OAKDALE EAST ESTATE

HORSLEY PARK, NSW

PRECINCT 2 – NOISE ASSESSMENT
RWDI # 2201866.08
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A	Draft	7 November 2024	Ben Lawrence	-
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NOTE

WILKINSON MURRAY

In October 2020, Wilkinson Murray Pty Ltd merged with RWDI Group, a leading international consulting firm. Wilkinson Murrays core practice areas of noise, acoustics, vibration and air quality consulting built since 1962 servicing Australia and Asia-Pacific region will complement RWDI practice areas. Combined, RWDI+Wilkinson Murray is one of the largest teams globally specialising in the area of noise, acoustics, vibration and air quality.

RWDI

RWDI is a team of highly specialised consulting engineers and scientists working to improve the built environment through three core areas of practice: building performance, climate engineering and environmental engineering. More information is available at www.rwdi.com.

AAAC

This firm is a member firm of the Association of Australasian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.

QUALITY ASSURANCE

RWDI Australia Pty Ltd operates a Quality Management System which complies with the requirements of AS/NZS ISO 9001:2015. This management system has been externally certified by SAI Global and Licence No. QEC 13457 has been issued for the following scope: The provision of consultancy services in acoustic engineering and air quality; and the sale, service, support and installation of acoustic monitoring and related systems and technologies.

GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

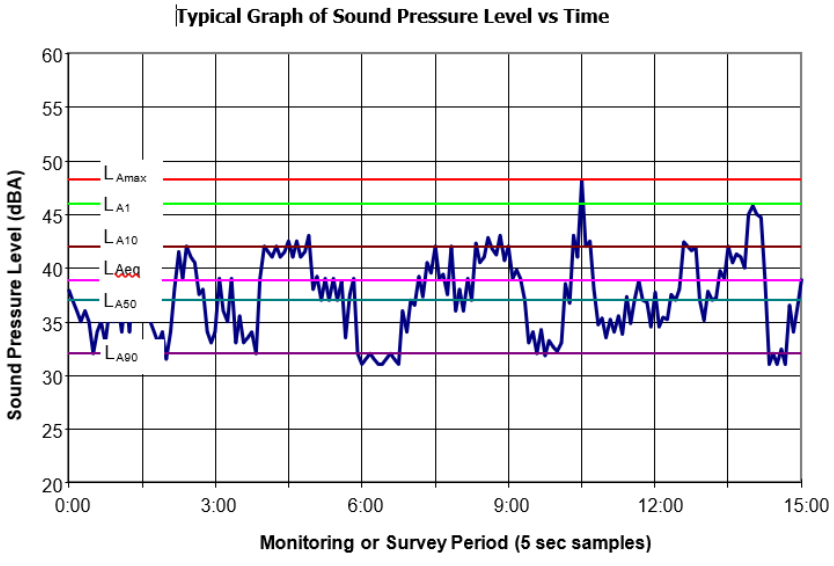


TABLE OF CONTENTS

GLOSSARY OF ACOUSTIC TERMS

LIST OF FIGURES

LIST OF APPENDICES

1 INTRODUCTION

This Operational Noise Assessment has been prepared by RWDI Australia Pty Ltd on behalf of Goodman Property Services (Aust.) Pty Ltd (the Applicant) to accompany a state significant development application (SSDA) for the development of a warehouse facility in Precinct 2 at the Oakdale East Industrial Estate (OEIE), at 2-10 Old Wallgrove Road, Horsley Park (Lot 103/DP 1268366).

On 11 October 2023, the delegate of the Minister for Planning and Public Spaces approved the Concept Proposal and Stage 2 development at OEIE. The OEIE Concept proposal approved under SSD-37486043 consists of 5 precincts to be developed in stages. The Concept proposal and Stage 2 development specifically excluded works relating to Precinct 2. This Operational Noise Assessment is in support of a SSDA that seeks approval for the following;

- Construction, operation, and fit-out approval of three warehouses spanning circa 90,158 sqm of GLA;
- The proposed development will proceed in two stages;
- Precinct 2 is divided into three buildings/four tenancies for warehousing and distribution use with ancillary office and carparking facilities;
- Completion of remediation and infrastructure works to provide clean, serviced development pads including appropriate stormwater infrastructure and retaining walls; and
- Completion of road infrastructure and services to provide access to Precinct 2.

The key features of the proposal are:

- 90,158 sqm of warehousing space across the three buildings;
- 3,604 sqm of office space (both administrative and dock) across the three buildings;
- 14.6m high ridge height;
- 20m cantilevered awnings over hardstand;
- 3m awnings over recessed docks;
- Speculative facilities - i.e. no customers have been identified yet;
- Ambient warehousing (no temperature control);
- Generic fitout to be included;
- 388 car spaces across four dedicated carparks;
- Separate light vehicle and heavy vehicle access;
- Hardstand areas;
- Landscaped areas;
- Solar panels;
- Targeting 5 star Greenstar Rating; and
- 24/7 operations.

The Concept Plan approval will be modified to incorporate the updated building layouts within Precinct 2. This will be known as Modification 5.

1.1 Overview of Noise Generation

The proposed Oakdale East Estate will fundamentally consist of warehousing and distribution operations. Operational noise emissions from the site will be primarily generated by heavy vehicle movements on estate roads and within each precinct. Assumptions surrounding variations in speed and manoeuvring are discussed in Section 4. Other noise sources included in our assessment include:

- Mechanical plant; and
- Light vehicle movements and noise associated with carparks.

The development has been assessed as a whole (inclusive of all precincts) in accordance with the NSW *Noise Policy for Industry* (NPfI).

1.2 Assessment Guidelines

The following NSW Environment Protection Authority (EPA) guidelines have been adopted for this assessment.

- Noise from on-site operations (including on-site vehicle movements) has been assessed in accordance with the NSW *Noise Policy for Industry (NPfI)*, NSW EPA, 2017, with guidance on sleep disturbance criteria taken from this Policy.
- Noise from off-site vehicle movements has been assessed in accordance with guidance provided by the EPA in the NSW *Road Noise Policy (RNP),* NSW EPA, 2011.
- Construction noise has been assessed in accordance with the *Interim Construction Noise Guideline (ICNG)*, DECC, 2009.
- Vibration from construction has been considered in accordance with *Assessing Vibration: A Technical Guideline*, DEC, 2006.

2 SITE DESCRIPTION

Figure 2-1 shows the updated Oakdale East Estate site layout and closest sensitive receivers (residential receivers - R01 to R11 and Industrial receivers - I01 to I04).

Figure 2-1 Site Layout and Receivers

The closest and potential worst affected residential receiver is R01, located near the southern boundary of the development. Receivers R10 and R11 on the eastern side of the development are further away but have a less impeded view of traffic movements on site.

2.1 Potential Noise Impacts

The following sources of noise and vibration have been considered in our report.

- **Operational noise** – Includes traffic movements on site, forklifts, and mechanical plant.
- **Off-site traffic noise** – additional traffic due to the development on surrounding roads.
- **Construction noise and vibration** – Noise generated during the key stages of construction.

3 EXISTING NOISE ENVIRONMENT

3.1 Background Noise Levels

Due to the impact of COVID-19 and unusual heavy rainfall in the area at the time of the previous noise assessment in 2022 (RWDI report reference #2201866 revision B), there was no background noise monitoring campaign conducted. To enable us to progress this assessment, we have adopted the same background noise monitoring results conducted for the nearby Oakdale West development (RWDI reference: 2102730D, Version C, 3 September 2021). The RBLs calculated for the 'South' location (most representative of the OEE receivers) in accordance with the NPfI for data obtained between 1 May 2021 and 29 June 2021 is shown in **Table 3-1**.

