200 Aldington Road Industrial Estate

SSD-10479 Modification, Noise and Vibration Impact Assessment and SSDA for Lot O (SSD-96107226)

Stockland Fife Kemps Creek Pty Ltd

Level 12, 89 York Street,
Sydney NSW 2000

Prepared by:

SLR Consulting Australia

Tenancy 202 Submarine School, Sub Base Platypus, 120 High Street, North Sydney NSW 2060, Australia

SLR Project No.: 610.31010.00001

24 July 2026

Revision: v2.1

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
v1.0	8 January 2026	Jordan McMahon	Antony Williams	Antony Williams
v2.0	24 March 2026	Jordan McMahon	Antony Williams	Antony Williams
v2.1	24 July 2026	Jordan McMahon	Antony Williams	Antony Williams

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Stockland Fife Kemps Creek Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Table of Contents

Tables in Text

Figures in Text

Appendices

Acronyms and Abbreviations

AS	Australian Standards
ARIE	200 Aldington Road Industrial Estate
BAPS	Bochasanwasi Shri Akshar Purushottam Swaminarayan Sanstha
BS	British Standard
CEMP	Construction Environmental Management Plan
CMP	Construction Management Plan
CNVG	Construction Noise and Vibration Guideline
CNVIA	Construction Noise and Vibration Impact Assessment
CNVMP	Construction Noise and Vibration Management Plan
dB	Decibel
dBA	A-weighted decibel (referenced 20 µPa)
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
ICNG	Interim Construction Noise Guideline
ISO	International Organization for Standardization
kHz	Kilohertz
L_{Aeq}	Equivalent continuous noise level, providing a representation of the cumulative level of noise exposure over a defined period.
m	Metres
Master Plan	Concept Master Plan
NIA	Noise Impact Assessment
NMLs	Noise Management Levels
NPfI	Noise Policy for Industry
NSW	New South Wales
SLR	SLR Consulting Australia Pty Ltd
SSD	State Significant Development
SSDA	State Significant Development Application
TfNSW	Transport for NSW

1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Stockland Fife Kemps Creek Pty Ltd (SKFC) to predict the potential operational noise impacts from 200 Aldington Road Industrial Estate (ARIE), formally known as Lot 200 DP 1285691, 106-228 Aldington Road, Kemps Creek.

Development Consent SSD-10479 was granted by the Director of Industry Assessment on 5 May 2023 for a State Significant Concept Master plan and Stage 1 Development Application for the 200 Aldington Road Industrial Estate, including:

- A concept master plan to support development for the purposes of warehouse and distribution centre, general industry and ancillary offices.
- Detailed consent for progressive delivery of site preparation, earthworks and infrastructure works (ie Stage 1 works) on the site.

The design of the development has been updated as part of a Modification Application to Development Consent SSD-10479, relating to the warehouse on Lot O.

The following operational Noise Impact Assessments (NIA) have been completed for the ARIE:

- A NIA was prepared by White Noise Acoustics as part of the SSD-10479 application, reference '*Report 20141_200819, Revision 8*', issued 26 August 2022 (the SSDA NIA).
- A modification NIA was prepared by SLR for MOD 1, reference *'SSD–10479 MOD 1 Updated Noise Impact Assessment'* 610.31010-R02-v2.0, issued May 2024 (the MOD 1 NIA).
- A modification NIA was prepared by SLR for Modification 2 as amended, reference *'SSD–10479 Modification 2 as amended, Noise Impact Assessment and SSDA for Lot J (SSD-61212208)'* 610.31010-R05-v2.1, issued March 2025 (the Lot J SSDA NIA).
- A modification NIA was prepared by SLR for Modification 4, reference *'SSD–10479 Modification 4, Noise Impact Assessment'* 610.31010-R08-v2.1, issued March 2025 (the MOD 4 NIA).
- A modification NIA was prepared by SLR for Lot F, reference *'SSD–79300218 Lot 4 Land Use and Fit Out Noise Impact Assessment'* 610.31010-R10-v2.0, issued November 2025 (the Lot F SSDA NIA).
- A modification NIA was prepared by SLR for Lot K, reference *'SSD-10479 Modification 5, Noise Impact Assessment and SSDA for Lot K (SSD-80264236)'* 610.31010-R11-v1.2, issued August 2025 (the Lot K SSDA NIA).
- A modification NIA was prepared by SLR as part of the SSD-85510213 application, reference *'SSD-10479 Modification 6, Noise Impact Assessment and SSDA for Lot E (SSD-*85510213*)'* 610.31010-R13-v1.1, issued March 2026 (the Lot E SSDA NIA).

This report has been prepared to support a Section 4.55(1) Modification Application to the approved 200 Aldington Road Industrial Estate and presents a review of the potential operational noise impacts by comparing the predicted noise levels to the noise limits for the site, as specified in Development Consent SSD-10479.

This report also addresses the potential construction and operational noise impacts for an additional State Signification Development (SSD) application for on-lot development for Lot O (SSD-96107226).

SLR is suitably qualified to produce this noise impact assessment. SLR staff are members of the Australian Acoustical Society (AAS) and a member firm of the Association of Australasian Acoustical Consultants (AAAC).

The following report uses specialist acoustic terminology. An explanation of common terms is provided in **Appendix A**.

2.0 Project Description

200 Aldington Road Industrial Estate is legally described as Lot 200 in DP 1285691. The site is located on the east side of Aldington Road, Kemps Creek and encompasses approximately 72.08 hectares (ha) of land within the Penrith Local Government Area (LGA).

The estate is approximately 6 kilometres (km) north-east of the future Western Sydney Nancy-Bird Walton Airport, 13 km south-east of the Penrith CBD and 40 km west of the Sydney CBD. The ARIE site is part of the broader Mamre Road Precinct (MRP) which is zoned IN1 General Industrial under Chapter 2 of the State Environmental Planning Policy (Industry and Employment) 2021 (I&E SEPP).

ARIE has around 1,242 metres (m) of direct frontage to Aldington Road with one proposed signalised intersection providing vehicular access to the southern side of the development, with a three-way junction (designed for a future signalised four-way intersection) providing access to the northern side of the development. Until the connection of Aldington Road to the future Southern Link Road (located to the north) is constructed, the access to Aldington Road will be provided from Abbots Road.

The ARIE concept proposal includes various warehouse developments with associated offices, carparking, loading areas and landscaping to be delivered in subsequent stages.

The proposed modifications to SSD-10479 are summarised below. A further detailed explanation is provided within the Modification Report prepared by Ethos Urban.

The site location and surrounding noise sensitive receivers are shown in **Figure 1**.

Modification 1 to SSD-10479

A first modification (Modification 1) was prepared and lodged with the (then) Department of Planning and Environment (DPE) on 3 July 2023. Modification 1 was approved on 14 August 2024. It relates to civil, subdivision and building works which reflects refinement of design development undertaken since approval. This includes removal of the temporary access road, lot boundary readjustments and pad level adjustments.

Modification 2 (as amended) to SSD-10479

A second modification (Modification 2 as amended) was prepared and lodged with the Department of Planning, Housing and Infrastructure (DPHI) in June 2024. Modification 2 as amended was approved on 26 March 2025. It relates primarily to the tenant-specific requirements for Lot J under SSD-61212208.

Modification 3 to SSD-10479

Modification 3 was prepared and lodged with DPHI in June 2024. Modification 3 was approved on 27 February 2025. It relates primarily to road widening and upgrade works to Aldington and Abbotts Road, and the upgrade of the Mamre Road and Abbotts Road intersection.

Modification 4 to SSD-10479

Modification 4 was prepared and lodged with DPHI in April 2025. Modification 4 was approved on 25 July 2025. It relates primarily to design amendments to the Warehouse 5 building on Lot F which supports the functional requirements of the tenant.

Modification 5 to SSD-10479

Modification 5 was prepared and lodged with DPHI in June 2025. Modification 5 was approved on 11 December 2025. It relates primarily to design amendments to the Warehouse 7 building on Lot K which will support the functional requirements of the tenant.

Modification 6 to SSD-10479

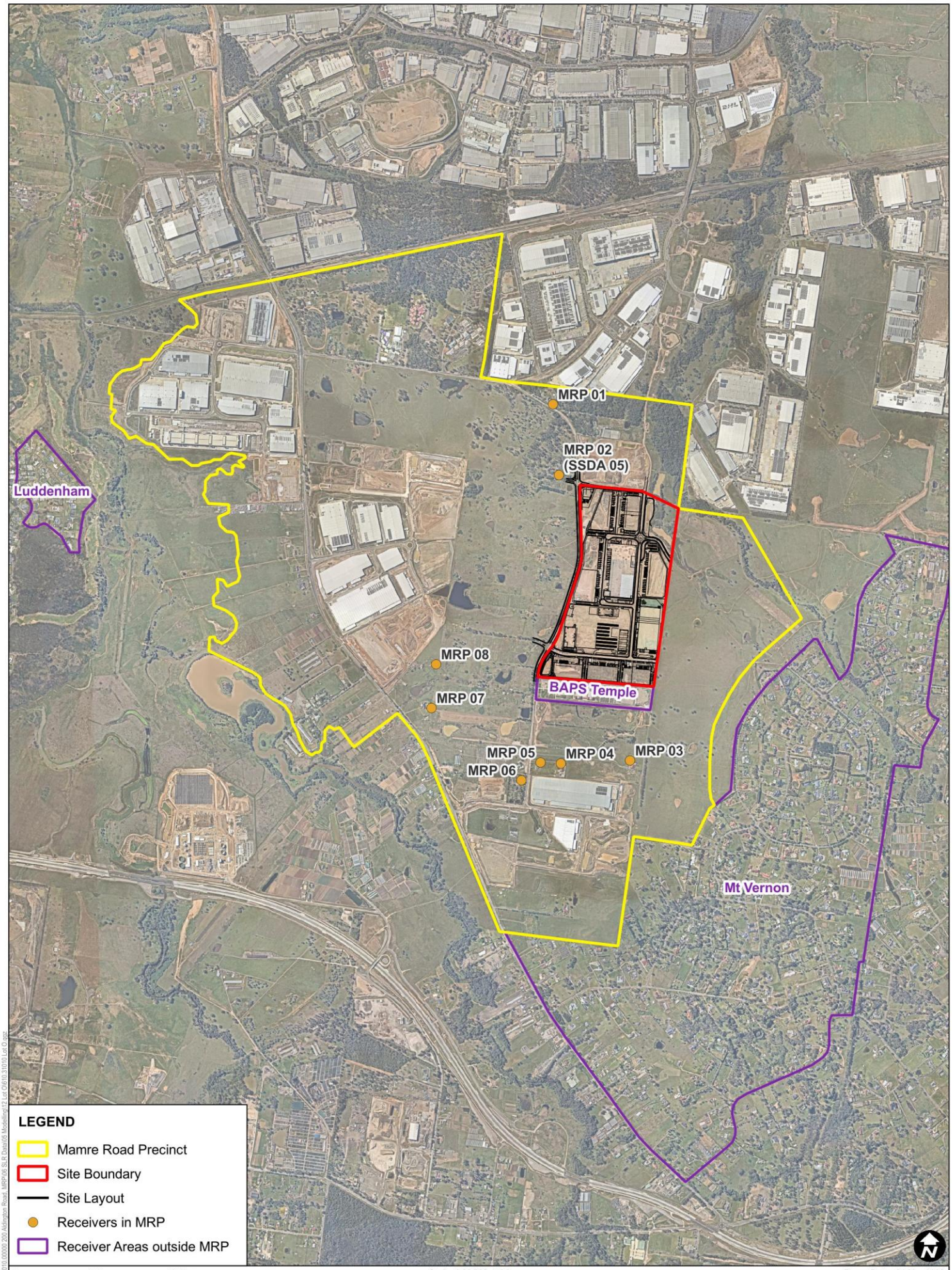
Modification 6 was prepared and lodged with DPHI in November 2025 and is currently under assessment. It relates primarily to design amendments to the Warehouse 4 building on Lot E which will support the functional requirements of the tenant and also includes changes to the warehouses on Lots A, B, C, G and J.

This Modification and SSD

This modification primarily relates to design amendments to Lot O which will support the functional requirements of the tenants. The SSD seeks approval for the following development:

- Construction and operation of a temperature-controlled warehouse and distribution centre extending to approximately 14,617 m^2 and configured to accommodate two cold-store logistics operators. The western tenancy will be referred to as Warehouse 1 and Office 1 with the eastern tenancy being referred to as Warehouse 2 and Office 2. This includes:
    - Access to the warehouse via a mix of recessed docks and on-grade roller shutter doors.
    - Each tenancy is provided a main office component arranged over two-levels with Warehouse 2 also providing a dock office.
    - The tenancies are separated by an internal intertenancy wall and each tenancy will benefit from their own truck entry and exit, hardstand for loading/unloading and car parking.
    - Hours of operation, including 24/7 use.

The Modification ARIE Concept Master Plan and staged ARIE with Lot O are shown in **Figure 2** and **Figure 3**, respectively. The ‘staged ARIE scenario’ refers to the previously assessed lots which are Lot F, Lot J Lot K and Lot E, plus the lot under assessment which is Lot O.



Scale: 1:30,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 24-Mar-2026
Project Number: 610.31010

