAN is a software package which enables compilation of a computer model comprising a digitised ground map (containing ground contours and significant structures, where appropriate), the location and acoustic power levels of significant noise sources, and the location of sensitive receptors.

The Conservation of Clean Air and Water Europe (CONCAWE) prediction methodology was utilised within SoundPLAN. This prediction method was specially designed for large industrial facilities.

6.2 Modelling Inputs

6.2.1 Noise Sources

The acoustically significant sources of noise and their associated sound power level (SWL) at the Facility have been described in **Table 9**.

The SWL values have been obtained from measurements undertaken by others at a similar facility in Victoria as provided to SLR and, where appropriate, supplemented with data contained in SLR's in-house database of noise measurements.

All noise sources are assumed to operate continuously for the 15-minute assessment period unless otherwise noted.

Table 9 Noise Sources

Noise Source	Number	Height, m	SWL, dBA $L_{A10(15minute)}$, per item
Pit pump	1	0.5	100
Aquacycle[1]	1	3	94
Aggmax[1]	1	3	100
Conveyor[1]	9	3 – 4	82
M1510 Feed[1]	1	3	89
Trommel Feed[1]	1	3	86
Front-end Loader[1, 2]	1	2	112
Truck (mobile)[2, 3]	1	4	116
Truck (idling)[4]	2	2	108

1. Located within an enclosure/building
2. Modelled at 10 km/h
3. It is assumed that trucks/tanker idle at the weighbridge for a total of 5 minutes in a 10-minute period.
4. SWL adjusted for audible period in 15 minutes.

6.2.2 Operational Scenario

For the purposes of this assessment, it has been assumed that all sources in **Table 9** occur at the same time, including a Front-end Loader operating inside the Facility building and in the two loading locations (ie three FELs at the same time).

In addition, the effect of one truck idling at the weighbridge, at the unloading area and at the loading area, and another truck manoeuvring at the site at the same time have been considered (ie 4 trucks operating within a 15-minute period). This would represent a "worst-case" scenario.

6.2.3 Modelling Procedures and Information

Topography for the site and surrounds has been incorporated into the model as flat ground. All ground on the site was modelled as acoustically "hard ground" (ie 85% reflective).

In terms of significant structures, only the main Facility building, and its cantilevered awnings have been incorporated into the model.

The assessment locations are near to the Facility and associated noise sources, which means that meteorological conditions would have little influence on noise propagation. Therefore, the modelling incorporates neutral meteorological conditions only.

6.3 Noise Modelling Results

The results of the noise predictions are shown in **Table 10**. Predicted exceedances of the zone noise criterial have been shaded.

Table 10 Predicted Facility Noise Levels and Assessment

Assessment Location	Address	Zone Noise Standard, dBA $L_{A10(15minute)}$	Predicted Noise Level, dBA $L_{A10(15minute)}$
1	33 Couranga Crescent (Block 1 Section 29, IZ1)	65	59
2	30 Couranga Crescent (Block 10 Section 21, IZ1)	65	67
3	Block 1670 Tralee Street (Section 22, CZ6)	65	52
4	Block 1210 Tralee Street (Section 22, IZ1)	65	61
5	"Rose Cottage", Section 79, CZ6	65	44
6	Residence on NSW land, Tralee	55	39

Therefore, noise from the Facility is predicted to comply with the daytime zone noise standards at all assessment locations except Location 2. This location is immediately adjacent to the weighbridge area where the dominant noise source would be an idling truck on the weighbridge.

6.4 Discussion of Noise Results and Possible Noise Controls

The predicted exceedance at Location 2, the boundary with 30 Couranga Crescent (Block 10 Section 21), was 2 dBA. An excess of that magnitude would generally be considered negligible and not expected to result in adverse effects or noise-related complaints, particularly in an industrial environment.

In addition, it is also likely that existing and future sensitive uses such as offices, located on the adjacent block would not be positioned immediately adjacent to the site boundary, ie at the assessment location. This would further reduce the likelihood of adverse effects associated with the truck idling noise. Compliance would be expected at other locations on the adjoining block that are further from the truck activity than the assessment location.

Notwithstanding this 'marginal compliance', possible noise-reducing opportunities will be available to the proponent, including:

- providing an acoustic barrier to the southwest site boundary. Indicatively, a suitable barrier could be constructed around 3 m high with length of 20 m adjacent to the weighbridge ensuring line of sight from the noise source to the receiver is interrupted); or
- requiring the truck engines to be turned off whilst at the weighbridge and loading/unloading areas.

7 Conclusion

SLR has undertaken an assessment of operational noise associated with the proposed Resource Recovery Facility to be located at Block 11 Section 21 in Hume, ACT.

The assessment included the following components:

- establish applicable noise assessment locations and ACT zone noise standards.
- prediction of construction noise from the site.
- consideration of vibration generated during construction of the Facility.
- prediction of operational noise from the Facility based on sound power data of plant/equipment and their proposed locations.
- consideration of possible noise controls to achieve full compliance with the zone noise standards.

Noise modelling of the proposed operations at the Facility was undertaken to predict noise at the assessment locations as determined in accordance with the ACT *Environmental Protection Regulation 2005*.

The predictions indicated compliance with the zone noise standards, applicable at the boundary of adjoining properties, at all assessment locations at the immediate boundary location with 30 Couranga Crescent (Block 10 Section 21) which is nearest to the weighbridge areas.

Operational noise is predicted to exceed the daytime zone noise standard by 2 dBA at the nearest part of that location to the Facility. Although that level of exceedance would be considered negligible and not likely to result in any type of discernible impact, particularly in the context of the project site and the surrounds, options to reduce noise from the weighbridge have been proposed.

Construction noise is exempt from complying with the zone noise standards provided works occur between 6:00 am and 8:00 pm and the reasonable and feasible noise controls described in **Table 7** of this report are implemented. Nonetheless, the separation distance from the bulk of the construction activities to the nearest sensitive receptors indicates that compliance with the zone noise standards would typically be achieved.

Vibration generated during excavation and compaction, which are the two construction activities likely to generate the most vibration, is not expected to be perceptible at sensitive receptors. There are no identified sources of significant vibration associated with the operations of the Facility.

Therefore, it is reasonable to conclude that, based on the assessment as undertaken and the outcomes presented in this report, the Facility would comply with all requirements of the *Environmental Protection Regulation 2005* in relation to noise, and thus would not be expected to result in adverse noise effects at identified nearby receptors.

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