Table 3-1 Calculated RBLs

Location	RBL (dBA)		
	Day	Evening	Night
South	42	37	37

3.2 Existing Meteorological Conditions

The *NPfI* defines standard meteorological conditions and noise-enhancing meteorological conditions to be considered for the assessment. The definition of those conditions is provided in Table D1 of Fact Sheet D, which is reproduced in **Table 3-2** below.

Table 3-2 Standard and Noise-Enhancing Meteorological Conditions

Meteorological conditions	Meteorological parameters
Standard Meteorological Conditions	Day/evening/night: stability categories A-D with wind speed up to 0.5 m/s at 10 m AGL.
Noise-Enhancing Meteorological Conditions	Daytime/evening: stability categories A-D with light winds (up to 3 m/s at 10 m AGL). Night-time: stability categories A-D with light winds (up to 3 m/s at 10 m AGL) and/or stability category F with winds up to 2 m/s at 10 m AGL.

Notes: m/s = metres per second; m = metres; AGL = above ground level; where a range of conditions is nominated, the meteorological condition delivering the highest predicted noise level should be adopted for assessment purposes. However, feasible and reasonable noise limits in consents and licences derived from this process would apply under the full range of meteorological conditions nominated under standard or noise-enhancing conditions as relevant. All wind speeds are referenced to 10m AGL. Stability categories are based on the Pasquill-Gifford stability classification scheme.

The *NPfI* provides two options when considering meteorological effects:

1. Conservatively adopt noise-enhancing meteorological conditions without processing meteorological data local to the site; or
2. Determine the significance of noise-enhancing meteorological conditions based on meteorological data local to the site and adopt significant noise-enhancing conditions for the assessment. Where noise-enhancing meteorological conditions are deemed non-significant (i.e. less than 30% of the time), standard meteorological conditions may be adopted.

The second option has been adopted with reference to a previous metrological analysis suitable for the project.

Assessment of prevailing weather conditions was carried for SSD-10448 (*Mirvac Projects Pty Ltd Aspect Industrial Estate*) by SLR Consulting in 2020 (ref. 610.19127-R2). The assessment considering meteorological data acquired from the Bureau of Meteorology automatic weather station located at Horsley Park, which is approximately 4 km south east of the site.

The assessment of prevailing weather conditions determined that during the daytime and evening periods, winds of up to 3 m/s did not exceed the 30% threshold during any season. The 30% threshold was only exceeded in the night period in the autumn months from the SW and WSW directions (wind blowing away from the receivers, providing more favourable noise levels). The more sensitive residential receivers are located south/south west of the site, thus when considering source to receiver, noise enhancing wind is not a significant feature of the noise environment.

The assessment of prevailing weather conditions also determined that only stability Class G noise enhancing temperature inversions occurred for more than 30% of the night period for all months of the year.

4 OPERATIONAL NOISE

4.1 Criteria

The NSW *NPfI* provides a framework and process for deriving noise criteria that enable the EPA and others to regulate premises that are scheduled under the Protection of the Environment Operations Act 1997. Whilst specifically aimed at assessment and control of noise from industrial premises regulated by the EPA, the policy is also appropriate for use by the DPE when assessing major development proposals.

The *NPfI* documents a procedure for assessment and management of industrial noise which involves the following steps:

- Determining the project noise trigger levels for a development. The project noise trigger level is a benchmark level above which noise management measured are required to be considered. They are derived by considering short-term intrusiveness due to changes in the existing noise environment (applicable to residential receivers only) and maintaining noise level amenity for particular land uses for residents and other sensitive receivers;
- Predicting or measuring noise produced by the development (having regard to any associated annoying characteristics and prevailing meteorological effects);
- Comparing the predicted or measured noise level with the project noise trigger level and assessing impacts and the need for noise mitigation and management measures;
- Considering any residual noise impacts following the application of feasible and reasonable noise mitigation measures;
- Setting statutory compliance levels that reflect the best achievable and agreed noise limits for development; and
- Monitoring and reporting environmental noise levels from the development.

The project noise trigger level represents the level that, if exceeded, may indicate a potential noise impact upon a community. It is a benchmark or objective and is not intended for use as a mandatory requirement.

4.1.1 Intrusiveness Noise Level

For assessing intrusiveness, the background noise level (L_{A90}) is measured, and the Rating Background Level (RBL) determined. The intrusiveness of an industrial noise source may generally be considered acceptable if the equivalent continuous noise level (L_{Aeq}) of the source (measured over a 15-minute period) does not exceed the background noise level (RBL) by more than 5dBA.

4.1.2 Amenity Noise Level

The amenity assessment is based on noise criteria specific to land use and associated activities. The criteria relate only to industrial-type noise and do not include transportation noise (when on public transport corridors), noise from motor sport, construction noise, community noise, blasting, shooting ranges, occupational workplace noise, wind farms, amplified music/patron noise.

The amenity noise level aims to limit continuing increases in noise levels which may occur if the intrusiveness level alone is applied to successive development within an area.

The recommended amenity noise level represents the objective for total industrial noise at a receiver location. The project amenity noise level represents the objective for noise from a single industrial development at a receiver location.

To prevent increases in industrial noise due to the cumulative effect of several developments, the project amenity noise level for each new source of industrial noise is set at 5dBA below the recommended amenity noise level. This accounts for any potential noise impacts from existing or future developments.

The following exceptions apply to determining the project amenity noise level:

- For high traffic areas the amenity criterion for industrial noise becomes the $L_{Aeq,period(traffic)}$ minus 15dBA.
- In proposed developments in major industrial clusters.
- If the resulting project amenity noise level is 10dB or more lower than the existing industrial noise level, the project amenity noise level can be set at 10dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.
- Where cumulative industrial noise is not a consideration because no other industries are present in, or likely to be introduced into the area, the relevant amenity noise level is assigned as the project amenity noise level for the development.

Amenity noise levels are not used directly as regulatory limits. They are used in combination with the project intrusiveness noise level to assess the potential impact of noise, assess mitigation options and determine achievable noise requirements.

An extract from the NSW *NPfI* that relates to the amenity noise levels for surrounding receivers is given in **Table 4-1**.

Table 4-1 Amenity Noise Levels

Receiver	Noise Amenity Area	Time of Day[1]	Recommended Amenity Noise Level $L_{Aeq, period}$ (dBA)
Residence	Rural	Day	50
		Evening	45
		Night	40
Commercial	All	Anytime	65

Note 1: Daytime 7.00am–6.00pm; Evening 6.00pm–10.00pm; Night 10.00pm-7.00am.

4.1.3 Maximum Noise Level Events

Noise sources of short duration and high level that may cause disturbance to sleep if occurring during the night time need to be considered.

The approach recommended by the *NPfI* is to apply the following initial screening noise levels:

- $L_{Aeq,15min}$ 40dBA or the prevailing RBL + 5dB, whichever is the greater; and/or
- L_{AFmax} 52dBA or the prevailing RBL + 15dB, whichever is the greater.

The sleep disturbance screening noise levels apply outside bedroom windows during the night time period.

Where the screening noise levels cannot be met, a detailed maximum noise level event assessment should be undertaken. It may also be appropriate to consider other guidelines including the NSW *Road Noise Policy* (RNP) which contains additional guidance relating to potential sleep disturbance impacts.

A review of research on sleep disturbance in the *RNP* indicates that in some circumstances, higher noise levels may occur without significant sleep disturbance. Based on currently available research results, the *RNP* concludes that:

- "Maximum internal noise levels below 50dBA to 55dBA are unlikely to cause awakening reactions."
- "One or two noise events per night, with maximum internal noise levels of 65dBA to 70dBA, are not likely to affect health and wellbeing significantly."

4.1.4 Project Noise Trigger Levels

The amenity and intrusiveness noise levels and resulting project trigger levels (shown in bold) for continuous nature operational noise emissions associated with the proposed development are detailed in **Table 4-2**.