Data Source:
Nearmap Imagery

Site Plan

FIGURE 1

Figure 2 Proposed Modification – ARIE Concept Master Plan Design

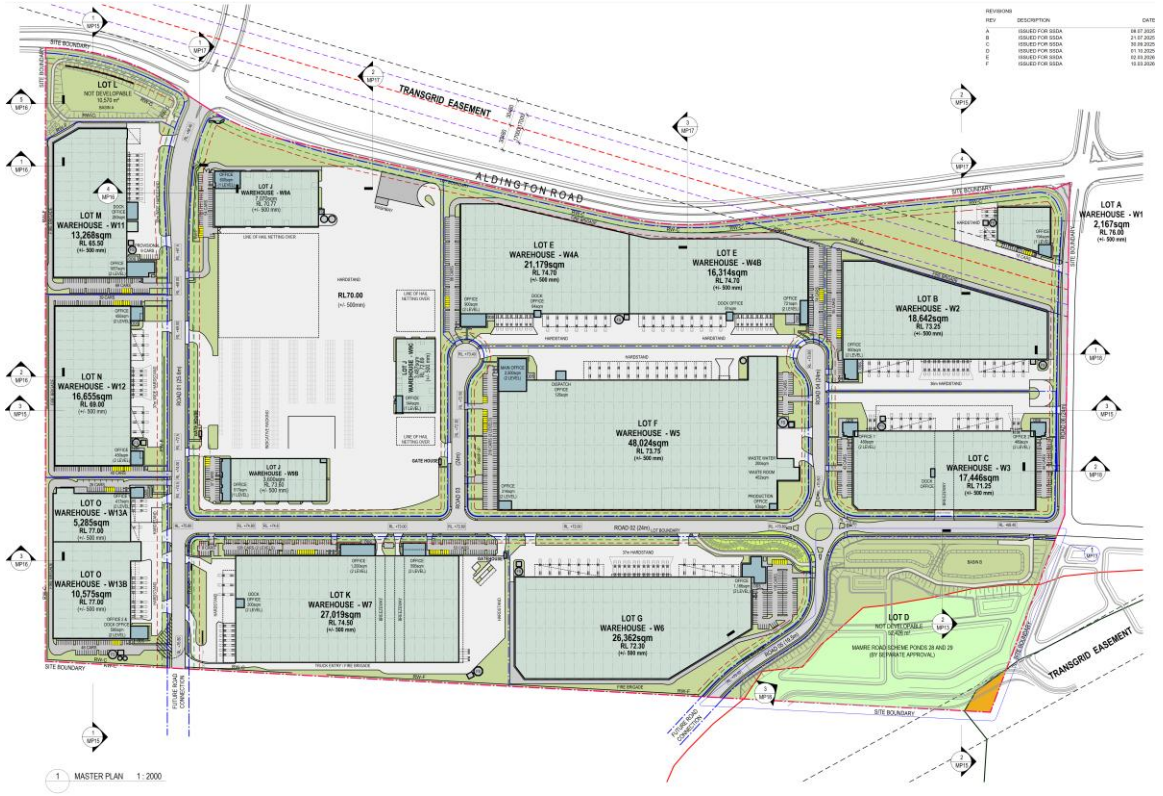
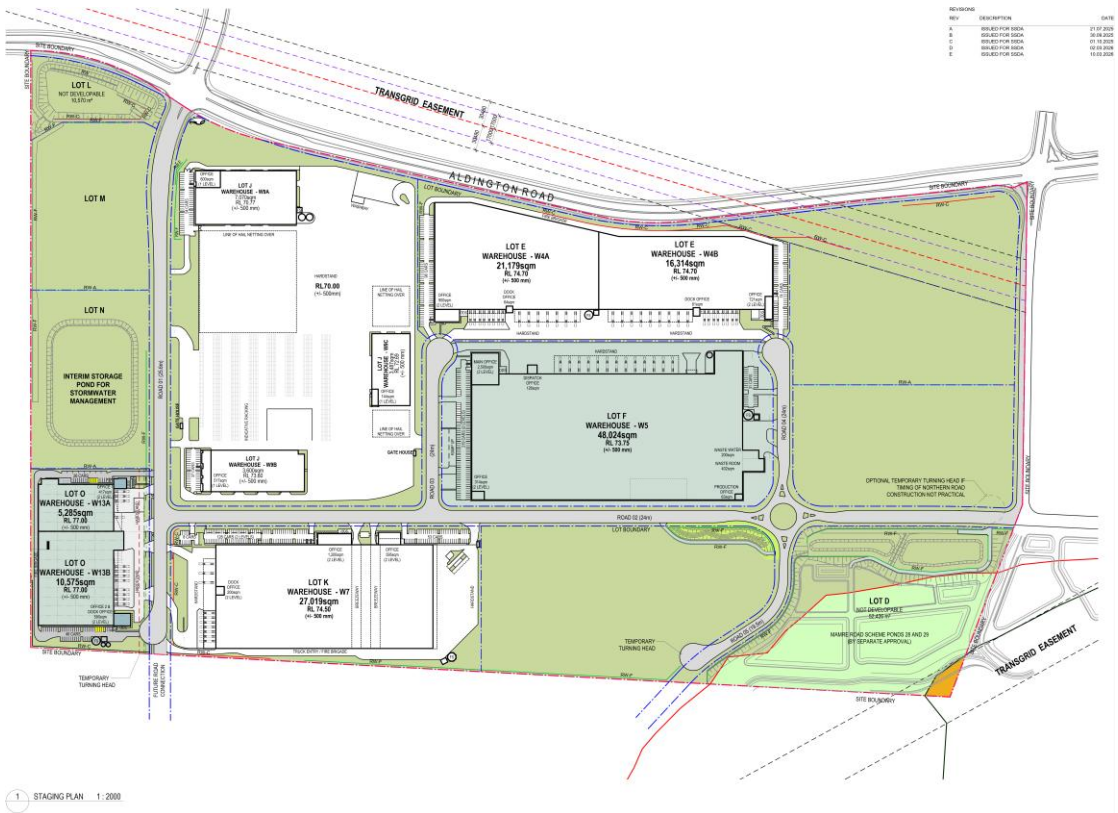


Figure 3 Proposed Modification – ARIE Lot O (and the staged Lot F, J,K and O)



2.1 Nearest Receivers

Nearby sensitive receiver areas outside the MRP are identified in Appendix 3 of the Development Consent.

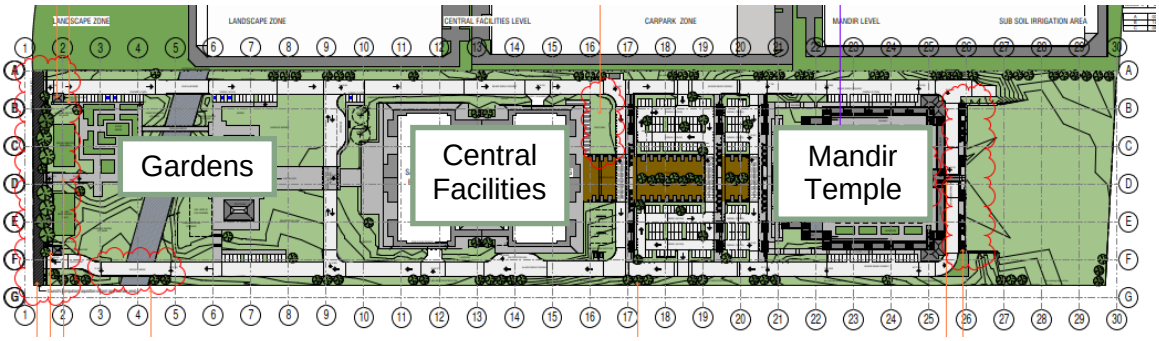
Sensitive receivers adjacent to the ARIE (within the MRP) were previously identified in the SSDA NIA. While the majority of these receivers are now demolished, or on land subject to separate SSD Applications, one receiver to the north-west is currently existing (identified as Receiver 05 in the SSDA NIA). Additional existing receivers within the MRP have been identified as part of this assessment which were not considered in the SSDA NIA.

The various sensitive receivers are in shown in **Figure 1** and detailed in **Table 1**.

Table 1 Surrounding Sensitive Receivers

NCA/ID	Description	Receiver Type	Approx. Distance (m)
Receivers Within MRP			
MRP 01	Newly identified residential receiver	Residential	570
MRP 02 (SSDA NIA 05)	Residential receiver identified in SSDA NIA	Residential	200
MRP 03	Newly identified residential receiver	Residential	500
MRP 04	Newly identified residential receiver	Residential	550
MRP 05	Newly identified residential receiver	Residential	550
MRP 06	Newly identified residential receiver	Residential	700
MRP 07	Newly identified residential receiver	Residential	720
MRP 08	Newly identified residential receiver	Residential	690
Receiver Areas Outside MRP / Receivers Identified in the Development Consent			
West Residential	Residences near Medinah Avenue, Luddenham	Residential	2,950
East Residential	Residences near Mount Vernon Road and Kerrs Road, Mount Vernon	Residential	610
BAPS Temple	232 Aldington Road, Kemps Creek. Areas include (see **Figure 4**): - Gardens - Central Facilities - Mandir Temple.	Place of Worship	Adjoining southern boundary of site

Figure 4 BAPS Temple



2.2 Development Consent Conditions

The Development Consent Conditions for SSD-10479 were issued in May 2023 and modified in July 2025. The conditions relevant to this assessment are shown in **Table 2**.

Table 2 Development Consent Conditions

Noise	Where Addressed
Noise A16. The Applicant must ensure that noise generated by operation of the development does not exceed the noise limits in **Table 2**. **Table 2** *Noise Limits (dB(A))*	Operational noise assessment with respect to Noise Limits detailed in **Section 5.2**. Operational noise mitigation and management measures discussed in **Section 7.2**.

Location	Day $L_{Aeq(15minute)}$	Evening $L_{Aeq(15minute)}$	Night $L_{Aeq(15minute)}$
Residential receivers near Medinah Avenue (Luddenham), Mount Vernon Road (Mount Vernon) and Kerrs Road (Mount Vernon)	40	35	30
BAPS Temple – outdoor areas of worship or congregation (excluding car parking areas and internal roads)	43 (When in use)		

Note *Noise generated by the development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017) (as may be updated or replaced from time to time). Refer to Figure 5 in Appendix 3 for the location of residential sensitive receivers.*

Noise	Where Addressed
A16A. The Applicant must implement reasonable and feasible measures (in accordance with Fact Sheet F of the *Noise Policy for Industry* (EPA 2017)) to minimise noise generated by operation of the development on Sunday afternoons and evenings (1pm – 8pm). These measures should aim, so far as is reasonably practicable, to achieve a noise level of 35 dBA $L_{Aeq(15minute)}$ at the BAPS temple site outdoor areas of worship or congregation (excluding car parking areas and internal roads) during this period.	Operational assessment of Sunday period detailed in **Section 5.2.3**.
A17. The Applicant must ensure that noise generated by any activity on the site does not exceed a sound power level of L_{AMax} 118 dB(A) or result in annoying noise characteristics as determined in accordance with the Noise Policy for Industry (EPA, 2017) and Australian Standard AS 1055:2018 Acoustics – Description and measurement of environmental noise (Standards Australia, 2018).	Sleep disturbance assessment detailed in **Section 5.2.4**.
A18. Prior to the commencement of operation of any part of the Development, the Applicant must prepare and submit an Operational Noise Management Plan to the satisfaction of the Planning Secretary. The Operational Noise Management Plan must: (a) describe the noise performance monitoring method established in accordance with the following guidelines and standards (as may be updated or replaced from time to time) to analyse compliance with the limits specified in condition A16: (i) the Australian Standard AS 1055:2018 Acoustics – Description and measurement of environmental noise (Standards Australia, 2018); (ii) the EPA Approved Methods for the Measurement and Analysis of Environmental Noise in NSW (EPA, 2022); (iii) Section 7 of the Noise Policy for Industry (EPA, 2017); (b) identify the allowable noise contribution level of each warehouse at compliance locations identified in Table 2; (c) identify the nominated intermediate monitoring locations, reference noise levels at each intermediate location, and noise level relationship between each intermediate location and compliance locations identified in Table 2; (d) include: (i) an outline of at-source and transmission path mitigation measures required to ensure compliance with the limits specified in condition A16; (ii) a description of operational procedures to minimise noise, including loading dock management practices and driver code of conduct; (iii) a description of contingency measures in the event mitigation measures and operational procedures are ineffective at reducing operational noise to comply with limits specified in condition A16; (e) include a Trigger Action Response Plan (TARP) for the noise limits and goal in Conditions A16 and A16A that includes: (i) details of on-site noise monitoring instrumentation to function as a real-time monitoring feedback tool for the TARP; (ii) the applicable on-site noise trigger levels at the real-time monitoring locations to ensure noise is minimised in accordance with condition A16A;	The Operational Noise Management Plan would be completed as part of future work.

Noise	Where Addressed
(iii) details of warning systems for when on-site noise trigger levels are exceeded and operational responses to be carried out by the Applicant or tenants to minimise and mitigate events exceeding the on-site noise trigger levels; (iv) a system for recording all exceedances of the on-site noise trigger levels and the responses taken to minimise those exceedances; and (f) be updated within three months of the approval of any modification of the Development Layout or determination of future DAs.	
Noise and Vibration B15. Future DAs must be accompanied by a Noise and Vibration Impact Assessment. The assessment must: (a) identify the noise and vibration impacts during construction and operation; (b) demonstrate compliance with the noise limits in Condition A16; (c) demonstrate compliance with the noise limits in Condition A17; (d) provide an analysis of all external plant and equipment, including but not limited to, forklifts, air conditioners and refrigeration systems and on-site vehicle movements; (e) incorporate noise mitigation measures, such as increased building setbacks, building insulation, noise barriers, layout of truck loading areas or source controls, to demonstrate the noise limits in Condition A16 can be achieved; (f) analyse the need for noise barriers to meet relevant noise limits at residential receivers within the MRP, if they are occupied residences at the time of the application; and (g) recommend mitigation and management measures (excluding measures at receivers) to be implemented to minimise noise during construction and operation.	Operational noise sources detailed in **Section 4.2.1**. Construction noise & vibration assessment detailed in **Section 5.1**. Operational noise assessment with respect to Noise Limits detailed in **Section 5.2** (no operational vibration impacts are expected at surrounding sensitive receivers due to the large separation distance from the project site). Noise mitigation and management measures discussed in **Section 7.0**.

2.3 Secretary's Environmental Assessment Requirements

This report has also been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for Lot O in June 2025, including additional requirements detailed in the SEARs Cover Letter.

Specifically, this report has been prepared to respond to the SEARs requirements shown in **Table 3**.

Table 3 Secretary's Environmental Assessment Requirements

Description of Requirement	Where Addressed
SEARs Cover Letter	
Construction and Operational Noise – Including: - a cumulative construction and operational noise impact assessment inclusive of impacts from approved and proposed developments in the Estate and the broader Mamre Road Precinct - demonstration of compliance with the noise limits set out in Conditions A16, A16A and A17 of the SSD-10479 development consent - a detailed noise source inventory describing all potential noise and vibration sources during construction and operation of the development, including but not limited to external plant and equipment (including all plant and equipment required for cold storage), vehicle types (including refrigerated trucks), on-site vehicle movements (e.g., gas-powered/electric forklifts, loading/unloading activities and manoeuvring within loading areas), and on-site and off-site traffic noise. Noise levels for all plant and equipment must be supported by manufacturer specifications.	**Section 6.0** **Section 5.2** **Section 4.2.1.7**
SEARs	
Noise and Vibration Provide a noise and vibration assessment prepared in accordance with the relevant EPA guidelines. The assessment must detail construction and operational noise and vibration impacts on nearby sensitive receivers and structures and outline the proposed management and mitigation measures that would be implemented.	Construction assessment in **Section 5.1**. Operational assessment in **Section 5.2**. Mitigation and management measures discussed in **Section 7.0**.

2.4 Mamre Road Precinct Development Control Plan

The Mamre Road Precinct (MRP) Development Control Plan (DCP) also applies to the proposal. The requirements of the MRP DCP relevant to noise and vibration are shown in **Table 4**.

Table 4 Mamre Road Precinct Development Control Plan

Noise and Vibration	Where Addressed
2.2.3 Biodiversity Conservation and Management	
16) Where noise adjacent to natural areas is likely to impact wildlife, the proponent must manage the timing of noise producing activities, including installing appropriate noise treatment barriers along major roads and other attenuation measures.	Noise from the development is not expected to impact on wildlife.
2.11 Aviation Safeguarding	
3) Development is constructed in accordance with Australian Standards AS2021 – Acoustics Noise Intrusion – Building Siting and Construction.	The site is within ANEC 20-25 and is therefore acceptable for light industry, as per AS2021.

Noise and Vibration	Where Addressed
4.3 Amenity – 4.3.1 Noise and Vibration	
1) Any machinery or activity considered to produce noise emissions from a premise shall be adequately sound-proofed so that noise emissions are in accordance with the provisions of the Protection of the Environment Operations Act 1997.	**Section 3.3.1**, **5.0** and **7.0**
2) Noise should be assessed in accordance with Noise Policy for Industry (EPA, 2017) and NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011).	**Section 3.0**
3) An Acoustic Report by a qualified acoustical engineer must be submitted where proposed development, including traffic generated by that development, will create noise and/or vibration impacts, either during construction or operation, that impacts on adjoining developments or nearby rural-residential areas. The Acoustic Report should outline the proposed noise amelioration strategies and management methods.	This report **Section 5.0** and **7.0**
4) An Acoustic Report shall be prepared for developments within 500m of rural-residential areas and other sensitive receivers, including educational establishments.	This report **Section 2.1** and **5.0**
5) Acoustic Reports for individual developments must assess cumulative noise impacts, including likely future noise emissions from the development and operation of the Precinct. The consultant should liaise with the relevant consent authority to determine acceptable amenity goals for individual industrial developments and background noise levels.	This report **Section 2.1** and **6.0**
6) The use of mechanical plant and equipment may be restricted in areas close to sensitive receivers, such as adjoining rural-residential development and educational establishments.	**Section 4.2.1**, **5.0** and **7.0**
7) Building design is to incorporate noise amelioration features. Roof elements are to control potential breakout noise, having regard to surrounding topography.	**Section 4.2.1**, **5.0** and **7.0**
8) Boundary fences are to incorporate noise amelioration features and control breakout noise having regard to developments adjoining rural-residential areas.	**Section 4.2.1**, **5.0** and **7.0**
9) Development shall comply with the relevant Australian Standards for noise and vibration.	**Section 5.0** and **7.0**
10) A qualified acoustical consultant is to certify any acoustic design measures have been satisfactorily incorporated into the development at construction certificate stage and validate the criteria at occupation certificate stage.	Will be undertaken following approval at construction certificate stage and occupation certificate stage

3.0 Assessment Criteria

3.1 Interim Construction Noise Guideline

The NSW *Interim Construction Noise Guideline* (ICNG) is used to assess and manage impacts from construction noise on residences and other sensitive land uses in NSW.

The ICNG contains procedures for determining project specific Noise Management Levels (NMLs) for sensitive receivers based on the existing background noise in the area. The 'worst-case' noise levels from construction of a project are predicted and then compared to the NMLs in a 15-minute assessment period to determine the likely impact of the project.

The NMLs are not mandatory limits, however, where construction noise levels are predicted or measured to be above the NMLs, feasible and reasonable work practices to minimise noise emissions are to be investigated.

Residential Receivers

The ICNG approach for determining NMLs at residential receivers is shown in **Table 5**.

Table 5 ICNG NMLs for Residential Receivers

Time of Day	NML $L_{Aeq(15minute)}$	How to Apply
Standard Construction Hours Monday to Friday 7:00 am to 6:00 pm Saturday 8:00 am to 1:00 pm No work on Sundays or public holidays	Noise affected RBL[1] + 10 dB	• The noise affected level represents the point above which there may be some community reaction to noise • Where the predicted or measured $L_{Aeq(15minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly Noise Affected 75 dBA	• The Highly Noise Affected (HNA) level represents the point above which there may be strong community reaction to noise • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restructuring the hours that the very noisy activities can occur, taking into account: o Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools or mid-morning or mid-afternoon for works near residences o If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside Standard Construction Hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours • The proponent should apply all feasible and reasonable work practices to meet the noise affected level • Where all feasible and reasonable practises have been applied and noise is more than 5 dB above the noise affected level, the proponent should negotiate with the community.

Note 1: The RBL is the Rating Background Level and the ICNG refers to the calculation procedures in the NSW Industrial Noise Policy (INP). The INP has been superseded by the NSW EPA *Noise Policy for Industry* (NPfI).

'Other Sensitive' Land Uses and Commercial Receivers

The ICNG NMLs for 'other sensitive' non-residential land uses are shown in **Table 6**.

Table 6 NMLs for 'Other Sensitive' Receivers

Land Use	Noise Management Level $L_{Aeq(15minute)}$ (dBA) (Applied when the property is in use)	
	Internal	External
Classrooms at schools and other educational institutions	45	55[1]
Worship	45	55[1]
Commercial	-	70
Industrial	-	75

Note 1: It is assumed that these receivers have windows partially open for ventilation which results in internal noise levels being around 10 dB lower than the external noise level.

3.1.1 NML Summary

The NMLs for the project have been taken from the ARIE Stage 1 Construction Noise and Vibration Management Plan (SLR Report 610.31010.00000-R01-v1.2, dated August 2023) (the CNVMP) and are shown in **Table 7**.

Table 7 Project Specific Noise Management Levels

Receiver Type	NML ($L_{Aeq(15minute)}$ – dBA)				Sleep Disturbance Screening Level (L_{Amax} dBA)
	Standard Construction Hours (RBL+10dB)	Out of Hours (RBL+5dB)			
	Daytime	Daytime[1]	Evening	Night-time	Night-time
Residential	45	40	35	35	52
Educational	55	55 (when in use)			-
Worship	55	55 (when in use)			-
Commercial	70	70 (when in use)			-
Industrial	75	75 (when in use)			-

Note 1: Daytime out of hours is 7 am to 8 am and 1 pm to 6 pm on Saturday, and 8 am to 6 pm on Sunday and public holidays.

3.2 Construction Vibration Criteria

3.2.1 Minimum Working Distances for Vibration Intensive Works

Minimum working distances for typical vibration intensive construction equipment are provided in the Transport for NSW *Construction Noise and Vibration Guideline* (CNVG) and are shown in **Table 8**.

The minimum working distances are for both cosmetic damage (from BS 7385 and DIN 4150) and human comfort (from the NSW EPA Vibration Guideline). They are based on empirical data which suggests that where works are further from receivers than the quoted minimum distances then impacts are not considered likely.

The minimum working distances for human comfort relate to continuous vibration. For most construction activities, vibration emissions are intermittent and for this reason, higher vibration levels occurring over shorter periods are allowed.

Table 8 Recommended Minimum Working Distances from Vibration Intensive Equipment

Plant Item	Rating/Description	Minimum Distance		
		Cosmetic Damage		Human Response (NSW EPA Guideline)
		Residential and Light Commercial (BS 7385)	Heritage Items (DIN 4150, Group 3)[1]	
Vibratory Roller	<50 kN (1–2 tonne)	5 m	11 m	15 m to 20 m
	<100 kN (2–4 tonne)	6 m	13 m	20 m
	<200 kN (4–6 tonne)	12 m	25 m	40 m
	<300 kN (7–13 tonne)	15 m	31 m	100 m
	>300 kN (13–18 tonne)	20 m	40 m	100 m
	>300 kN (>18 tonne)	25 m	50 m	100 m
Small Hydraulic Hammer	300 kg (5 to 12 t excavator)	2 m	5 m	7 m
Medium Hydraulic Hammer	900 kg (12 to 18 t excavator)	7 m	15 m	23 m
Large Hydraulic Hammer	1,600 kg (18 to 34 t excavator)	22 m	44 m	73 m
Vibratory Pile Driver	Sheet piles	2 m to 20 m	5 m to 40 m	20 m
Piling Rig – Bored	≤ 800 mm	2 m (nominal)	5 m	4 m
Jackhammer	Hand held	1 m (nominal)	3 m	2 m

Note 1: Minimum working distances for heritage items that have been identified as structurally unsound or otherwise particularly sensitive to vibration. These distances have been calculated based on the 2.5 mm/s PPV criterion from DIN 4150 and the cosmetic damage minimum working distances presented in the CNVG with reference to BS 7385. It is recommended that the 2.5 mm/s PPV criterion is considered at the foundation (rather than the highest floor as suggested in DIN 4150).

The minimum working distances are indicative and will vary depending on the particular item of equipment and local geotechnical conditions. The distances apply to cosmetic damage of typical buildings under typical geotechnical conditions.

3.3 Operational Noise Criteria

3.3.1 Noise Limits and Project Noise Trigger Levels

Operational noise criteria for the proposal have been taken from the noise limits specified in the Development Consent and the criteria defined in the SSDA NIA. The criteria defined in the SSDA NIA were based on background noise levels measured at the time of that assessment. The noise criteria for the development are detailed in **Table 9**.

Table 9 Project Related Noise Criteria

Receiver Location	Period	Noise Level $L_{Aeq(15minute)}$ (dBA)	
		Consent Noise Limit	Project Noise Trigger Level[1]
Receivers Within MRP			
Rural residences (north / west / south of site)	Day	n/a	40
	Evening	n/a	35
	Night	n/a	35
Receiver Areas Outside MRP / Receivers Identified in the Development Consent			
Residential receivers near Medinah Avenue (Luddenham), Mount Vernon Road (Mount Vernon) and Kerrs Road (Mount Vernon)	Day	40	n/a
	Evening	35	n/a
	Night	30	n/a
BAPS Temple – outdoor areas of worship or congregation (excluding car parking areas and internal roads)	When in use	43	n/a
	Sunday 1pm – 8pm	35	n/a

Note 1: Project Noise Trigger Levels were previously identified in the SSDA NIA.

It is noted that the acoustic assessment for the BAPS Temple (Acoustic Logic Report 20171171.1/1001A/R2/TT, dated November 2017) indicates that the site would generate its own noise, with potentially significant levels of noise being a regular occurrence at the site from the following sources:

- Up to 300 vehicle movements per hour
- Daily congregation of 50 people chanting
- Weekly congregation of 600 people
- Special event congregation of around 800 people.

3.3.2 Cumulative Noise Impacts

The NSW Government *Cumulative Impact Assessment Guidelines for State Significant Projects* requires that the potential combined effect of cumulative impacts on all nearby industrial developments to be considered when assessing potential noise impacts from state significant projects. The guideline references the NPfI when determining the approach to assessing the cumulative industrial noise impacts.

The NPfI states that it aims to limit continuing increases in cumulative industrial noise through the application of amenity noise levels, which are applicable to all industrial noise sources in an area.

The NPfI requires that the amenity noise levels which are applied to an individual project be reduced by 5 dB (or by the value determined when using the formula relevant to areas near clusters of industry) to allow for the potential cumulative impact from multiple sources of industrial noise in an area (including existing and new).

By doing this, the policy accounts for potential cumulative impacts by lowering the criteria for each individual development to ensure that the ambient noise level within an area from all industrial noise sources combined remains below the recommended amenity noise levels, where feasible and reasonable. The NPfI states that *"where the project amenity noise level applies and it can be met, no additional consideration of cumulative industrial noise is required"*.

The potential cumulative impacts from the development and other sources of industrial noise in the area are therefore accounted for in the proposal-specific PNTLs and/or Development Consent Noise Limits (see **Table 9**).

3.3.3 Sleep Disturbance

The potential for sleep disturbance from maximum noise level events from the proposal during the night-time period is required to be considered. This is applicable only to residential receivers.

The NPfI defines the sleep disturbance screening level as 52 dBA L_{Amax} or the prevailing background level plus 15 dB, whichever is greater.

The Development Consent does not specify a maximum noise level criteria for sleep disturbance events during the night-time. The 52 dBA L_{Amax} screening level has been used for this proposal, which is consistent with the SSDA NIA.

A detailed maximum noise level event assessment should be completed where the sleep disturbance screening level is exceeded. The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the RBL, and the number of times this happens during the night-time period.

The NPfI refers to the *Road Noise Policy* (RNP) for additional information regarding sleep disturbance. enHealth Council studies are referenced which indicate that for short-term or transient noise events, for good sleep over eight hours the indoor L_{Amax} sound pressure level should ideally not exceed around 45 dBA more than 10 or 15 times per night.

The RNP goes on to conclude that from the research on sleep disturbance to date:

- Maximum internal noise levels below 50 dBA to 55 dBA are unlikely to awaken people from sleep
- One or two events per night with maximum internal noise levels of 65-70 dBA are not likely to affect health and wellbeing significantly.

3.3.4 Corrections for Annoying Noise Characteristics

Sources of industrial noise can cause greater annoyance where they contain certain characteristics, such as tonality, intermittency or dominant low-frequency content. The NPfI specifies the following modifying factor corrections, shown in **Table 10**, which are to be applied where annoying characteristics are present. The corrections are to be added to the noise level at the receiver before comparison with the Project Noise Trigger Levels.

Table 10 NPfI Modifying Factor Corrections

Factor	Assessment/ Measurement	When to Apply	Correction[1]
Tonal noise	One-third octave or narrow band analysis	Level of one-third octave band exceeds the level of the adjacent bands on both sides by the levels defined in the NPfI.	5 dB[2]
Low-frequency noise	Measurement of source contribution C-weighted and A-weighted level and one-third octave measurements	Measure/assess source contribution C and A weighted $L_{eq,t}$ levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and the level to which the thresholds defined in the NPfI are exceeded.	2 or 5 dB[2]
Intermittent noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level	The source noise heard at the receiver varies by more than 5 dB and the intermittent nature of the noise is clearly audible. The NPfI further defines intermittent noise as noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB, for example, equipment cycling on and off. The EPA has confirmed[4] that the intermittent correction does not apply to short-term events that emerge above the general industrial noise level and is therefore not applicable to industrial or commercial sites that have vehicle or plant movements at night, including audible reversing alarms. The intermittency correction is not intended to be applied to changes in noise level due to meteorology.	5 dB[3]
Maximum adjustment	Refer to individual modifying factors	Where two or more modifying factors are indicated.	Maximum correction of 10 dB[2] (excluding duration correction)

Note 1: Corrections to be added to the measured or predicted levels.

Note 2: Where a source emits tonal and low-frequency noise, only one 5 dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.

Note 3: Adjustment to be applied to night-time only.

Note 4: *How to Apply the Noise Policy for Industry Intermittent Modifying Factor Corrections*, NSW Environment Protection Authority, Acoustics Australia Vol. 50, No. 3, September 2022.

Details of the modifying factor corrections applied in the assessment are provided in **Section 4.2.1.8**.

3.3.5 Residual Impacts

The NPfI defines residual noise impacts as exceedances of the Project Noise Trigger Levels which remain after all feasible and reasonable source and pathway mitigation measures have been considered.

The significance of residual noise impacts, as defined in the NPfI, is shown in **Table 11**. Examples of receiver-based treatments that can be used to mitigate residual impacts are shown in **Table 12**.

Table 11 NPfI Significance of Residual Noise Impacts

If the Predicted Noise Level minus the Project Noise Trigger Level is:	And the Total Cumulative Industrial Noise Levels is:	Then the Significance of the Residual Noise Level is:
≤ 2 dBA	Not applicable	Negligible
≥ 3 but ≤ 5 dBA	< recommended amenity noise level or > recommended amenity noise level, but the increase in total cumulative industrial noise level resulting from the development is less than or equal to 1dB	Marginal
≥ 3 but ≤ 5 dBA	> recommended amenity noise level and the increase in total cumulative industrial noise level resulting from the development is more than 1 dB	Moderate
> 5 dBA	≤ recommended amenity noise level	Moderate
	> recommended amenity noise level	Significant

Table 12 NPfI Examples of Receiver-based Treatments to Mitigate Residual Noise Impacts

Significance of Residual Noise Impact	Example of Potential Treatment
Negligible	The exceedances would not be discernible by the average listener and therefore would not warrant receiver-based treatments or controls.
Marginal	Provide mechanical ventilation/comfort condition systems to enable windows to be closed without compromising internal air quality/amenity.
Moderate	As for ‘marginal’, but also upgraded facade elements, such as windows, doors or roof insulation, to further increase the ability of the building facade to reduce noise levels.
Significant	May include suitable commercial agreements where considered feasible and reasonable.

4.0 Assessment Methodology

4.1 Construction

The potential construction noise levels from the proposal have been predicted to the surrounding receivers using the ISO 9613-2 algorithm in SoundPLAN, implemented in accordance with ISO 17534-3. The noise model includes ground topography, ground type, buildings and representative worst-case noise sources from the proposal.

It is assumed that the Lot F, J, K and E buildings are built prior to construction of Lot O.

4.1.1 Works Description

Representative scenarios have been developed to assess the likely impacts from the various construction phases of the project. These scenarios are shown in **Table 13** together with a high-level description and expected duration of each works activity.

Details of the items of plant that would be used during each scenario, together with corresponding sound power levels, are in **Appendix B**.

Table 13 Construction Scenario Descriptions

Ref.	Equipment	Description	Expected Duration[1]
W1	Site Establishment	Site establishment	1 month
W2	Stage 1	Underground services installation and connections	2 months
W3	Stage 2	Detailed excavation for pad levels and footings	1 month
W4	Stage 3	Substructure (foundations and retaining walls)	1 month
W5	Stage 4	Superstructure (warehouse and office buildings)	3 months
W6	Stage 5	External works (landscaping, fencing, etc)	2 months
W7	Stage 6	Fit-out, testing and commissioning	1 months

Note 1: Indicative duration to be confirmed by the construction contractor.

4.1.2 Hours of Construction

Condition D48 of the SSD-10479 Development Consent requires construction activities to be undertaken during the following hours:

- 7:00 am to 6:00 pm, Mondays to Fridays
- 8:00 am to 1:00 pm on Saturdays
- At no time on Sundays or Public Holidays

Works outside of these hours may only be undertaken in the following circumstances (as noted in Condition D49 of the SSD-10479 Development Consent):

- Works that are inaudible at the nearest sensitive receivers
- Works agreed to in writing by the Planning Secretary
- For the delivery of materials required outside these hours by the NSW Police Force or other authorities for safety reasons
- Where it is required in an emergency to avoid the loss of lives, property or to prevent environmental harm.

4.2 Operational Noise Assessment Methodology

The potential operational noise levels from the proposal have been predicted to the surrounding receivers using the ISO 9613-2 algorithm in SoundPLAN, implemented in accordance with ISO 17534.