Table 4-2 Project Noise Trigger Levels for Continuous Operational Noise Emissions

Location	Area Classification	Period	ANL[1] $L_{Aeq,period}$ dBA	RBL[2] dBA	Project Noise Trigger Levels	
					Intrusive[3] $L_{Aeq,15min}$	Amenity[4] $L_{Aeq,15min}$
Residential	Rural	Day	50	42	**47**	48
		Evening	45	37	**42**	43
		Night	40	37	42	**38**
Industrial	All	All	65	-	**-**	**63**

Note 1: Recommended amenity noise level.
Note 2: RBL – Rating Background Level.
Note 3: Intrusiveness noise level is $L_{Aeq,15min} \leq$ RBL +5 and is only applicable to residential receivers.
Note 4: Project amenity noise level (ANL) is rural ANL plus 3dBA to convert from a period level to a 15-minute level.

For maximum noise level events (night-time period only) the following screening noise levels apply:

- $L_{Aeq,15min}$ 40dBA; and/or
- L_{AFmax} 52dBA.

4.2 Modelling Methodology

Operational noise emissions from the site have been predicted with a model prepared using the SoundPLAN V8.2 noise modelling software, implementing the CONCAWE prediction method. The model incorporates the OEE Masterplan design, including the civil design, buildings, and sensitive receivers shown in **Figure 2-1.** Operational noise sources included in the model comprise fixed rooftop plant, loading activities (forklifts) and

on-site light and heavy vehicles movements. The parameters used in the Noise modelling have been detailed in **Table 4-3** below.

Table 4-3 Noise Model Details

Data	Description
Terrain data	1m elevation contours obtained from DEM made available by Geoscience Australia have been used for all terrain outside the OEE site. Elevation for OEE site were obtained from the relevant masterplan drawings (OAK E MP02 (A) dated 8 August 2024), inclusive of revisions 5.
Buildings	Proposed OEE buildings were drawn based on the architectural drawings provided by Goodman (referenced above). Buildings surrounding the OEE were obtained from Geovision.
Aerial images	Obtained from Nearmap
Ground absorption	0.2 within the OEE site 0.75 outside the OEE site
Building reflection loss	2.5 dB
Receivers	1.5 m above ground level + 3m for each storey above ground
Meteorological conditions	**Standard meteorological conditions:** D-class temperature inversion with a 0.5 m/s source to receiver drainage flow **Adverse meteorological conditions:** G-class temperature inversion with calm winds. Humidity 70% Temperature 10ºC Air Pressure 101.3 kPa

4.3 Assumed On site Traffic Volumes

Table 4-4 details the updated assumptions for the light and heavy vehicle movements on site. These are representative of the typical worst-case hour in each time period.

Table 4-4 Assumed Traffic Movements

Lot	Day		Evening		Night	
	LV	HV	LV	HV	LV	HV
1A	10	4	6	2	2	2
1B	60	12	0	0	10	2
1C	10	4	6	2	2	2
1D-1	10	4	6	2	2	2
1D-2	10	4	6	2	2	2
1E	10	4	6	2	2	2
1F	10	4	6	2	2	2
2A-1	44	15	44	15	13	4
2A-2	54	18	54	18	16	5
2B-1	21	7	21	7	6	2
2B-2	24	8	24	8	7	2
3A	64	22	64	22	19	6
3B	241(157)	64(42)	156(101)	29(19)	156(101)	27(18)
4A	10	4	6	2	2	2
4B	10	4	6	2	2	2
5A	10	4	6	2	2	2

Note: Values presented in brackets are for off-peak season traffic volumes (January to October)

4.4 Adopted Sound Power Levels

The following noise level data for vehicle-related noise sources has been used for the assessment. These noise levels are taken from RWDI's internal database and external assessments and measurements of similar subject sites.

4.4.1 Vehicular Sources

Adopted sound power levels for vehicular sources are shown in **Table 4-5**.

Table 4-5 Sound Power Reference Levels

Noise Source	Noise Characteristic	Sound Power Level SWL, dBA
Forklift operational on hardstand[3]	Quasi-steady	93 L_{Aeq}
Light Vehicles[6] on site, up to speed of 40km/h	Quasi-steady	90 L_{Aeq}
Heavy Vehicle[1] @25 km/h	Quasi-steady	106 L_{Aeq}
Heavy Vehicle[1], unloaded @ 10 km/h	Quasi-steady	106 L_{Aeq}
Heavy Vehicle[1], loaded @ 10 km/h	Quasi-steady	107 L_{Aeq}
Heavy Vehicle[1], reversing[4] @ 5 km/h	Quasi-steady	111 L_{Aeq}
Truck Idling[5]	Quasi-steady	95 L_{Aeq}
Truck Engine Starting	Instantaneous	100 L_{Amax}
Truck Airbrake Release[2]	Instantaneous	115 L_{Amax}

Note 1: Heavy vehicle defined as any cargo vehicle with three or more axles with gross vehicle weight > 12,000 kg.

Note 2: Consistent with measurements taken at Woolworths Customer Fulfillment Centre Brookvale by Renzo Tonin and Associates (Report: TL496-03F03 FP3 Wetherill Park NVIA R5), 16 March 2021.

Note 3: Consistent with assessment of Woolworths Moorebank Distribution Centre by Renzo Tonin and Associates (Report: TL265-01F04 DA ACOUSTIC ASSESSMENT _CONSTRUCTION AND OPERATION R10), 16 October 2020.

Note 4: Assume that reversing operation will not take more than 30 seconds for each vehicle, includes reversing alarm and air brake release.

Note 5: Consistent with measurements taken at Woolworths Distribution Centre Minchinbury by Renzo Tonin and Associates (Report: TL496-03F03 FP3 Wetherill Park NVIA R5), 1 April 2021.

Note 6: Considered conservative when compared to previous assessment of Woolworths Moorebank Distribution Centre by Renzo Tonin and Associates (Report: TL265-01F04 DA ACOUSTIC ASSESSMENT _CONSTRUCTION AND OPERATION R10).

The noise levels presented above are consistent with US-FHWA-TNM 2.5 technical model and are considered to be a conservative for the purposes of this assessment. Note the increased level for a truck reversing is to account for audible reversing alarms and air brake releases.

4.4.2 Fixed Sources

Table 4-6 presents the mechanical services / fixed plant noise source assumptions for the OEE Lots. The assumptions have been updated having regard to the operational requirements of the committed customers. Where there are not customers committed to development lots, assumptions have been made that are consistent with other industrial estates given the size and type of customer likely to be attracted to the building.

Table 4-6 Mechanical Services / Fixed Plant Noise Sources throughout OEE

Precinct	Lot	Day (7am -6pm)	Evening (6pm-10pm)	Night (10pm -7am)
Precinct 1	1A	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	1B	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	1C	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	1D	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	1E	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	1F	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
Precinct 2	2A	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative
	2B	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative
	2C	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	2D	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
Precinct 3	3A	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative	SWL 88 dBA Cumulative
	3B	SWL 94 dBA Cumulative	SWL 94 dBA Cumulative	SWL 94 dBA Cumulative
Precinct 4	4A	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative
	4B	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85dBA Cumulative
Precinct 5	5A	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative	SWL 85 dBA Cumulative

Cooling for all buildings will be minimal (office areas only), with the exception of 3B which will incorporate cooling of the main warehouse space. Sound power levels for 3B have been provided by the mechanical consultant and are included in the allowances above.

Equipment across the entire precinct has not been finalised and final equipment has not been selected. Total sound power levels shown in Table 4-6 above represent the best information available at the time of our assessment.