ISO 9613-2 was used in the SSDA NIA and is an industry standard algorithm that is considered suitable for use in the prediction of noise from industrial sources where intervening objects provide acoustic shielding, such as at the subject site and surrounding area.

The ISO 9613-2 algorithm predicts continuous A-weighted sound pressure levels under noise-enhancing meteorological conditions favourable to downwind propagation, or equivalently, propagation under a well-developed, moderate, ground-based temperature inversion, such as commonly occurs on clear calm nights.

Downwind propagation conditions include wind from source to receiver, with wind speeds of around 1 to 5 m/s, measured at a height of 3 to 11 m above the ground. These propagation conditions are considered consistent with the noise-enhancing weather conditions specified in *Fact Sheet D: Accounting for noise-enhancing weather conditions* of the NPfI.

ISO 9613-2 has been used extensively on industrial projects in Australia over several decades and has been accepted previously by NSW DPE (now DPHI) in numerous environmental noise assessments.

The CONCAWE algorithm in SoundPLAN was also investigated for use in this project, however, given the project area, terrain and separation distances, and intervening buildings between sources and receivers, ISO 9613-2 was considered to be more appropriate.

The noise model includes ground topography, ground type (ground absorption modelled at 0.75 in the surrounding residential areas and 0.0 within the MRP), buildings and representative worst-case noise sources from the proposal.

The potential noise impacts from the development have been determined by comparing the predicted noise levels to the noise limits in 15-minute assessment periods which are representative of the worst-case expected activity from the development.

The worst-case 15-minute periods have been determined as those with the highest expected volumes of on-site traffic and corresponding activity for the daytime, evening and night-time periods.

The following assessment assumptions are considered to be conservatively representative of the realistic worst-case scenario:

- Vehicle volumes are representative of the expected realistic worst-case 15-minute period occurring simultaneously for each individual lot within the ARIE during the daytime, evening, and night-time periods. This approach assumes that realistic worst-case deliveries, vehicle movements and site activities occur at all lots during the same 15-minute period. In reality, the realistic worst-case 15-minute vehicle volumes would likely occur at different times for each warehouse, based on delivery schedules and shift times.
- All forklifts are conservatively modelled as operating continuously for the full 15-minute period.
- All mechanical plant is conservatively assumed to be operating continuously 24/7. Office plant would most likely be limited to the operating hours of the office, and other individual items of plant may not operate on a 24/7 basis.

- Hard ground (0.00 absorption) has conservatively been modelled across the entire developable area of the MRP for the assessment of the ARIE Master Plan. In reality, the area will consist of a mix of hard pavements (such as hardstands and roads), and softer surfaces such as vegetation, foliage and landscaping, and would achieve more absorption.

Based on the above, sufficient conservatism has been included in the modelling assumptions for the realistic worst-case scenarios and an additional engineering safety factor is not considered necessary.

4.2.1 Operational Noise Sources

Detailed information regarding the future uses of the various lots within the ARIE are only known for Lot O, Lot F, Lot J and Lot K.

Operational details have been provided by the project team and are detailed in the following sections. Several assumptions have been made regarding unknown future tenants and sources of noise, based on the likely uses as warehousing, distribution and light-industry as per the approved concept DA. These assumptions, along with supplied operational information regarding the known tenants, have formed the basis of the representative realistic worst-case noise modelling scenarios that reflect the expected highest noise emissions that the development would likely emit.

ARIE consists of numerous warehouse developments with ancillary offices, carparking, loading areas and landscaping. Heavy vehicle deliveries would park in the hardstand loading areas or recessed loading docks while they are loaded/unloaded, before exiting the site. Light vehicle carparking is provided at each warehouse which would generally be used by staff.

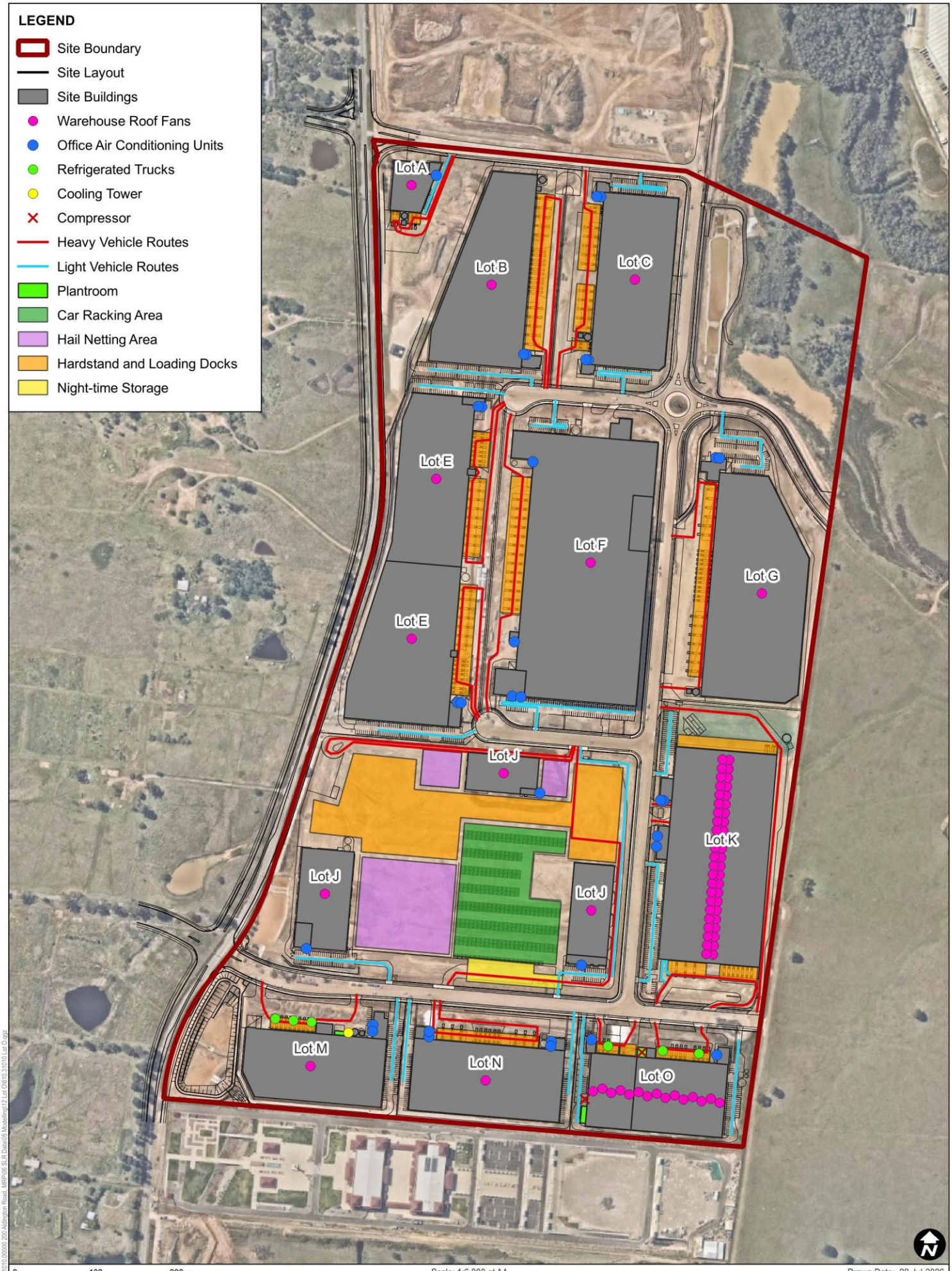
Internal noise sources are expected to generally be minimal and associated with typical logistical, distribution, warehousing and commercial office activities. The ARIE would operate 24 hours a day.

The main sources of operational noise at the development include:

- On-site light and heavy vehicle movements
- Loading dock activities in hardstands
- Mechanical plant.

Additional modelling and sensitivity analysis has been conducted to determine noise input assumptions for a realistic worst-case assessment scenario, particularly as it concerns potential noise impacts at the BAPS Temple.

A summary of the expected noise sources and representative worst-case assessment scenarios associated with the operation of the development is provided below. The locations of all modelled noise sources are shown in **Figure 5**.



0 100 200 m

Scale: 1:6,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 22-Jul-2026
Project Number: 610.31010

SLR

Data Source:
Nearmap Imagery

Operational Sources

FIGURE 5

4.2.1.1 On-Site Traffic

Realistic worst-case vehicle volumes for each lot in the ARIE have been provided by the project's traffic consultant. Volumes specific to customer's operations have been provided for Lot O, Lot F, Lot J and Lot K. Volumes for lots with unknown tenants are understood to have been based on the total Gross Floor Area (GFA) of the warehouse relevant to that lot and the TfNSW Guide to Traffic Generating Developments. The vehicle volumes for lots with unknown tenants generally include a 25% reduction to the forecasts based on the TfNSW trip rates to represent a realistic worst-case scenario of concurrent traffic across all lots .

Additional analysis of the volumes has been completed to split delivery vehicles into heavy vehicles (ie semi-trailers, B-doubles and A-doubles) and medium vehicles (ie rigid trucks).

On-site vehicles have been modelled using the data in **Table 14** and **Table 15**. The volumes are representative of the expected realistic worst-case 15-minute period for the daytime, evening, and night-time. Medium and heavy vehicles have been modelled in hardstands and on-lot truck access roads. Light vehicles have been modelled in car parks and on-lot light-vehicle access roads. The modelled vehicle routes are shown in **Figure 5**.

Table 14 On-Site Traffic Data – Worst-case 15-Minute Period

Lot	Location	Vehicle Type	Number of Vehicles in Worst-case 15-minute Period[1]		
			Daytime	Evening	Night-time
A	Lot access road/car park	Light vehicle	1	1	1
	Lot access road/hardstand	Medium vehicle	1	1	1
	Lot access road/hardstand	Heavy vehicle	1	1	1
B	Lot access road/car park	Light vehicle	7	3	7
	Lot access road/hardstand	Medium vehicle	2	1	2
	Lot access road/hardstand	Heavy vehicle	1	1	1
C	Lot access road/car park	Light vehicle	7	3	6
	Lot access road/hardstand	Medium vehicle	2	1	2
	Lot access road/hardstand	Heavy vehicle	1	1	1
E	Lot access road/car park	Light vehicle	19	6	17
	Lot access road/hardstand	Medium vehicle	5	2	3
	Lot access road/hardstand	Heavy vehicle	3	1	2
F	Lot access road/car park	Light vehicle	23	4	17
	Lot access road/hardstand	Medium vehicle	5	1	5
	Lot access road/hardstand	Heavy vehicle	4	2	4

Lot	Location	Vehicle Type	Number of Vehicles in Worst-case 15-minute Period[1]		
			Daytime	Evening	Night-time
G	Lot access road/car park	Light vehicle	10	4	9
	Lot access road/hardstand	Medium vehicle	3	1	2
	Lot access road/hardstand	Heavy vehicle	2	1	1
J	Lot access road/car park	Light vehicle	28	2	3
	Lot access road/hardstand	Medium vehicle[2]	6	1	1
	Lot access road/hardstand	Heavy vehicle[2]	4	1	1
K[3]	Lot access road/car park	Light vehicle	21	6	8
	Lot access road/hardstand	Medium vehicle	9	2	2
	Lot access road/hardstand	Heavy vehicle	4	2	2
M	Lot access road/car park	Light vehicle	7	3	7
	Lot access road/hardstand	Medium vehicle	2	1	2
	Lot access road/hardstand	Heavy vehicle	1	1	1
N	Lot access road/car park	Light vehicle	7	3	6
	Lot access road/hardstand	Medium vehicle	2	1	1
	Lot access road/hardstand	Heavy vehicle	1	1	1
O	Lot access road/car park	Light vehicle	4	1	4
	Lot access road/hardstand	Medium vehicle	4	1	4
	Lot access road/hardstand	Heavy vehicle	3	1	3

Note 1: Total vehicles, includes both inbound and outbound vehicles. Volumes have been rounded up to whole numbers for display purposes.

Note 2: Heavy/medium vehicles during the evening and night-time would only access the temporary storage area of Lot J (see **Figure 5**) and would not enter or exit the rest of the lot.

Note 3: Lot K specific traffic is provided in more detail in the Lot K SSDA NIA.

Table 15 Vehicle Sound Power Levels

Vehicle Classification	Location	Sound Power Level (dBA)	Vehicle Speed (km/h)
Heavy vehicles	Hardstands and on-lot truck access roads	108[1]	10
Medium vehicles	Hardstands and on-lot truck access roads	97[2]	10
Light vehicles	Car parks and on-lot light-vehicle access roads	90[3]	20[4]

Note 1: Sound power level for ‘heavy vehicles’ based on 106 dBA for trucks at slow speed for 80% of the time and 111 dBA for trucks accelerating for 20% of the time. Sound power levels taken from the Federal Highway Administration’s Traffic Noise Model and is representative of trucks with three or more axles.

Note 2: Sound power level for ‘medium vehicles’ based on 95 dBA for trucks at slow speed for 80% of the time and 100 dBA for trucks accelerating for 20% of the time. Sound power level for ‘medium vehicles’ is based on measurement data.

Note 3: Sound power level for light vehicles based on measurement data.

Note 4: Light vehicles at Lot J would be restricted to 10 km/h while on site.

The sound power level for medium vehicles is based on SLR measurement data taken over multiple years at multiple locations and includes various medium truck types and models in the approximate 5 to 15 tonne range. Sound power level data is based on pass-by measurement at a known distance with the passby L_{Amax} measurement used to develop the source sound power level. The measured sound power levels ranged from 91-100 dBA for low-speed (5-20km/h) manoeuvring including acceleration. A sound power level of 97 dBA has been used for this assessment.

The sound power level for light vehicles is based on measurement data from SLR's noise measurement database taken over multiple years at multiple locations and includes various light vehicle types and models. Measurements of the L_{Amax} sound power level were made of light vehicle passbys at speeds of up to around 40 km/h, including accelerating conditions. SLR's database for light vehicles indicates a SWL range of 73-90 dBA. A sound power level of 90 dBA has been used for this assessment.

The modelling conservatively assumes that all light, medium and heavy vehicles concurrently access all warehouses during the realistic worst-case 15-minute assessment periods. In reality, vehicle access across the lots would be spread over a longer period, particularly during the night-time.

4.2.1.2 Hardstand and Loading Docks

Details of the hardstand and loading dock noise sources are shown in **Table 16**.

Table 16 Typical Loading Dock Noise Sources – All Buildings

Noise Source	Sound Power Level (dBA)[1]	Typical Duration of Use in Realistic Worst-case 15-minute Period
Truck reversing alarm	107[2]	30 seconds
Forklift reversing alarm	102[2]	90 seconds
Truck air brakes[3]	118	1 second
Roller door	94	15 Seconds
Electric forklift	84	900 seconds

Note 1: Sound power level taken from SLR's measurement database unless specified otherwise.

Note 2: Sound power level includes a -3 dB reduction due to alarms being discrete events.

Note 3: Air brakes would not be used at Lot J.

The various sources have been modelled in the hardstand areas (see **Figure 5**) based on the corresponding number of medium and heavy vehicle movements occurring in the worst-case 15-minute periods (see **Table 14**).

Lot J and Lot K specific hardstand areas and sources are modelled as detailed in the Lot J SSDA NIA and the Lot K SSDA NIA, respectively.

Refrigeration truck trailers have been modelled at Lot M and O using the details in **Table 17**. The following operational conditions are assumed:

- Refrigeration truck trailers are assumed to be parked at the recessed loading docks and are assumed to be operational during all assessment periods.
- Refrigeration truck trailers would only run when they are out of their set temperature and would generally not run continually when parked on dock. Notwithstanding, they have been conservatively assumed to run for 100% of the worst-case 15-minute assessment periods.

- All ‘reefers’ stored in heavy vehicle bays would use ‘electric standby’ power connected to the warehouses which would remove the need to run the onboard refrigeration engine.
- If refrigeration truck trailers are required to run during the night-time period, they would use ‘electric standby’ power connected to the warehouses which would remove the need to run the onboard refrigeration engine.