All other mechanical services will be located within the building envelope. This will provide substantial acoustic attenuation and noise breakout from these sources (assuming doors remain closed) will not be significant.

4.5 Forklift Loading Activities

On-site forklift loading activities have been assumed based on information provided by Goodman. Table 4-7 shows the number of forklifts assumed to be operating for each lot, where information is available from the customer these have been included. Remaining assumptions are consistent with other industrial estates. The majority of the forklift movements occurring at Night represent an early start for those particular users.

Table 4-7 Number of Operational Forklifts Assumed for each Lot

Precinct	Lot	Day (7am -6pm)	Evening (6pm-10pm)	Night (10pm -7am)
Precinct 1	1A	2	2	2
	1B	3	3	3
	1C	1	1	1
	1D-1	1	1	1
	1D-2	1	1	1
	1E	1	1	1
	1F	1	1	1
Precinct 2	2A-1	2	2	2
	2A-2	2	2	2
	2B-1	2	2	2
	2B-2	1	1	1
Precinct 3	3A	2	2	2
	3B	2	2	2
Precinct 4	4A	2	2	2
	4B	2	2	2
Precinct 5	5A	2	2	2

4.6 Operational Noise Scenarios

Our assessment has considered two scenarios, outlined as follows. The first scenario considers Precinct 2 operating in isolation. This illustrates the noise contribution from the subject site. The second scenario considers the entire estate once fully developed and operational. Table 4-8 presents the assumptions for the noise prediction scenarios.

Table 4-8: Noise Prediction Scenarios

Scenario	Lot Operation	Description
1 – Precinct 2 only	2A-1, 2A-2, 2B-1, 2B-2	Light and heavy onsite vehicle movements. Mechanical plant operation as per Table 4-6. Loading activities as per Section 4.5.
2 - All OEE Precincts	All Lots listed	Light and heavy onsite vehicle movements. All lots mechanical plant operation as per Table 4-6. Loading activities as per Section 4.5.

It's the full operation of the site that is used for our assessment.

Light vehicle and heavy vehicle traffic movements have been modelled as line sources with varying speed. Heavy vehicles are expected to enter the estate at 50km/h, reduce speed to 25km/h on estate roads, and reduce speed again to 10km/h when manoeuvring on site. For instances where heavy vehicles will be side loaded, these will park up within the bays allocated with engine off whilst loading/unloading. For rear loaded semi-trailers, these will reverse into the recessed docks where indicated. Sound power levels have been applied as per Table 4-5, accounting for reversing alarms.

This modelling strategy as used for Lot 5A is presented in Figure 4-1 below.

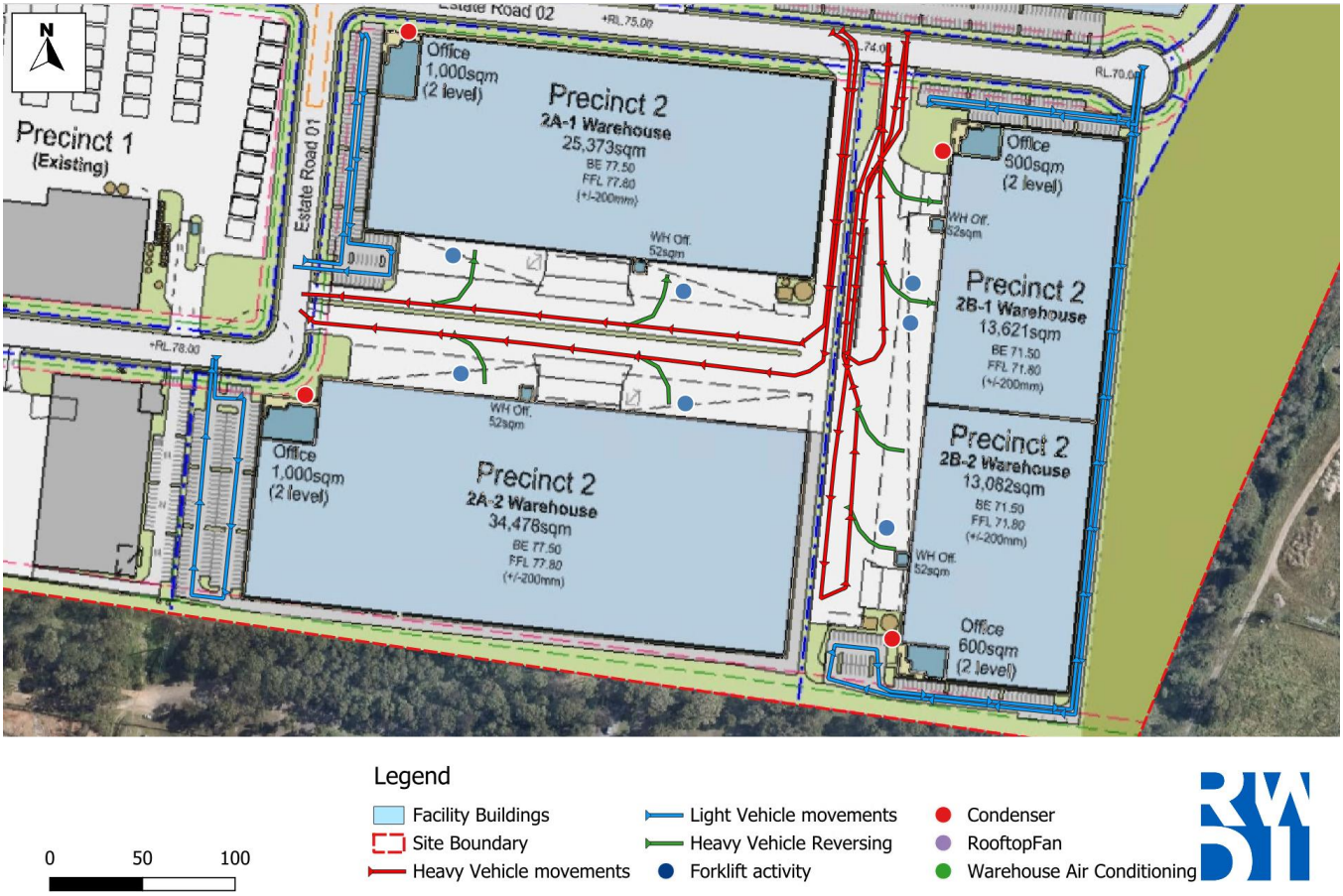


Figure 4-1 Source Layout for Precinct 2

4.7 Predicted Noise Levels – No Mitigation

4.7.1 Continuous Noise Levels

Table 4-9 below presents the predicted operational noise levels under the worst-case assumptions details above.

Table 4-9 Predicted $L_{Aeq,15min}$ Operational Noise Levels - without Mitigation

Receiver	Period (weather)	Noise Limit $L_{Aeq,15min}$	$L_{Aeq,15min}$ (dBA) Precinct 2 Only		$L_{Aeq,15min}$ (dBA) All Precincts	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
R01	Day	47	35	OK	41	OK
	Eve	42	35	OK	39	OK
	Night	38	29	OK	37	OK
	Night(Adverse)	38	31	OK	**39**	**1**
R02	Day	47	28	OK	39	OK
	Eve	42	28	OK	37	OK
	Night	38	23	OK	35	OK
	Night(Adverse)	38	25	OK	38	OK
R03	Day	47	30	OK	35	OK
	Eve	42	30	OK	34	OK
	Night	38	24	OK	32	OK
	Night(Adverse)	38	26	OK	34	OK
R04	Day	47	29	OK	32	OK
	Eve	42	29	OK	31	OK
	Night	38	26	OK	29	OK
	Night(Adverse)	38	28	OK	31	OK
R05	Day	47	39	OK	39	OK
	Eve	42	39	OK	39	OK
	Night	38	35	OK	35	OK
	Night(Adverse)	38	37	OK	37	OK
R06	Day	47	45	OK	45	OK
	Eve	42	**45**	**3**	**45**	**3**
	Night	38	**40**	**2**	**40**	**2**
	Night(Adverse)	38	**42**	**4**	**42**	**4**
R07	Day	47	22	OK	32	OK
	Eve	42	22	OK	31	OK
	Night	38	17	OK	28	OK
	Night(Adverse)	38	20	OK	31	OK
R08	Day	47	26	OK	33	OK
	Eve	42	26	OK	33	OK

Receiver	Period (weather)	Noise Limit $L_{Aeq,15min}$	$L_{Aeq,15min}$ (dBA) Precinct 2 Only		$L_{Aeq,15min}$ (dBA) All Precincts	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
	Night	38	20	OK	29	OK
	Night(Adverse)	38	23	OK	31	OK
R09	Day	47	28	OK	37	OK
	Eve	42	28	OK	37	OK
	Night	38	23	OK	33	OK
	Night(Adverse)	38	25	OK	35	OK
R10	Day	47	29	OK	38	OK
	Eve	42	29	OK	37	OK
	Night	38	24	OK	34	OK
	Night(Adverse)	38	26	OK	36	OK
R11	Day	47	28	OK	37	OK
	Eve	42	28	OK	36	OK
	Night	38	23	OK	32	OK
	Night(Adverse)	38	26	OK	35	OK
R12	Day	47	24	OK	33	OK
	Eve	42	24	OK	32	OK
	Night	38	19	OK	28	OK
	Night(Adverse)	38	22	OK	31	OK
I01	When in use	63	34	OK	41	OK
I02	When in use	63	29	OK	41	OK
I03	When in use	63	30	OK	42	OK
I04	When in use	63	27	OK	38	OK

For the first scenario where only Precinct 2 was operating, continuous operational noise was found to comply with the required criteria at all times of the day. The predicted levels illustrate that Precinct 2 is typically not the dominant source at the most affected receivers.

For the second scenario of all precincts being complete and operating, continuous operational noise was found to exceed the adopted criteria at locations R01 and R06. The worst of these exceedances were at residential receiver R06 with a 4dB exceedance under adverse conditions at night. This is equivalent to the prediction in the approved SSD report.

We do not believe that noise emissions from site would be considered annoying or a modifying factor correction is warranted at this stage. We would normally apply an intermittent modifying factor to $L_{Aeq,15min}$ noise levels where all noise being assessed suddenly increases or reduces where the difference between the

total $L_{Aeq,15min}$ (including all other non-industrial sources) at the receiver with the source present and not present results in a difference in L_{Aeq} of 5dB or more during a 15-minute period. It should be noted that given the number of sources at OEE, total noise emissions will not suddenly change.

Further, we believe air brake releases and reversing beepers would be defined as 'Impulsive noise' under the following NPfI definition:

Noise with a high peak of short duration, or a sequence of such peaks

An impulsive correction was dropped from the NPfI in favour of the Maximum Noise Level Event Assessment (MNLEA), included in Section 4.7.2 below.

4.7.2 Maximum Noise Levels

Table 4-10 shows the $L_{A1,1min}$ maximum operational noise predictions. Note that for the sources assessed, the difference between the $L_{A1,1min}$ and L_{AMax} descriptors is negligible.

Table 4-10 Predicted Maximum Operational Noise Levels – without Mitigation

Receiver	Period	Screening Criterion (dBA)	Predicted $L_{A1,1min}$ (dBA) Precinct 2 Only		Predicted $L_{A1,1min}$ (dBA) All Precincts	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
R01	Night	52	46	OK	48	OK
	Night^{Adverse}	52	48	OK	50	OK
R02	Night	52	40	OK	41	OK
	Night^{Adverse}	52	42	OK	43	OK
R03	Night	52	41	OK	41	OK
	Night^{Adverse}	52	43	OK	43	OK
R04	Night	52	49	OK	49	OK
	Night^{Adverse}	52	51	OK	51	OK
R05	Night	52	52	OK	52	OK
	Night^{Adverse}	52	54	**2**	54	**2**
R06	Night	52	59	**7**	59	**7**
	Night^{Adverse}	52	60	**8**	60	**8**
R07	Night	52	34	OK	34	OK
	Night^{Adverse}	52	36	OK	36	OK
R08	Night	52	40	OK	40	OK

Receiver	Period	Screening Criterion (dBA)	Predicted $L_{A1,1min}$ (dBA) Precinct 2 Only		Predicted $L_{A1,1min}$ (dBA) All Precincts	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
	Night^{Adverse}	52	42	OK	42	OK
R09	Night	52	40	OK	41	OK
	Night^{Adverse}	52	42	OK	44	OK
R10	Night	52	33	OK	40	OK
	Night^{Adverse}	52	36	OK	42	OK
R11	Night	52	33	OK	43	OK
	Night^{Adverse}	52	35	OK	46	OK
R12	Night	52	33	OK	34	OK
	Night^{Adverse}	52	35	OK	37	OK

In the first scenario with only Precinct 2 operating, there were no exceedances of the NPFI screening criteria.

In both scenarios, R05 and R06 exceed the NPfl screening criterion by up to 8 dB. These exceedances are considered further in the following sections.

4.8 Proposed Noise Mitigation Measures

To ensure that compliance with noise criteria is achieved from the whole estate, we have proposed two noise barriers as described in the following sections. Note that these are indicative only at this stage. A Design Noise Verification Report will be prepared in accordance with SSD consent conditions D8 to D11 confirming the final design details and suitability. This will be submitted to DPE for review and approval in accordance with those conditions.

4.8.1 Scenario 2 – All Precincts

Two noise barriers located along the southern boundary will be required to ensure operational noise criteria are achieved at all receivers once all precincts are at full operational capacity. The location of these is shown in **Figure 4-2** below and included in noise contours attached in Appendix A.

These are defined in more detail on the architectural drawings (DA050 dated 31 October 2024) and in the civil package. The western wall should have a height of at least 2m above the natural terrain level. The eastern wall should have a height of 4m above the hardstand level, noting that this is higher than the natural RL at this point.

Figure 4-2 Noise Barriers – Scenario 2

Both barriers should have a minimum transmission loss performance of R_w 18 or greater. This could be made from typical noise barrier materials such as laminated EPS systems, aerated concrete panels, etc that will meet this performance.

4.8.2 Timing of Mitigation Measures

The timing of completion of these mitigation measures and construction of Precinct 2 buildings is important as they provide acoustic shielding of operational noise levels to the most affected receivers. A temporary stockpile currently exists on site (in the approximate location of buildings 2A-2 and 2B-2). This will be progressively removed as the Precinct 2 earthworks proceeds between January and August 2025. The completion of Warehouse 3B and transition of operation is expected in September 2025.

Warehouse 2A-1 will be the first building to commence construction in Precinct 2. The precise timing of this is currently unknown. If the building envelope/cladding is yet to be installed on the northern facade of this building by the time Warehouse 3B becomes operational, a temporary noise barrier (currently proposed on the northern boundary of Lot 2A-2) will be constructed in addition to the permanent barriers to provide adequate mitigation to ensure compliance at the impacted receivers. This will be reviewed once the construction schedule of Warehouse 2A-1 is confirmed and any mitigation measures implemented, prior to completion of Warehouse 3B.

4.9 Predicted Noise Levels – With Mitigation

4.9.1 Continuous Noise Levels

Table 4-11 below presents the predicted operational noise levels under the worst case assumptions details above. This includes the acoustic barriers discussed in Section 4.8.