The locations of the refrigerated trucks are included in **Figure 5**.

Table 17 Refrigeration Truck Trailers

Lot	Noise Source	Sound Power Level (dBA)[1]	Assumed Number of Trailers in Worst-case 15-minute Period[2]		
			Daytime	Evening	Night-time
M	Large articulated refrigeration truck trailer on engine/diesel power	102	4	4	-
	Medium rigid refrigeration truck trailer on engine/diesel power	95	4	4	-
	Refrigeration truck trailer (any size) on electric standby power	90	3	3	10
O	Large articulated refrigeration truck trailer on engine/diesel power	102	1	1	-
	Medium rigid refrigeration truck trailer on engine/diesel power	95	2	2	-
	Refrigeration truck trailer (any size) on electric standby power	90	-	-	3

Note 1: SWL based on measurement data completed by SLR at a comparable site and *Sound Power Levels and Directivity Patterns of Refrigerated Transport Trailers*, Roy et al, 2017.

Note 2: Trailer numbers have been rounded up to whole numbers for display purposes.

4.2.1.3 Internal Activities

The future tenants of the warehouses would likely be associated with typical warehousing and distribution or light industrial uses. Internal noise-generating activities at all warehouses are generally expected to be minimal. A sound power level of 75 dBA has been applied at openings on the facades of each warehouse to cover potential break-out noise from general internal activities. The sound power level is based on observations of loading activities at similar warehouse facilities. Warehouse roller shutter doors are assumed to be open during loading activities.

Lot F and K specific internal activities are modelled as per the Lot F SSDA NIA and the Lot K SSDA NIA, respectively.

4.2.1.4 Mechanical Plant

At this early stage of the development, specific mechanical plant requirements for each building have not been determined. External mechanical plant noise emissions would be reassessed during the detailed design stage of the project, when more definitive information is available.

Indicative external mechanical plant types, sound power levels and number of units have been assumed based on the requirements of similar warehouse developments.

The assumed sound power levels and hours of operation for fixed external mechanical plant are detailed in **Table 18**. Equipment locations are shown in **Figure 5**.

Table 18 External Mechanical Plant Details

Noise Source	Sound Power Level (dBA)	Location and Operating Hours
Office air conditioning condenser units	78 (per unit)	At ground level, adjacent to each office building (one per floor). Assumed operational 24/7
Roof fans	90 All warehouses Generally, one source has been modelled per warehouse building which represents the cumulative sound power level of all roof mounted mechanical plant for that warehouse. Lot O has been modelled with 15 individual roof fan sources, as per the architectural plans, with a total cumulative sound power level of 90 dBA. Lot K has been modelled with 46 individual roof fan sources per the architectural plans, with a total cumulative sound power level of 90 dBA.	Warehouse roofs. Assumed operational 24/7
Cold storage – Lot M	The majority of the cold storage related plant for Lot M would be housed in a plant room, located on the hardstand. The plant room would be a concrete (or similar) structure with a solid roof to mitigate noise emissions. Limited details of the cold storage equipment are currently available. Measurements of an existing facility have been used to determine indicative sound power levels for cold storage equipment for Lot M. The following items of equipment have been assumed: - x4 cold storage plant items in plant room (100 dBA each) - x1 external cooling tower (95 dBA) The plant room walls have been modelled as 150mm concrete, with a metal sheet roof with insulation. A 3m x 4m roller shutter door and 2.5m x 3m louvre have been included on the northern facade of the plant room. The louvre performance is assumed to be equivalent to Aambianz AWAZ Series 300S or similar.	Plant room and cooling tower located on north side of warehouse. Assumed operational 24/7
Cold storage plant room– Lot O	All cold storage related equipment at Lot O would be in two plant rooms. No details of the cold storage equipment are currently available, so a nominal internal reverberant sound pressure level of 82 dBA has been assumed, based on measurements at comparable existing sites. Assuming mostly reflective internal surfaces, this is represented in the model by a total sound power level of 94 dBA per plant room. The plant rooms would be a blockwork structure or equivalent with a solid roof to minimise noise emissions. The plant room walls have been modelled as 150 mm concrete, with a metal sheet roof with insulation.	Plant rooms located on west and north sides of warehouse. Assumed operational 24/7

Noise Source	Sound Power Level (dBA)	Location and Operating Hours
	The Warehouse 1 plant room (southwest) has been modelled with a 6 m^2 louvre area on the north facade to provide airflow and minimise noise breakout in the southern direction towards the BAPS Temple. Louvre performance is assumed to be equivalent to Aambianz AWAZ Series 300S louvre or similar (ie minimum Sound Transmission Loss of 20 dB). The roller door on the west facade of the plant room is assumed to be acoustically rated (ie solid construction with sealed edges and no gaps or holes) with a minimum noise reduction of Rw 25. The Warehouse 2 plant room (north) has been modelled with a 3 m x 4 m perforated roller door to allow for airflow on the north facade, facing into the ARIE.	
Cold storage compressor – Lot O	An external compressor is included for each Lot O warehouse. Details of the compressors are not currently available so sound power levels have been modelled based on information from the project team. The compressor for Warehouse Building 1 is located on the western facade of the warehouse, just north of the plant room, within a screened enclosure. The compressor has been modelled with a mitigated sound power level of 68 dBA. The unmitigated sound power level of the compressor would likely be higher, however, an equivalent sound power level of 68 dBA (or sound pressure level of 50 dBA at 3 m) would be achieved with source mitigation measures such as low-noise fans, silencers snouts, acoustic louvres, etc (see **Section 7.2**). The compressor for Warehouse Building 2 is located on top of the plant room at the loading dock. The compressor has been modelled with a sound power level of 91 dBA.	Compressors located on western facade north of plant room and on top of plant room at loading dock (north). Assumed operational 24/7

4.2.1.5 Noise Sources with Potential for Sleep Disturbance

As the development is to operate 24-hours a day, noise emissions during the night-time require assessment for potential sleep disturbance at the nearest residential receivers. The details of typical activities with the potential to cause sleep disturbance are shown in **Table 19**.

Table 19 Sleep Disturbance Noise Sources

Noise Source	Sound Power Level L_{Amax} (dBA)
Accelerating trucks in on-lot truck access and hardstands	110
Truck air brakes in hardstands[1]	118
Truck reversing alarm in hardstands	110
Forklift reversing alarm in hardstands	105
Light vehicle movements in carparks and on-lot light-vehicle access	100

Note 1: Air brakes would not be used at Lot J.

4.2.1.6 Sunday Afternoons and Evenings (1pm – 8pm) Noise Sources

The Sunday 1pm – 8pm period at the BAPS Temple is understood to be particularly noise sensitive given the large gatherings that are planned to be hosted.

The ARIE on-site traffic and corresponding activity during the Sunday 1pm – 8pm period is expected to be lower relative to the worst-case scenario considered based on the peak traffic in **Section 4.2.1.1**, since it is assumed that the majority of industrial users are unlikely to operate at full capacity on Sunday afternoons.

The Sunday 1pm – 8pm scenario has been assessed using the on-site traffic volumes in **Table 20**, which include a 75% reduction to the forecast peak daytime volumes for all lots with unknown tenants.

Traffic at lots with known tenants is based on the following provided information specific to customer's operations:

- Lot O – Sunday traffic movements reduced by 75% during the 1pm – 8pm period.
- Lot F – Sunday traffic movements are generally ad hoc and negligible during the 1pm – 8pm period.
- Lot J – Sunday traffic movements are generally ad hoc and negligible during the 1pm – 8pm period.
- Lot K – Two to four semi-trailers arrive with loading/unloading complete by 5pm.

All external mechanical plant, including idling refrigerated trailers, is conservatively assumed to operate on Sundays 1pm – 8pm at all lots.

Table 20 On-Site Traffic Data – Worst-case Sunday 1pm to 8pm 15-minute Period

Lot	Location	Vehicle Type	Number of Vehicles in Worst-case 15-minute Period[1]
A	Lot access road/car park	Light vehicle	1
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
B	Lot access road/car park	Light vehicle	3
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
C	Lot access road/car park	Light vehicle	3
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
E	Lot access road/car park	Light vehicle	5
	Lot access road/hardstand	Medium vehicle	2
	Lot access road/hardstand	Heavy vehicle	1
G	Lot access road/car park	Light vehicle	4
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
K[2]	Lot access road/car park	Light vehicle	-

Lot	Location	Vehicle Type	Number of Vehicles in Worst-case 15-minute Period[1]
	Lot access road/hardstand	Medium vehicle	-
	Lot access road/hardstand	Heavy vehicle	1
M	Lot access road/car park	Light vehicle	2
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
N	Lot access road/car park	Light vehicle	3
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1
O	Lot access road/car park	Light vehicle	1
	Lot access road/hardstand	Medium vehicle	1
	Lot access road/hardstand	Heavy vehicle	1

Note 1: Total vehicles, includes both inbound and outbound vehicles. Volumes have been rounded up to whole numbers for display purposes.

Note 2: Lot K heavy vehicle is assumed to access Lot K via Gates 2 and be loaded/unloaded at the at-grade southern facing dock, which is the worst-case scenario for potential noise impacts at the BAPS Temple.

Note that the worst-case Sunday 1pm – 8pm 15-minute period generally has the highest traffic forecast in the afternoon, around 1pm to 3pm. Later in the evening, the on-site traffic is generally forecast to be lower and therefore the predicted noise levels at the BAPS Temple would also be less.

4.2.1.7 Noise Source Inventory

A noise source inventory which includes the details of the various operational noise sources at the development is shown in **Table 21**.

Table 21 Noise Source Inventory

Category	Noise Source	Usage	Reference for Noise Data
On-site traffic	Light vehicles	Light vehicles would access the development and park in the various car parks. Modelled in all locations shown in **Figure 5** using vehicle volumes in **Table 14**.	Sound power level taken from measurement data of various light vehicle types and models at speeds of up to around 40 km/h, including vehicle acceleration.
	Medium vehicle		Sound power level taken from historical measurement data of various medium rigid truck types and models in approximate 5 to 15 tonne range.

Category	Noise Source	Usage	Reference for Noise Data
	Heavy vehicles	Deliveries to the development would be via heavy vehicles. Heavy vehicles would access the development and travel to the various hardstands/loading docks. Modelled on all heavy vehicle routes shown in **Figure 5** using vehicle volumes in **Table 14**.	Sound power level taken from Federal Highway Administration's Traffic Noise Model. Assumes slow speed for 80% of the time and truck acceleration for 20% of the time.
Hardstand and loading docks	Forklifts, reversing alarms, air brakes, roller doors	Heavy vehicle deliveries would be unloaded by forklifts in the various hardstands/loading docks. Modelled in all hardstands/loading docks shown in **Figure 5** using vehicle volumes in **Table 14**. Forklifts have been conservatively assumed to operate externally at all hardstands/loading docks.	Sound power level taken from historical measurement data of typical loading dock activities at similar warehousing and distribution facilities.
	Compactor	Garbage compactor within Lot K warehouse behind roller door.	Sound power levels based on measurement data of similar auger compactor at an industrial facility.
	Refrigerated trailer trucks	Lot M and Lot O are proposed to be cold storage and have refrigerated trailer trucks. These are assumed to be parked externally and continuously operational during all assessment periods	SLR measurement data completed at a similar existing site and referenced publications.

Category	Noise Source	Usage	Reference for Noise Data
Internal activities	Typical warehousing and distribution activities	Internal noise-generating activities at all warehouses would be associated with typical warehousing and distribution activities. Noise from these activities is generally expected to be minimal.	Sound power level based on observations of typical internal activities at similar warehousing and distribution facilities.
	Lot F specific activity	Internal noise-generating activities at Lot F associated with a packaging facility.	Sound power levels based on measurements at equivalent existing facility.
Mechanical plant	Roof fans	Roof fans would be used to cycle air in the warehouses. At this early stage of the development, specific mechanical plant requirements for each building have not been determined.	Sound power level taken from measurement data and manufacturers specifications for typical roof fans at similar warehousing and distribution facilities. Assumed sound power level also consistent with limiting sound power level in Consent Conditions for other developments in the MRP.
	Office air-conditioning units	Air-conditioning units would be used for all office buildings. At this early stage of the development, specific mechanical plant requirements for each building have not been determined.	Sound power level taken from measurement data and manufacturers specification data for typical air-conditioning units.
	Cold storage mechanical plant	The majority of the cold storage related plant for Lot M would be housed in a plant room, located externally on the hardstand. A cooling tower would also be required which would likely be located next to the plant room. All cold storage related equipment at Lot O would be housed in plant rooms. The plant rooms would be a blockwork structure or equivalent with a solid roof to minimise noise emissions.	No details of the cold storage equipment are currently available, so nominal noise sources have been based on measurements at equivalent existing facilities.

4.2.1.8 Corrections for Annoying Noise Characteristics

The potential annoying noise characteristics and modifying factor corrections relevant to the project are:

- **Tonality** – the only source identified with potential tonal characteristics is reversing alarms. However, when considering broadband reversing alarms have been recommended as a noise mitigation measure (see **Section 7.1**), it is unlikely that this noise source would result in tonal noise impacts at the receivers and no corrections have been applied.

- **Low frequency noise** – review of the predicted noise levels at the nearest receivers and previous measurements of sources similar to those operating at the development indicate that low frequency noise impacts are not expected, and no corrections have been applied.
- **Intermittent noise** – the NPfI defines intermittent noise as noise heard at the receiver where the level suddenly drops or increases several times during the assessment period, with a noticeable change of at least 5 dB. The intermittent correction does not apply to short-term events that emerge above the general industrial noise level and is therefore not applicable to industrial or commercial sites that have vehicle or plant movements at night, including audible reversing alarms. No sources have been identified with potential intermittent characteristics.

4.2.2 Mamre Road Precinct

Indicative future warehouse buildings in the MRP have been included in the noise model, along with associated areas of hard ground (modelled with a ground absorption of 0.00). Areas outside of the MRP have been modelled as rural soft ground (with a ground absorption of 0.75).

Future warehouse buildings are based on an indicative layout of the MRP which considered the MRP Development Control Plan built form controls, including proposed road corridors and other easements, and existing ground levels. The indicative layout of buildings within the MRP is based on Figure 1 of Renzo Tonin Report TN328-02F02 DNVR (r6) 'Aspect Industrial Estate Stage 2 Warehouse 9 Design Noise Verification Report,' issued 17 July 2023, which has been approved by the DPE, updated to include recently constructed warehouses in the MRP. All future buildings are indicative and subject to change in their respective development applications.