Table 4-11 Predicted $L_{Aeq,15min}$ Operational Noise Levels – with Mitigation

Receiver	Period (weather)	Noise Limit $L_{Aeq,15min}$	$L_{Aeq,15min}$ (dBA) Precinct 2 Only		$L_{Aeq,15min}$ (dBA) All Precincts[1]	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
R01	Day	47	34	OK	40	OK
	Eve	42	34	OK	39	OK
	Night	38	29	OK	36	OK
	Night(Adverse)	38	31	OK	38	OK
R02	Day	47	33	OK	39	OK
	Eve	42	33	OK	37	OK
	Night	38	27	OK	35	OK
	Night(Adverse)	38	30	OK	38	OK
R03	Day	47	29	OK	34	OK
	Eve	42	29	OK	33	OK
	Night	38	24	OK	31	OK
	Night(Adverse)	38	26	OK	33	OK
R04	Day	47	30	OK	32	OK
	Eve	42	30	OK	31	OK
	Night	38	26	OK	29	OK
	Night(Adverse)	38	28	OK	31	OK
R05	Day	47	38	OK	38	OK
	Eve	42	38	OK	38	OK
	Night	38	34	OK	34	OK
	Night(Adverse)	38	36	OK	36	OK
R06	Day	47	40	OK	40	OK
	Eve	42	40	OK	40	OK
	Night	38	36	OK	36	OK
	Night(Adverse)	38	38	OK	38	OK
R07	Day	47	26	OK	32	OK
	Eve	42	26	OK	30	OK
	Night	38	21	OK	28	OK
	Night(Adverse)	38	23	OK	31	OK
R08	Day	47	30	OK	33	OK
	Eve	42	30	OK	33	OK
	Night	38	24	OK	29	OK

Receiver	Period (weather)	Noise Limit $L_{Aeq,15min}$	$L_{Aeq,15min}$ (dBA) Precinct 2 Only		$L_{Aeq,15min}$ (dBA) All Precincts[1]	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
	Night(Adverse)	38	27	OK	31	OK
R09	Day	47	29	OK	37	OK
	Eve	42	29	OK	37	OK
	Night	38	24	OK	33	OK
	Night(Adverse)	38	26	OK	35	OK
R10	Day	47	31	OK	38	OK
	Eve	42	31	OK	37	OK
	Night	38	25	OK	34	OK
	Night(Adverse)	38	28	OK	36	OK
R11	Day	47	30	OK	37	OK
	Eve	42	30	OK	36	OK
	Night	38	25	OK	32	OK
	Night(Adverse)	38	27	OK	35	OK
R12	Day	47	25	OK	33	OK
	Eve	42	25	OK	32	OK
	Night	38	20	OK	28	OK
	Night(Adverse)	38	23	OK	31	OK
I01	When in use	63	37	OK	41	OK
I02	When in use	63	31	OK	41	OK
I03	When in use	63	33	OK	42	OK
I04	When in use	63	29	OK	38	OK

Once the proposed noise mitigation/barriers were applied, compliance was achieved across all receivers for all scenarios.

By comparing the results before and after mitigation is applied, the proposed noise barriers for each scenario are providing up to 5dB of attenuation overall depending on receiver, time period, and meteorological conditions.

4.9.2 Maximum Noise Levels

Table 4-12 shows the $L_{A1,1min}$ maximum operational noise predictions. Note that for the sources assessed, the difference between the $L_{A1,1min}$ and L_{AMax} descriptors is negligible.

Table 4-12 Predicted Maximum Operational Noise Levels – with Mitigation

Receiver	Period	Screening Criterion (dBA)	Predicted $L_{A1,1min}$ (dBA) Precinct 2 Only		Predicted $L_{A1,1min}$ (dBA) All Precincts	
			Prediction	Compliance (exceedance)	Prediction	Compliance (exceedance)
R01	Night	52	44	OK	44	OK
	Night^{Adverse}	52	46	OK	46	OK
R02	Night	52	40	OK	40	OK
	Night^{Adverse}	52	42	OK	43	OK
R03	Night	52	39	OK	39	OK
	Night^{Adverse}	52	41	OK	41	OK
R04	Night	52	43	OK	43	OK
	Night^{Adverse}	52	45	OK	45	OK
R05	Night	52	50	OK	50	OK
	Night^{Adverse}	52	52	OK	52	OK
R06	Night	52	51	OK	51	OK
	Night^{Adverse}	52	53	**1**	53	**1**
R07	Night	52	31	OK	33	OK
	Night^{Adverse}	52	34	OK	36	OK
R08	Night	52	40	OK	40	OK
	Night^{Adverse}	52	42	OK	42	OK
R09	Night	52	40	OK	41	OK
	Night^{Adverse}	52	42	OK	44	OK
R10	Night	52	33	OK	40	OK
	Night^{Adverse}	52	36	OK	42	OK
R11	Night	52	33	OK	43	OK
	Night^{Adverse}	52	35	OK	46	OK
R12	Night	52	33	OK	34	OK
	Night^{Adverse}	52	35	OK	37	OK

R06 exceeds the NPfI screening criterion for these scenarios by up to 1dB. As discussed in Section 4.1.3, the RNP offers additional guidance for sleep disturbance:

- "Maximum internal noise levels below 50dBA to 55dBA are unlikely to cause awakening reactions."

Assuming windows are open at the residence to provide ventilation to the room during the night time, this corresponds to an external noise level of 60 to 65dBA. Given that the predicted noise levels are below this range, we expect sleep disturbance associated with this development will be unlikely. No further mitigation of maximum noise levels is warranted.

4.10 Sensitivity to Site Specific Factors

The sensitivity to changing meteorological assumptions and traffic volumes was analysed in detail. Two adverse meteorological cases were considered:

- G class temperature inversion with calm winds (as determined by meteorological analysis); and
- F class temperature inversion with 2m/s source to receiver wind (standard NPfI adverse assumption).

Implementation of the standard adverse assumptions gave rise to 0.5 to 1dB higher noise levels at the most critical receivers.

The traffic volumes nominated for the dominant warehouse within the estate (3B) was given during peak (November to January – used in our analysis above) and off-peak (January to November) seasons. When considering total noise emissions from site, off-peak volumes resulted in total noise levels 1 to 1.5dB less at the critical receivers.

4.11 Noise Monitoring

Compliance monitoring should be conducted once all warehouses have been constructed and the site is operating normally. This should be conducted at locations representative of the most affected receivers to the south and east of the site. A monitoring plan will be informed by information provided by the future tenants.

All monitoring should be conducted by an accredited member firm of the Association of Australasian Acoustical Consultants (AAAC).

5 OFF-SITE TRAFFIC NOISE

5.1 Criteria

The *RNP* requires noise mitigation where new land use developments increase road traffic noise by more than 2 dB. An increase of greater than 2 dB requires an increase in traffic volumes of approximately 60% or higher.

5.2 Off-Site Traffic Noise Impact Assessment

The main access route to the development site is via Old Wallgrove Road then the arterial road of Lenore Drive. The forecast traffic daily traffic volumes on Lenore Drive are approximately 28,000 vehicles (refer to SLR report 610.16083-R1). The daily traffic volume from the OEE is estimated to be approximately 8,050 vehicles, which equates to an increase in traffic volumes of approximately 29%.

Therefore, an increase in traffic noise due to the OEE of greater than 2 dB is not considered likely. No mitigation is likely to be required as a result.

6 CONSTRUCTION NOISE AND VIBRATION

6.1 Criteria

Construction works will be undertaken within the standard construction hours (7.00am-6.00pm Monday to Friday and 8.00am-1.00pm Saturdays).

Adopting the measured background noise levels determined in Section 3 above, the Construction Noise Management Levels NMLs derived for the project in accordance with the NSW *Interim Construction Noise Guideline (ICNG)* are detailed in **Table 6-1**.