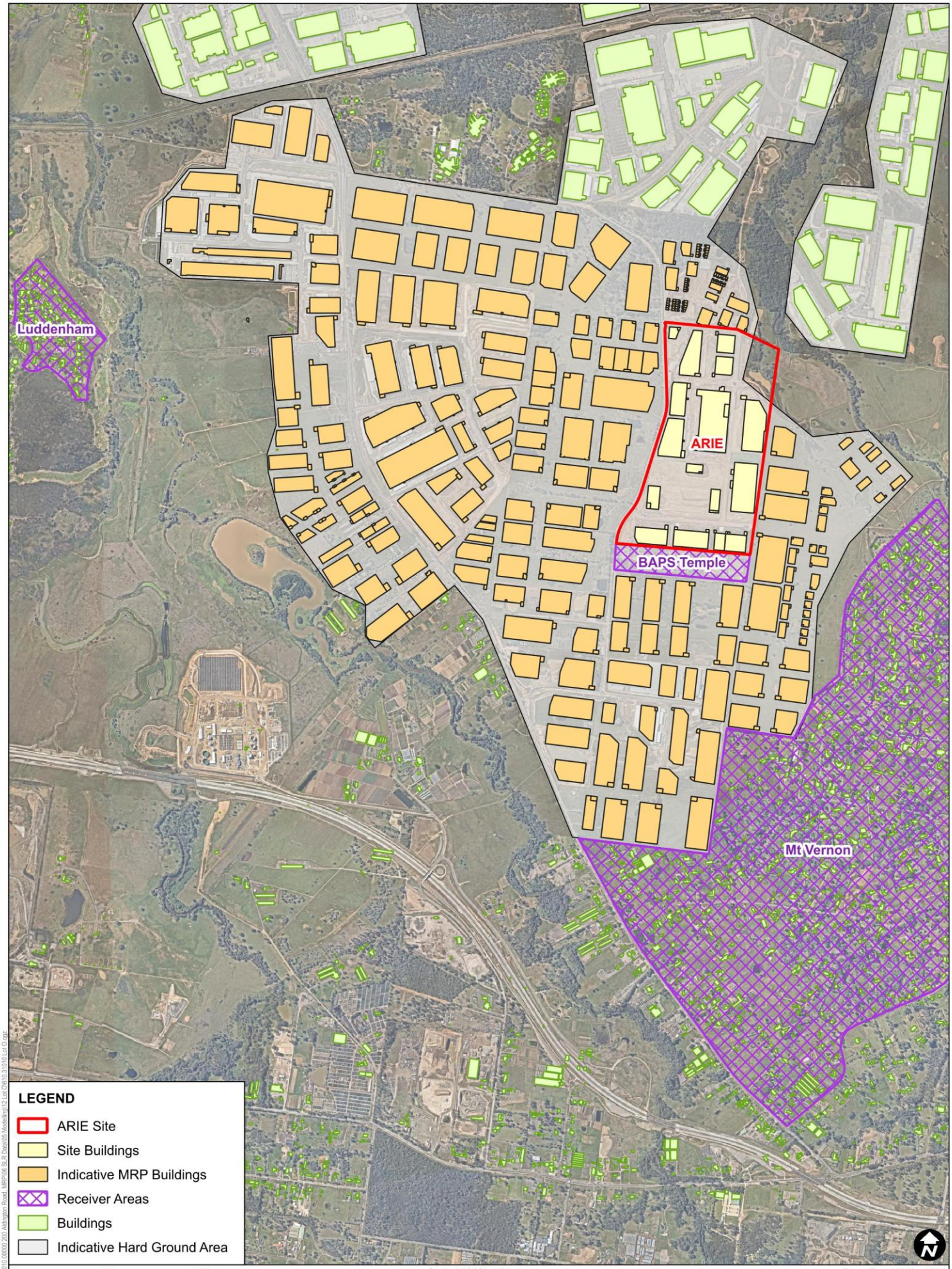
The indicative buildings have been modelled at the existing ground level and are assumed to be 16 m height.

The modelled ground absorption and indicative buildings vary for the different assessment scenarios and are summarised in **Table 22**.

Table 22 MRP Scenarios

Scenario	Ground Absorption	Indicative MRP Buildings
Staged ARIE with Lot O (including the staged Lot F, J, K and E) predictions to existing receivers within the MRP	Hard ground for Lot O, F, J and K and supporting roads in the ARIE. Soft ground in remaining areas of ARIE and the rest of the MRP.	No
Staged ARIE with Lot O (including the staged Lot F, J, K and E) predictions to receivers outside the MRP	Hard ground for Lot O, F, J and K and supporting roads in the ARIE. Soft ground in remaining areas of ARIE. Hard ground in the rest of the MRP.	Yes
ARIE Concept Master Plan predictions to existing receivers within the MRP	Hard ground for the entire ARIE. Soft ground in the rest of the MRP.	No
ARIE Concept Master Plan predictions to receivers outside the MRP	Hard ground throughout the ARIE and the rest of the MRP.	Yes

The modelled indicative buildings with associated hard ground are shown in **Figure 6**.



Scale: 1:26,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 25-Nov-2025
Project Number: 610.31010

SLR

Data Source:
Nearmap Imagery

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

Indicative Future MRP Buildings

FIGURE 6

H:\Projects-SLR\610.SYD\610.SydSYD0000 280 Aldington Road, MRP\06 SLR Data\05 Modelling\12 Lvl 0\610.31010 Lvl 0.qgz

4.2.3 Prevailing Weather Conditions

Fact Sheet D of the NPfI requires noise assessments to consider the potential effects of noise-enhancing weather conditions, such as wind from the source to the receiver and/or temperature inversions.

Analysis of the prevailing weather conditions has been undertaken in accordance with the NPfI for a 10-year period from 2013 to 2022 to determine the prevailing wind and temperature inversion conditions at the site. Wind data was obtained from the Bureau of Meteorology automatic weather station at Horsley Park, and cloud cover data (to determine the occurrence of temperature inversions) from the Bureau of Meteorology automatic weather station at Bankstown Airport.

The weather data was analysed to determine the frequency of occurrence of wind speeds up to 3 m/s in each period. The NPfI states that where wind blows from the source to the receiver at speeds of up to 3 m/s for more than 30% of the daytime, evening or night-time in any season, then wind is considered to be a feature of the area. The results of the wind analysis are presented for the daytime, evening and night-time periods in **Table 23**, **Table 24**, and **Table 25** respectively.

Table 23 Occurrence of Noise-Enhancing Winds for Daytime Period

Season	Percentage of Occurrence of Noise-Enhancing Winds (0.5-3 m/s) (Winds Blowing From)							
	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Summer	7.4%	19.0%	12.5%	13.4%	14.0%	10.6%	7.2%	10.2%
Autumn	5.6%	13.3%	8.7%	10.3%	14.1%	19.0%	17.7%	16.4%
Winter	6.2%	7.4%	3.8%	5.8%	9.2%	18.5%	23.1%	23.4%
Spring	7.4%	14.6%	8.7%	7.7%	8.5%	10.8%	12.2%	16.5%

Note 1: Noise-enhancing winds (0.5-3 m/s) were calculated per direction ±45 degrees during the daytime (7 am to 6 pm) for each season.

Table 24 Occurrence of Noise-Enhancing Winds for Evening Period

Season	Percentage of Occurrence of Noise-Enhancing Winds (0.5-3 m/s) (Winds Blowing From)							
	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Summer	1.6%	13.3%	20.6%	16.4%	9.6%	3.6%	2.1%	2.4%
Autumn	1.9%	13.3%	19.6%	22.3%	22.2%	16.8%	10.5%	6.8%
Winter	4.0%	6.2%	8.8%	14.3%	20.6%	25.1%	21.4%	16.8%
Spring	2.5%	14.9%	20.2%	16.8%	11.4%	7.3%	7.5%	6.7%

Note 1: Noise-enhancing winds (0.5-3 m/s) were calculated per direction ±45 degrees during the daytime (6 pm to 10 pm) for each season.

Table 25 Occurrence of Noise-Enhancing Winds for Night-time Period

Season	Percentage of Occurrence of Noise-Enhancing Winds (0.5-3 m/s) (Winds Blowing From)							
	North	Northeast	East	Southeast	South	Southwest	West	Northwest
Summer	2.5%	11.0%	13.6%	19.6%	28.4%	22.8%	9.0%	4.1%
Autumn	1.3%	2.8%	2.5%	6.1%	21.2%	**35.7%**	24.0%	9.9%
Winter	3.9%	1.9%	0.3%	1.2%	10.0%	**33.0%**	**33.0%**	20.5%
Spring	3.8%	6.9%	7.0%	10.3%	20.7%	26.1%	17.2%	10.5%

Note 1: Noise-enhancing winds (0.5-3 m/s) were calculated per direction ±45 degrees during the daytime (10 pm to 7 am) for each season.

The analysis determined that standard weather conditions are prevalent in the MRP during the daytime, evening and night-time periods, with noise-enhancing wind only during the night-time period.

The weather data was also analysed to estimate the frequency of occurrence of temperature inversions during the night-time in winter. This analysis used the Pasquill-Gifford stability classification scheme based on cloud cover as detailed in Fact Sheet D of the NPfI. The NPfI states that where the sum total of F and G category inversions occur for at least 30% of the total night-time during the winter, then temperature inversions are considered to be a feature of the area. The results of the stability class analysis are presented in **Table 26**.

Table 26 Occurrence of Stability Classification Distribution during the Night-time Period in Winter

Stability Class	Category Description	Frequency of Occurrence During Night-time in Winter
D	Neutral	3%
E	Slightly stable	10%
F	Moderately stable	17%
G	Extremely stable	31%
Sum Total: F+G	**Moderately to Extremely Stable**	**48%**

Note 1: Stability classes A (extremely unstable), B (moderately unstable) and C (slightly unstable) have not been shown as they are not relevant to the analysis of temperature inversions.

The above analysis shows that noise-enhancing temperature inversions are a feature of the area during the night-time in winter. Temperature inversions can occur under calm wind conditions (up to 0.5 m/s), and also under winds up to 2 m/s.

The noise prediction modelling uses ISO 9613-2 algorithms which include noise-enhancing weather conditions including downwind propagation, or equivalently, propagation under a well-developed moderate ground-based temperature inversion.

Given that assessment of noise enhancing weather conditions is not required for the daytime and evening periods, the ISO 9613-2 algorithm has been adjusted to represent neutral conditions for these periods. The adjustment was made using the correction factor and methodology for meteorological corrections described in Section 8 of ISO 9613-2.

A comparative review of the difference between neutral and noise enhancing weather was conducted with the CONCAWE algorithm as implemented in SoundPLAN, which allows for the input of specific weather conditions. The review found similar or greater levels of reduction predicted for neutral weather with CONCAWE when compared to the adjusted ISO 9613-2 predictions.

Predictions during the night-time period are presented for both neutral and noise enhancing weather conditions.

5.0 Assessment of Impacts

5.1 Construction

5.1.1 Construction Noise Predictions

The predicted noise impacts for the assessed construction scenarios for Lot O are shown in **Table 28**. The predictions are representative of the highest noise levels that could potentially be experienced at the surrounding receivers when the works are at the closest point. For most construction activities, it is expected that the construction noise levels would frequently be lower than those predicted, as the noise levels presented are based on all items of equipment in each scenario being used concurrently and occurring at the nearest point of the site to each receiver.

The assessment shows the predicted impacts based on the exceedance of the NMLs, as per the categories in **Table 27**.

The assessment uses ‘realistic worst-case’ scenarios to determine the impacts from the noisiest 15-minute period that are likely to occur for each work scenario, as required by the ICNG. The impacts represent construction noise levels without mitigation applied.

It is noted that the BAPS Temple is currently under construction. The temple has been conservatively assumed to be operational during the construction of Lot O.

Table 27 Exceedance Bands and Impact Colouring

Exceedance of NML	Subjective Classification	Impact Colouring
No exceedance	Negligible	
1 to 10 dB	Low impact	
11 dB to 20 dB	Moderate impact	
21 dB to 30 dB	High impact	
Highly Noise Affected[1]	Highly Noise Affected	

Note 1: Greater than 75 dBA at residential receivers.

Table 28 Construction Noise Predictions at Sensitive Receivers

Receiver	NML (dBA)	Predicted $L_{Aeq(15minute)}$ Construction Noise Impact (dBA)						
		W1	W2	W3	W4	W5	W6	W7
		Site Establishment	Stage 1 Services	Stage 2 Excavation	Stage 3 Substructure	Stage 4 Superstructure	Stage 5 External Works	Stage 6 Fit out
MRP 01	45	30	26	31	27	36	23	25
MRP 02	45	35	31	36	32	39	28	28
MRP 03	45	40	36	41	37	40	33	29
MRP 04	45	34	30	35	31	39	27	28
MRP 05	45	41	37	42	38	41	34	30
MRP 06	45	37	33	38	34	37	30	26
MRP 07	45	34	30	35	31	37	27	26
MRP 08	45	34	30	35	31	38	27	27
East[1]	45	41	37	42	38	41	34	30
BAPS Mandir	55	70	66	71	67	67	63	56
BAPS Central	55	52	48	53	49	51	45	40

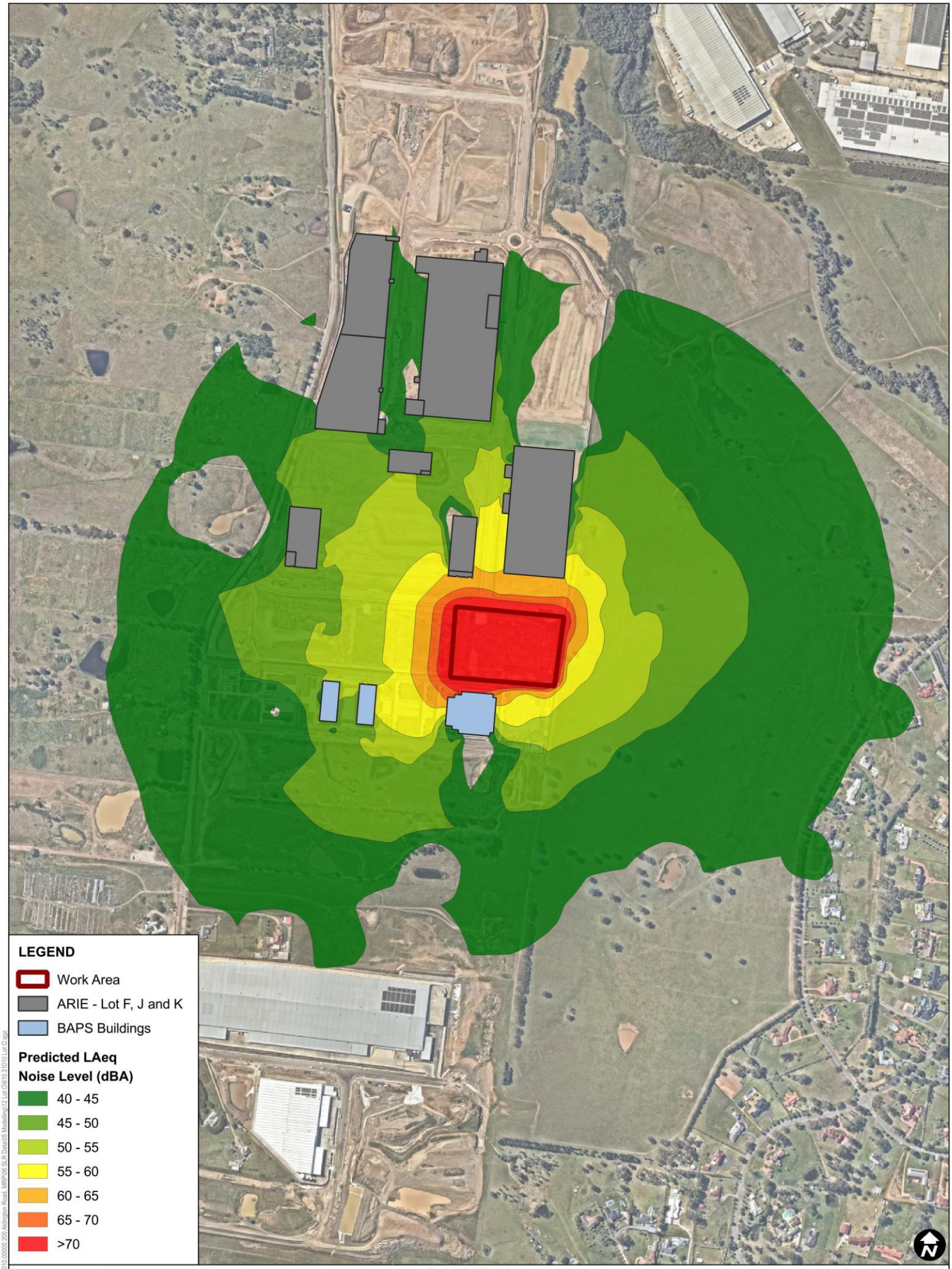
Note 1: Highest predicted level shown for nearest receivers to the east of the site, at Mt. Vernon Road, Capitol Hill & Kerrs Road, Mt Vernon.

The assessment of the worst-case construction noise levels shows:

- Noise levels at the surrounding residential receivers are expected to comply with the NMLs.
- Noise levels are predicted to exceed the NML at the BAPS Temple Mandir area, which is closest to the Lot O construction work. The predicted noise levels at BAPS Mandir are 56 – 71 dBA which corresponds with 'low' to 'moderate' subjective impacts depending on the work activity.
  It is noted that the Mandir Temple is not yet constructed, with planning modifications for the site ongoing at the time of this report. Given this, it is likely that the Temple will not be operational at the time of the Lot O construction work and all noise sensitive receivers will be predicted to comply with the NMLs. Additionally, based on SSD-10479 Condition A16A, it is understood that Sunday afternoons and evenings (1pm – 8pm) would be the most noise sensitive period for the Mandir Temple. No noise intensive construction is proposed during this period. Nonetheless, best practice mitigation measures will be applied, as discussed in **Section 7.1**.
- Individual receivers would be subject to a large range of worst-case impacts, depending on how far from the works they are. The highest impacts would be apparent when works occur closest to the receiver. Noise level would be significantly lower when works move further away from a particular receiver.

A noise contour map showing the worst-case predictions is shown in **Figure 7** for W3 – Stage 2 Excavation, which is the scenario with the highest predicted noise impacts.

Construction mitigation measures are discussed in **Section 7.1**.



Scale: 1:10,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 17-Mar-2026
Project Number: 610.31010

SLR

Data Source:
Nearmap Imagery

Construction Noise Contours
W3 - Stage 2 Excavation

FIGURE 7

5.1.2 Construction Vibration

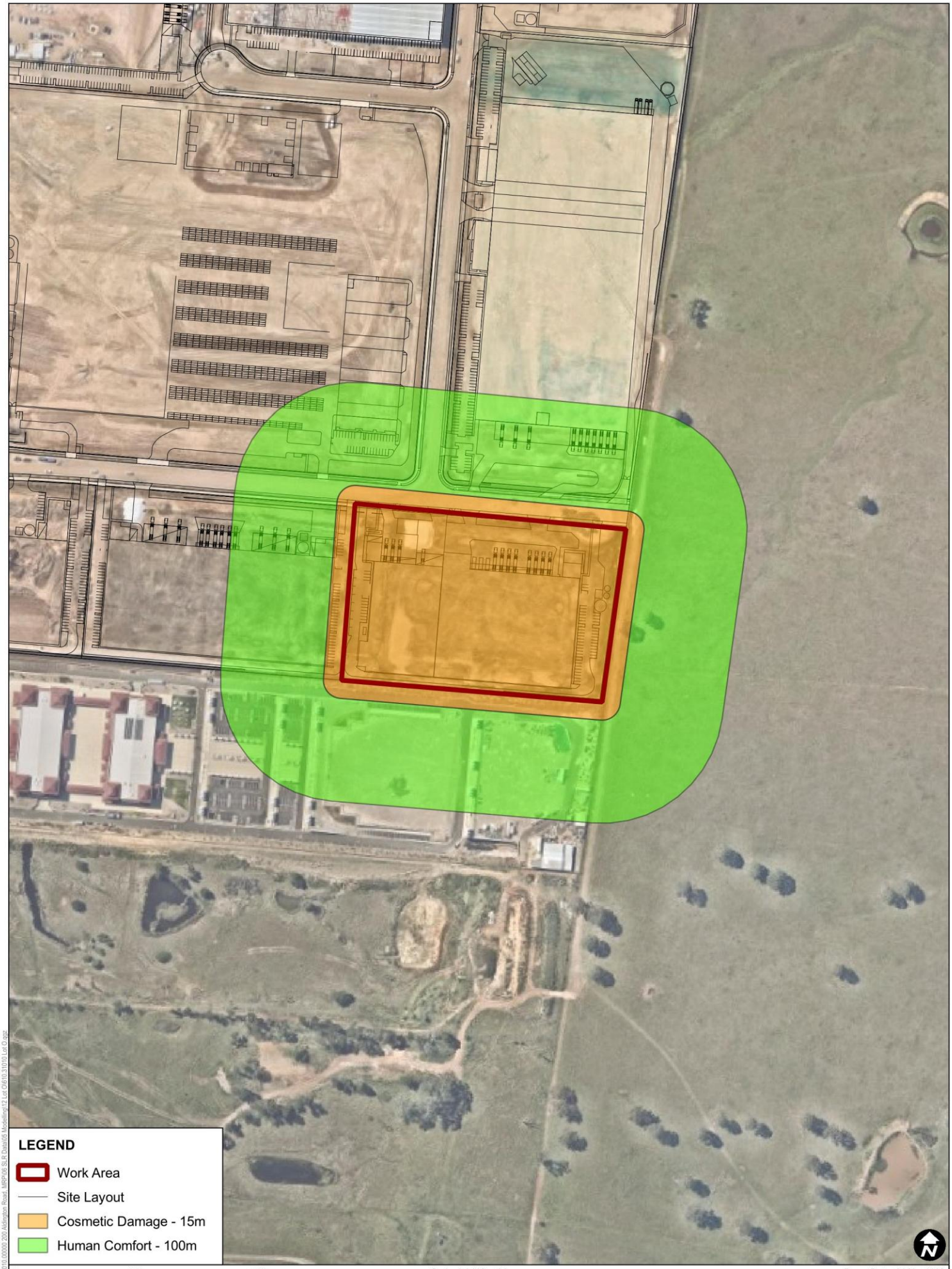
The major potential sources of vibration from the proposed construction activities would likely be during Site Establishment when vibratory rollers are being used.

Vibration offset distances have been determined from the CNVG minimum working distances for cosmetic damage and human comfort (see **Table 8**) and the assessment for a vibratory roller is summarised in **Figure 8**.

The figure shows that the distance between the construction work and the nearest sensitive receivers is sufficient for all receiver buildings to be outside of the cosmetic damage minimum working distance for vibration intensive equipment.

Nearby buildings at the BAPS Temple site (if they are constructed by the time Lot O construction starts) are within the recommended human comfort minimum working distance and occupants of the building may be able to perceive vibration at times when vibration intensive equipment is in use nearby. Where impacts are perceptible, they would likely only be apparent for relatively short durations when the vibration intensive equipment is in use.

Feasible and reasonable construction vibration mitigation measures should be applied where vibration intensive works are required within the minimum working distances. Construction vibration mitigation and management measures are discussed in **Section 7.1**.



Scale: 1:4,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 24-Mar-2026
Project Number: 610.31010

SLR

Data Source:
Nearmap Imagery

Construction Vibration
7-13t Vibratory Roller

FIGURE 8

5.2 Operation

5.2.1 Staged ARIE

A summary of the worst-case operational noise assessment at the receivers surrounding the proposal is shown in **Table 29** for the staged ARIE Lot O. The predicted levels include all noise sources operating simultaneously across ARIE Lot O (and the staged Lot F, J K and E) and represent the expected highest cumulative noise emissions that ARIE Lot O, F, J , K and E would likely emit.

The predictions are compared to those from the staged Lot F, Lot J, Lot K and Lot E, as presented in the Lot E SSDA NIA (Modification 6), for reference. The site layout of the staged ARIE with Lot O is shown in **Figure 3**. Noise contours for the realistic worst-case noise emission scenarios are in **Appendix C**.

Feasible and reasonable mitigation measures have been investigated for the development with the aim of minimising noise emissions from the site as far as practicable. A detailed investigation of all potential feasible and reasonable mitigation measures considered and applied to the development is provided in **Section 7.1**. The following predictions include the recommended mitigation measures.

Table 29 Operational Noise Assessment – Staged ARIE

Receiver	Period[2]	Noise Level $L_{Aeq(15minute)}$ (dBA)						Compliance with Noise Criteria
		Noise Criteria		This Mod Predicted	Exceedance of Noise Criteria	Mod 6 Predicted	Change from Mod 6	
		Consent Noise Limit	PNTL					
Receivers Within MRP								
MRP 01	Daytime	n/a	40	29	-	29	-	Yes
	Evening	n/a	35	25	-	24	+1	Yes
	Night-time (Neutral)	n/a	35	28	-	28	-	Yes
	Night-time (Noise Enh.)	n/a	35	33	-	33	-	Yes
MRP 02 (SSDA NIA 05)	Daytime	n/a	40	30	-	29	+1	Yes
	Evening	n/a	35	27	-	25	+2	Yes
	Night-time (Neutral)	n/a	35	28	-	28	-	Yes
	Night-time (Noise Enh.)	n/a	35	35	-	35	-	Yes
MRP 03 to MRP 06	Daytime	n/a	40	32	-	32	-	Yes
	Evening	n/a	35	25	-	24	+1	Yes
	Night-time (Neutral)	n/a	35	28	-	27	+1	Yes
	Night-time (Noise Enh.)	n/a	35	32	-	32	-	Yes
MRP 07 to MRP 08	Daytime	n/a	40	28	-	27	+1	Yes
	Evening	n/a	35	22	-	20	+2	Yes
	Night-time (Neutral)	n/a	35	23	-	22	+1	Yes
	Night-time (Noise Enh.)	n/a	35	28	-	27	+1	Yes

Receiver	Period[2]	Noise Level $L_{Aeq(15minute)}$ (dBA)						Compliance with Noise Criteria
		Noise Criteria		This Mod Predicted	Exceedance of Noise Criteria	Mod 6 Predicted	Change from Mod 6	
		Consent Noise Limit	PNTL					
Receiver Areas Outside MRP / Receivers Identified in the Development Consent								
Medinah Avenue, Luddenham	Daytime	40	n/a	<20	-	<20	-	Yes
	Evening	35	n/a	<20	-	<20	-	Yes
	Night-time (Neutral)	30	n/a	<20	-	<20	-	Yes
	Night-time (Noise Enh.)	30	n/a	<20	-	<20	-	Yes
Mt. Vernon Road, Capitol Hill & Kerrs Road, Mt, Vernon	Daytime	40	n/a	28	-	27	+1	Yes
	Evening	35	n/a	24	-	23	+1	Yes
	Night-time (Neutral)	30	n/a	24	-	23	+1	Yes
	Night-time (Noise Enh.)	30	n/a	29	-	28	+1	Yes
BAPS – Gardens	When in use	43	n/a	33	-	33	-	Yes
BAPS – Central	When in use	43	n/a	40	-	40	-	Yes
BAPS – Mandir L	When in use	43	n/a	43	-	44	-1	Yes
BAPS – Mandir U	When in use	43	n/a	41	-	43	-2	Yes

Note 1: Neutral = Neutral meteorological conditions. Noise Enh. = Noise enhancing meteorological conditions.

The above assessment indicates the following for the staged ARIE with Lot O:

- Noise from the development is predicted to comply with the Project Noise Trigger Levels at all existing receivers within the MRP.
- Noise from the development is predicted to comply with the Consent Noise Limits at the residential receivers near Medinah Avenue (Luddenham), Mount Vernon Road (Mount Vernon), Kerrs Road (Mount Vernon) and Capitol Hill Road (Mount Vernon).
- Noise levels at the BAPS Temple are predicted to comply with the Consent Noise Limit.
- The predicted noise levels are generally predicted to slightly increase compared to what was predicted for Modification 6 (ie Lot F, J, K and E) due to the inclusion of noise sources at Lot O. However, the predicted noise levels at the BAPS Temple have reduced compared to what was predicted for Modification 6 due to the Lot O buildings providing additional screening from other noise sources in the ARIE.

5.2.2 ARIE Concept Master Plan

A summary of the worst-case operational noise assessment at the receivers surrounding the proposal is shown in **Table 30** for the ARIE Concept Master Plan. The predicted levels include all noise sources operating simultaneously across the entire ARIE and represent the expected highest cumulative noise emissions that the development would likely emit.

The predictions are compared to those from the Master Plan scenario in the Lot E SSDA NIA (Modification 6), for reference.

The Concept Master Plan site layout is shown in **Figure 2**.

Noise contours for the realistic worst-case noise emission scenarios are in **Appendix C**.

Feasible and reasonable mitigation measures have been investigated for the development with the aim of minimising noise emissions from the site as far as practicable. A detailed investigation of all potential feasible and reasonable mitigation measures considered and applied to the development is provided in **Section 7.1**. The following predictions include the recommended mitigation measures.

Table 30 Operational Noise Assessment – ARIE Concept Master Plan

Receiver	Period[2]	Noise Level $L_{Aeq(15minute)}$ (dBA)						Compliance with Noise Criteria
		Noise Criteria		This Mod Predicted	Exceedance of Noise Criteria	Mod 6 Predicted	Change from Mod 6	
		Consent Noise Limit	PNTL					
Receivers Within MRP								
MRP 01	Daytime	n/a	40	31	-	31	-	Yes
	Evening	n/a	35	27	-	27	-	Yes
	Night-time (Neutral)	n/a	35	29	-	29	-	Yes
	Night-time (Noise Enh.)	n/a	35	34	-	33	+1	Yes
MRP 02 (SSDA NIA 05)	Daytime	n/a	40	32	-	32	-	Yes
	Evening	n/a	35	30	-	29	+1	Yes
	Night-time (Neutral)	n/a	35	30	-	30	-	Yes
	Night-time (Noise Enh.)	n/a	35	34	-	34	-	Yes
MRP 03 to MRP 06	Daytime	n/a	40	30	-	30	-	Yes
	Evening	n/a	35	25	-	25	-	Yes
	Night-time (Neutral)	n/a	35	28	-	28	-	Yes
	Night-time (Noise Enh.)	n/a	35	32	-	32	-	Yes
MRP 07 to MRP 08	Daytime	n/a	40	32	-	32	-	Yes
	Evening	n/a	35	30	-	30	-	Yes
	Night-time (Neutral)	n/a	35	26	-	26	-	Yes
	Night-time (Noise Enh.)	n/a	35	31	-	31	-	Yes
Receiver Areas Outside MRP / Receivers Identified in the Development Consent								
Medinah Avenue, Luddenham	Daytime	40	n/a	<20	-	<20	-	Yes
	Evening	35	n/a	<20	-	<20	-	Yes
	Night-time (Neutral)	30	n/a	<20	-	<20	-	Yes
	Night-time (Noise Enh.)	30	n/a	21	-	21	-	Yes

Receiver	Period[2]	Noise Level $L_{Aeq(15minute)}$ (dBA)						Compliance with Noise Criteria
		Noise Criteria		This Mod Predicted	Exceedance of Noise Criteria	Mod 6 Predicted	Change from Mod 6	
		Consent Noise Limit	PNTL					
Mt. Vernon Road, Capitol Hill & Kerrs Road, Mt, Vernon	Daytime	40	n/a	29	-	29	-	Yes
	Evening	35	n/a	26	-	25	+1	Yes
	Night-time (Neutral)	30	n/a	26	-	26	-	Yes
	Night-time (Noise Enh.)	30	n/a	30	-	30	-	Yes
BAPS – Gardens	When in use	43	n/a	32	-	32	-	Yes
BAPS – Central	When in use	43	n/a	40	-	40	-	Yes
BAPS – Mandir L	When in use	43	n/a	42	-	43	-1	Yes
BAPS – Mandir U	When in use	43	n/a	41	-	41	-	Yes

Note 1: Neutral = Neutral meteorological conditions. Noise Enh = Noise enhancing meteorological conditions.

The above assessment indicates the following for the ARIE Concept Master Plan:

- Noise from the development is predicted to comply with the Project Noise Trigger Levels at all receivers within the MRP.
- Noise from the development is predicted to comply with the Consent Noise Limits at the residential receivers near Medinah Avenue (Luddenham), Mount Vernon Road (Mount Vernon), Kerrs Road (Mount Vernon) and Capitol Hill Road (Mount Vernon).
- Noise from the development is predicted to comply with the Consent Noise Limit at BAPS Temple.
- The predicted noise levels are predicted to slightly increase by up to 1 dB at some receivers compared to what was predicted for the Master Plan scenario in Modification 6. However, the predicted noise levels at the BAPS Temple are predicted to be equal to or 1 dB less than the worst-case levels from Modification 6.

5.2.3 Predicted Sunday 1pm – 8pm Operational Noise at BAPS

A summary of the worst-case operational noise assessment during the Sunday 1pm – 8pm period at the BAPS Temple is shown in **Table 31** for the staged ARIE with Lot O (which includes the staged Lot F, J, K and E) and **Table 30** for the ARIE Concept Master Plan.