Table 6-1 *ICNG* Construction Noise Management Levels (CNMLs)

Receiver	Period	$L_{Aeq,15min}$ Construction NMLs (dBA)	
		Standard Hours	Highly Noise Affected
R01 to R11	Day	52	75
I01 to I04	Day	75	-

6.2 Modelling Methodology

Construction noise emissions from the site have been predicted with a model prepared using the SoundPLAN V8.2 noise modelling software, implementing the CONCAWE prediction method. The model incorporates the OEE Masterplan design, including the civil design, buildings, and sensitive receivers shown in Figure 2-1**.** Construction noise sources included in the model comprise fixed plant, mobile plant, and dump trucks. Construction is only expected to occur during the daytime.

Given that Precinct 2 will likely be constructed at least in part with other precincts, construction noise has been considered from the whole estate as a worst case. If buildings within Precinct 2 were to be constructed at a later date in isolation, predicted construction noise levels would be significantly lower.

The parameters used in the noise modelling have been detailed in Table 6-2 below.

Table 6-2 Noise model details

Data	Description
Terrain data	1m elevation contours obtained from DEM made available by Geoscience Australia have been used for all terrain.
Buildings	Buildings surrounding the OEE were obtained from Geovision. Buildings 1A to 1F were included in the model and hand drawn from architectural drawings provided by Goodmans
Aerial images	Obtained from Nearmaps
Ground absorption	0.2 within the OEE site 0.75 outside the OEE site
Building reflection loss	2.5 dB
Receivers	1.5 m above ground level
Meteorological conditions	F-class temperature inversion with a 2 m/s source to receiver drainage flow Humidity 70% Temperature 10ºC Air Pressure 101.3 kPa

6.3 Adopted Sound Power Levels

The sound power levels and scenarios detailed in **Table 6-3** have been adopted for this assessment.

Table 6-3 Sound Power Levels for Construction Equipment

Construction Activity	Equipment	Operating minutes in 15-min period	No of Items in each Work Area	Sound Power Level (dBA)		
				$L_{Aeq,15min}$		L_{Amax}
				Item	Activity	Activity
Site Clearing, Earthworks, road construction & retaining walls	Dozer	15	1	110	116	121
	Dump Truck	15	3	100		
	Excavator	15	1	102		
	Front End Loader (FEL) 962	15	1	112		
	Grader	15	1	108		
Pad and Hardstand Works	Concrete Pump	7.5	2	106	116	118
	Concrete Truck / Agitator	7.5	2	106		
	Concrete Vibrator	15	2	102		
	Paving Machine	15	2	104		
	Plate Compactor	5	2	108		
	Vibratory Roller (12 tonne)	15	2	109		
Construction of Warehouse and Office Structures	Elevated Working Platform	15	4	97	110	112
	Flatbed Truck	15	2	100		
	Hand Tools (electric)	15	8	96		
	Mobile Crane (100 tonne)	15	2	101		
	Welding Equipment	15	2	97		

Note 1: In accordance with the *ICNG*, for activities identified as particularly annoying (such as jackhammering, rock breaking and power saw operations), a 5 dB 'penalty' is added to the source sound power level when predicting noise using the quantitative method.

6.4 Predicted Construction Noise Levels

Table 6-4 details predicted construction noise levels for each scenario.

Table 6-4 Predicted Construction Noise Levels

Receiver	Period (weather)	$L_{Aeq,15min}$ Noise Level (dBA)				
		CNML	Highly Affected NML	Predicted		
				Earthworks	Hardstand	Construction
R01	Day (neutral)	52	75	**54**	51	47
R02	Day (neutral)	52	75	52	49	44
R03	Day (neutral)	52	75	**55**	50	46
R04	Day (neutral)	52	75	**56**	**53**	47
R05	Day (neutral)	52	75	**56**	52	48
R06	Day (neutral)	52	75	**58**	52	49
R07	Day (neutral)	52	75	46	42	37
R08	Day (neutral)	52	75	48	43	38
R09	Day (neutral)	52	75	**56**	52	47
R10	Day (neutral)	52	75	47	45	39
R11	Day (neutral)	52	75	47	45	38
R12	Day (neutral)	52	75	48	45	39
I01	Day (neutral)	75	-	52	51	46
I02	Day (neutral)	75	-	40	39	38

Receiver	Period (weather)	$L_{Aeq,15min}$ Noise Level (dBA)				
		CNML	Highly Affected NML	Predicted		
				Earthworks	Hardstand	Construction
I03	Day (neutral)	75	-	48	47	42
I04	Day (neutral)	75	-	47	45	40

Note 1: Highlighted text indicates an exceedance of the *ICNG* CNML.

Construction noise scenarios are predicted to be within the daytime CNML at most receiver locations, except for R01, R03, R04, R05, R06, R09 during earthworks and for R04 during hardstand works. Noise mitigation should be implemented to minimise noise impact on the surrounding receivers, as provided in Section 6.5.

6.5 Construction Noise Mitigation

As noted, the predictions indicate general compliance with the *ICNG* standard hours criteria without any focussed mitigation requirements, except for the minor exceedances at R01, R03, R04, R05, R06 and R09.

The *ICNG* describes strategies for construction noise mitigation and control that are applicable to this proposal. The strategies are designed to minimise, to the fullest extent practicable, noise during construction.

The following construction noise mitigation measures would be applied during the works:

- Minimising the coinciding use of multiple noisy plant items;
- Equipment which is used intermittently is to be shut down when not in use;
- Equipment with directional noise emissions would be oriented away from sensitive receivers as much as practicable;
- Regular compliance checks on the noise emissions of all plant and machinery used for the proposal would indicate whether noise emissions from plant items were higher than predicted. This also identifies defective silencing equipment on the items of plant;
- Non-tonal reversing alarms should be used on all items of plants and heavy vehicles used for construction; and
- Goodman would undertake pre-construction community consultation with receivers R01, R03, R04, R05, R06 and R09 in order clearly and transparently explain the proposed works and the potential for construction noise impacts. Regular on-going updates would be provided throughout the works in order to understand and address as far as practicable any noise related concerns of the receivers.

The identified measures would be carried out to ensure the works are undertaken with minimal noise impact.

6.6 Construction Vibration Impact Assessment

The vibration generating plant items would be set back from the site boundaries by at least 120m. Given this setback distance, vibration levels would not be discernible off-site, therefore no vibration impacts would be expected.

We note that the site is in close proximity to a Sydney Water asset. We recommend that Sydney Water is consulted once a detailed construction plan has been developed.

6.7 Construction Noise & Vibration Management Plan

A Construction Noise and Vibration Management Plan (CNVMP) should be developed with the contractor prior to commencement of site works. At a minimum, this should include:

- Confirmation that the results presented here are representative of the final construction methodology;
- Identify most sensitive receivers;
- Provide details of all reasonable and feasible noise mitigation measures required; and
- Inform site staff of this sensitivity and methods to reduce construction noise.

7 CONCLUSION

RWDI has undertaken an operational noise and construction noise & vibration assessment of the proposed Oakdale Eat Estate (OEE) in Kemps Creek, NSW.

7.1 Operational Phase

The principal OEE operational noise sources comprise of light and heavy vehicle movements, loading activities and fixed mechanical service plant. Noise modelling of these sources has been undertaken to determine potential noise impacts associated with the proposed operation of the OEE.

The following outcomes have been drawn from our assessment:

- Noise produced by the operation of Precinct 2 of OEE in isolation is predicted to comply with relevant criteria and is not the dominant source within the estate.
- The operation of the entire OEE is predicted to marginally exceed noise criteria without further mitigation.
- The operation of full development of the OEE is predicted to comply with the operational noise criteria during the day, evening and night time periods with the inclusion of two small noise barriers along the southern boundary (described in Section 4.8.1).
- An assessment of potential sleep disturbance has been undertaken considering heavy vehicle brake releases and reverse alarms. The assessment indicates that noise impact would unlikely to result in sleep disturbance and no further mitigation is warranted.

The cumulative effect of noise from all industrial sources has been considered in assessing potential noise impacts.

7.2 Construction Phase

This assessment has considered construction noise and vibration impacts that have potential to arise during construction of the development.

The key construction works would involve earthworks at Precincts 2, hardstand works at each lot, and the construction of the Building warehouse and office structures. This may happen concurrently with construction works in other precincts. All construction work scenarios include the use of the site access road for the delivery of materials to the site. The construction works are proposed to be undertaken during standard construction hours (7.00am-6.00pm Monday to Friday and 8.00am-1.00pm Saturdays).

Construction noise scenarios predict some exceedances of the daytime CNML during earthworks and hardstand works. Noise mitigation should be implemented to minimise noise impact on the surrounding receivers, as provided in Section 6.

No vibration impacts at external receivers are anticipated during the proposed works. We note that the development is within proximity of a Sydney Water asset. Whilst we do not anticipate any need for specific controls given the setback involved, Sydney Water should be consulted once a detailed construction plan has been developed.

APPENDIX A – OPERATIONAL NOISE CONTOURS

Noise level Day dB(A)

	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	< 80
80 <=	< 85
85 <=	

Noise displayed contours at 1.5 m receiver height

Signs and symbols

- Main building
- Site Extent Area
- Point receiver
- Noise Wall

Scale on A4 - 1:15000

0 100 200 300 400 m

N

Oakdale East Industrial Estate

Operational noise contours (with mitigation) - Day period (Standard Met)

Source:
1. Basemap from Nearmaps 2023
2. Buildings from Geovision

Map projection:
GDA 2020/MGA zone 56 (EPSG: 7856)

Drawn by: Ben Lawrence	**Checked by:** Remi Larmandieu
Project No.: 2201866	**Figure** 1 of 4
Date created: 11/11/2024	

Noise level Evening dB(A)

	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	< 80
80 <=	< 85
85 <=	

Noise displayed contours at 1.5 m receiver height

Signs and symbols

- Main building
- Site Extent Area
- Point receiver
- Noise Wall

Scale on A4 - 1:15000

0 100 200 300 400 m

N

Oakdale East Industrial Estate

Operational noise contours (with mitigation) - Evening period (Standard Met)

Source:
1. Basemap from Nearmaps 2023
2. Buildings from Geovision

Map projection:
GDA 2020/MGA zone 56 (EPSG: 7856)

Drawn by: Ben Lawrence

Checked by: Remi Larmandieu

Project No.: 2201866

Figure 2 of 5

Date created: 11/11/2024

Noise level Night dB(A)

	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	< 80
80 <=	< 85
85 <=	

Noise displayed contours at 1.5 m receiver height

Signs and symbols

- Main building
- Site Extent Area
- Point receiver
- Noise Wall

Scale on A4 - 1:15000

0 100 200 300 400 m

N

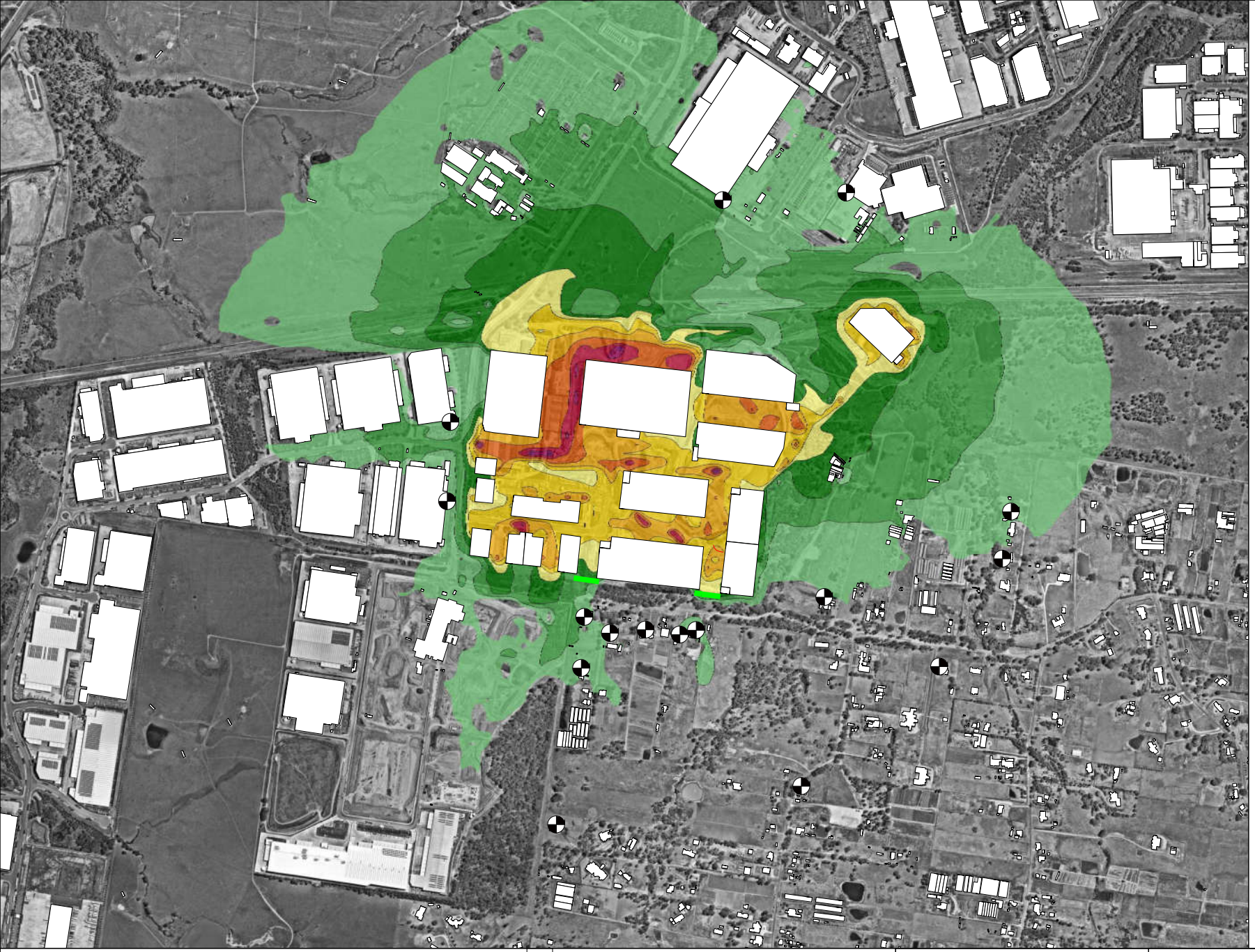
Oakdale East Industrial Estate

Operational noise contours (with mitigation) - Night period (Standard Met)

Source:
1. Basemap from Nearmaps 2023
2. Buildings from Geovision

Map projection:
GDA 2020/MGA zone 56 (EPSG: 7856)

Drawn by: Ben Lawrence	**Checked by:** Remi Larmandieu
Project No.: 2201866	**Figure** 3 of 5
Date created: 11/11/2024	



Noise level Night dB(A)

	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	< 80
80 <=	< 85
85 <=	

Noise displayed contours at 1.5 m receiver height

Signs and symbols

- Main building
- Site Extent Area
- Point receiver
- Noise Wall

Scale on A4 - 1:15000

0 100 200 300 400 m

N

Oakdale East Industrial Estate

Operational noise contours (with mitigation) - Night period (Adverse Met G 0ms)

Source:
1. Basemap from Nearmaps 2023
2. Buildings from Geovision

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