Table 31 Sunday Operational Noise Assessment – Staged ARIE

Receiver	Period	Noise Level $L_{Aeq(15minute)}$ (dBA)			Compliance
		Consent Noise Limit	Predicted	Exceedance	
BAPS - Gardens	Sunday 1pm – 8pm	35	23	-	Yes
BAPS – Central	Sunday 1pm – 8pm	35	29	-	Yes
BAPS – Mandir L	Sunday 1pm – 8pm	35	32	-	Yes
BAPS – Mandir U	Sunday 1pm – 8pm	35	32	-	Yes

Table 32 Sunday Operational Noise Assessment – ARIE Concept Master Plan

Receiver	Period	Noise Level $L_{Aeq(15minute)}$ (dBA)			Compliance
		Consent Noise Limit	Predicted	Exceedance	
BAPS - Gardens	Sunday 1pm – 8pm	35	29	-	Yes
BAPS – Central	Sunday 1pm – 8pm	35	33	-	Yes
BAPS – Mandir L	Sunday 1pm – 8pm	35	34	-	Yes
BAPS – Mandir U	Sunday 1pm – 8pm	35	35	-	Yes

The above assessment indicates the noise from the development is predicted to comply with the Consent Noise Limit at BAPS Temple during the Sunday 1pm to 8pm period.

5.2.4 Sleep Disturbance

A summary of L_{Amax} noise levels predicted at the nearest residential receivers is shown in **Table 33** for the ARIE Concept Master Plan. The predicted L_{Amax} levels are compared to the sleep disturbance screening level for each residential receiver.

Table 33 Sleep Disturbance Assessment – ARIE Concept Master Plan

Receiver Location	Source	Noise Level L_{Amax} (dBA)			Below Screening Level
		Sleep Disturbance Screening Level (dBA)	Predicted Noise Level (dBA)	Exceedance (dB)	
Receivers Within MRP					
MRP 01	All sources	52	≤49	-	Yes
MRP 02 (SSDA NIA 05)	All sources	52	≤49	-	Yes
MRP 03 to MRP 06	All sources	52	≤40	-	Yes
MRP 07 to MRP 08	All sources	52	≤42	-	Yes
Receiver Areas Outside MRP / Receivers Identified in the Development Consent					
Medinah Avenue, Luddenham	All sources	52	≤30	-	Yes
Mt. Vernon Road, Capitol Hill & Kerrs Road, Mt, Vernon	All sources	52	≤42	-	Yes

The above assessment indicates that maximum noise events from the proposal are predicted to be below the sleep disturbance screening level at all surrounding residential receivers.

The assessment demonstrates that the development is not expected to result in sleep disturbance at the nearest residential receivers when operating with truck airbrakes with a sound power level of L_{Amax} 118 dBA (as required by Condition A17).

Noise levels from the staged ARIE Lot O (including the prior Lot F, J, K and E) are generally lower than predicted for the ARIE Concept Master Plan and are also compliant with the sleep disturbance screening level.

5.2.5 Off-site Traffic Assessment

Traffic associated with the development would enter and exit from Aldington Road. Traffic would initially travel south on Aldington Road to Abbotts Road, then north or south along Mamre Road. In the future, following construction of the Southern Link Road to the north of the site, traffic would either travel north or south on Aldington Road.

It is expected that traffic noise levels in the wider MRP would increase as the precinct is progressively developed and the various estates become operational. Impacts from increased traffic noise are likely to occur at certain receivers within the MRP as the precinct is developed.

6.0 Cumulative Impacts

The NSW Government *Cumulative Impact Assessment Guidelines for State Significant Projects* requires that the potential combined effect of cumulative impacts on all nearby industrial developments to be considered when assessing potential noise impacts from state significant projects. Cumulative impacts can be caused by the compounding effects of multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise.

6.1 Construction Noise

Cumulative construction noise impacts can occur where multiple work activities are being completed near to a particular receiver at the same time.

While construction impacts from the proposal are expected to mostly be compliant, the work has the possibility of interacting with the construction activities of other nearby projects within the MRP, if they are constructed at the same time.

The construction schedules for the various projects are currently unknown, meaning a detailed assessment of the potential for cumulative impacts is not able to be completed.

Since construction scenarios and equipment for the various projects would generally require similar items of equipment to the proposal, concurrent construction work could theoretically increase the worst-case noise levels from the proposal by around 3 dB (ie a logarithmic adding of two sources of noise at the same level). The likelihood of worst-case noise levels being generated by works on different projects at the same time is, however, considered low.

As such, cumulative construction impacts are not considered likely to significantly alter the predictions from the proposal and no specific mitigation to address cumulative impacts is expected to be required. The potential cumulative impacts from the proposal and other projects would continue to be considered as the project progresses when detailed construction planning is developed as part of preparation of the site's Construction Environmental Management Plans (CEMPs).

6.2 Operational Noise

The *Noise Policy for Industry* states that it aims to limit continuing increases in cumulative industrial noise through the application of amenity noise levels, which are applicable to all industrial noise sources in an area.

The policy accounts for potential cumulative impacts by lowering the criteria for each individual development to ensure that the ambient noise level within an area from all industrial noise sources combined remains below the recommended amenity noise levels, where feasible and reasonable. As such (as discussed in **Section 3.3.2**), the potential cumulative operational impacts from the proposal and other potential sources of industrial noise in the area are accounted for in the proposal-specific PNTLs and Development Consent Noise Limits and, therefore, do not require further consideration.

7.0 Mitigation and Management Measures

7.1 Construction

The ICNG acknowledges that due to the nature of construction works it is inevitable that there will be impacts where construction is near to sensitive receivers.

Noise during construction of Lot O is generally predicted to be below the Noise Management Levels, except at the closest future building within the adjacent BAPS Temple site. Notwithstanding, all appropriate feasible and reasonable mitigation measures should be applied to the work to minimise the potential impacts, as far as practicable.

The works should be managed in accordance with the CNVMP (SLR Report 610.31010-R19), including the use of the mitigation and management measures detailed in **Table 34**.

Table 34 Environmental Management Controls for Construction Noise and Vibration

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Project Planning			
Use quieter and less vibration emitting construction methods where feasible and reasonable.	Project Manager	Ongoing	Best practice
Works should be completed during standard daytime construction hours outlined in **Section 4.1.2**.			
Truck routes to site should be limited to major roads.			
Site Layout			
Compounds and worksites should be designed to promote one-way traffic and minimise the need for vehicle reversing.	Project Manager	Ongoing	Best practice
Where practicable, work compounds, parking areas, and equipment and material stockpiles should be positioned away from noise-sensitive locations and take advantage of existing screening from local topography.			
Documentation of how site layout has been considered to reduce noise impacts must be provided to the Contractor's Project Manager. This must occur any time there are significant changes to the site layout.			
Equipment that is noisy should be started away from sensitive receivers.			
Training			
Training should be provided to all personnel on noise and vibration requirements for the project. Inductions and toolbox talks to be used to inform personnel of the location and sensitivity of surrounding receivers.	Project Manager	Ongoing	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Plant and Equipment Source Mitigation			
All plant and equipment must be maintained in a proper and efficient condition, operated in a proper and efficient manner, and feature standard noise amelioration measures where applicable.	Project Manager	Ongoing	Best practice
Where practicable, tonal reversing alarms (beepers) should be replaced with non-tonal alarms (squawkers) on all equipment in use (subject to occupational health and safety requirements).			
Noisy equipment should be sited behind structures that act as barriers, or at the greatest distance from the noise-sensitive area. Equipment should be oriented so that noise emissions are directed away from any sensitive areas, where possible.			
Noise generating equipment should be regularly checked and effectively maintained, including checking of hatches/enclosures regularly to ensure that seals are in good condition and doors close properly against seals.			
Noise monitoring spot checks of equipment should be completed to ensure individual items are operating as expected.			
Dropping materials from a height should be avoided.			
Loading and unloading should be carried out away from noise sensitive areas, where practicable.			
Trucks should not queue outside residential properties. Truck drivers should avoid compression braking as far as practicable.			
Truck movements should be kept to a minimum, ie trucks are fully loaded on each trip.			
Screening			
The layout of the site should take advantage of existing screening from local topography, where possible. Site huts, maintenance sheds and/or containers should be positioned between noisy equipment and the affected receivers.	Project Manager	Ongoing	Best practice
Complaints Management			
Where complaints are received, work practices should be reviewed and feasible and reasonable practices implemented to minimise any further impacts.	Communications and Community Liaison Representative	Ongoing	Best practice

Measure	Person Responsible	Timing / Frequency	Reference / Notes
Monitoring			
Noise and/or vibration monitoring should be conducted (as appropriate) when noise/vibration intensive works are being undertaken in close proximity to sensitive receivers.	Environmental Coordinator	Ongoing	Best practice
Noise and/or vibration monitoring should be conducted (as appropriate) in response to any complaints received to verify that levels are not substantially above the predicted levels.			
Vibration			
If vibration generating works are required within the minimum cosmetic damage working distances (refer **Table 8**) and considered likely to exceed the criteria: • Different construction methods with lower source vibration levels should be investigated and implemented, where feasible • Attended vibration measurements should be undertaken at the start of the works to determine actual vibration levels at the item. Works should cease if the monitoring indicates vibration levels are likely to, or do, exceed the relevant criteria.	Environmental Coordinator	Ongoing	Best practice
Where works are required within the cosmetic damage minimum working distances (refer **Table 8**), building condition surveys and public infrastructure dilapidation surveys should be completed before and after the works to ensure no cosmetic damage has occurred.			

7.1.1 Mitigation Effectiveness and Residual Impacts

AS 2436 provides further guidance on the control of construction noise and vibration and includes the nominal noise reduction possible from various mitigation strategies summarised in **Table 35**.

Table 35 Nominal Construction Noise Reductions

Control	Example	Nominal Noise Reduction (AS 2436)
Distance	Maximising the offset distance between noisy plant and adjacent sensitive receivers.	6 dB per doubling of distance
Screening	Use of structures (ie site shed, earth bund, temporary hoarding) to shield adjacent sensitive receivers from noisy plant and activities.	5-10 dB
Enclosure	Construct a solid enclosure around generators, compressors, pumps or similar long-term plant.	15-25 dB
Silencing	Fit muffler, silenced or dampened bit to relevant noise intensive equipment.	5-10 dB

The proposed mitigation measures are expected to reduce the potential for construction noise and vibration impacts as much as is practicable. The cumulative effect of the recommended measures may reduce noise levels at sensitive receivers by 5-15 dB at certain times. Given this, the worst-case predicted impacts at the BAPS Mandir Temple are expected to be reduced to compliant with the NML at times when work is more distant and can be effectively screened.

However, residual noise impacts may occur if the temple is operational during Lot O and construction and noisy work is required near to the site boundary. If the temple is operational during Lot O construction, the following specific mitigation measures would be applied:

- Prioritise construction of the warehouse buildings' southern wall cladding to act as a barrier for other works.
- Undertake no noise intensive works on Sundays 1pm – 8pm, which is understood to be the most noise sensitive period for the temple (in accordance with Condition D49 of the SSD-10479 Development Consent).

7.2 Operational Noise Impacts

Where operational noise impacts are predicted from a development, all feasible and reasonable operational noise mitigation and management measures should be considered.

The typical hierarchy for mitigation and management of industrial noise sources is as follows:

- Reducing noise emissions at the source (ie noise source control).
- Reducing noise in transmission to the receiver (ie noise path control).
- Reducing noise at the receiver (ie at-receiver control).

7.2.1 Summary of Feasible and Reasonable Mitigation Measures

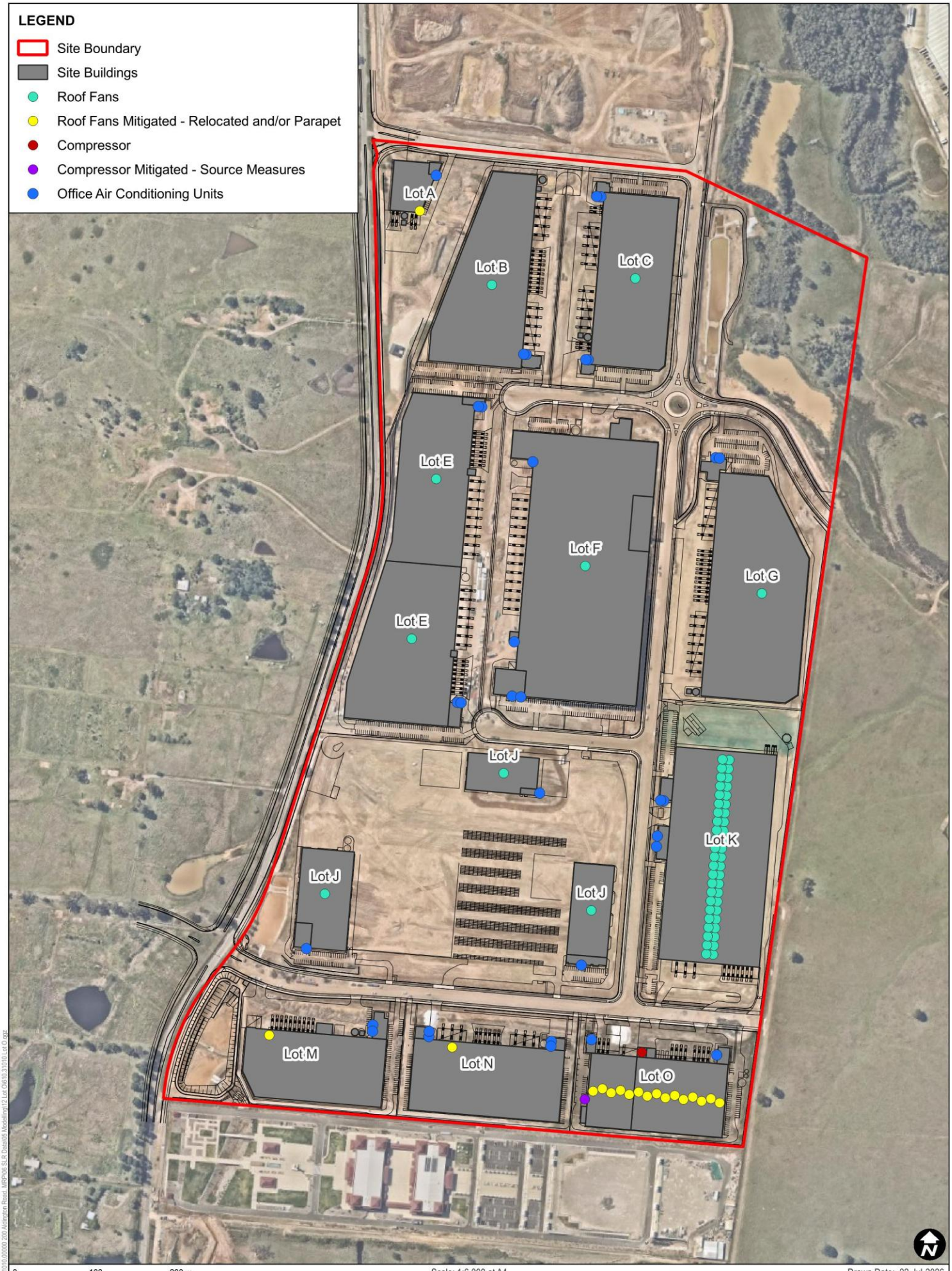
A detailed assessment of all feasible and reasonable mitigation measures that could be applied to the development to minimise the operational noise impacts has been completed and is summarised in **Table 36**.

Table 36 Summary of Considered Feasible and Reasonable Mitigation Measures

Ref.	Mitigation Option	Noise Impact/Benefit	Reasonable and Feasible to Apply
Source Control			
S1	Mechanical plant located at ground, where possible	Reduce potential noise emissions by locating equipment at ground level as opposed to elevated positions.	**Yes** – all office air-conditioning units have been located at ground level (see **Figure 9**) to minimise noise emissions. Applied to both Lot O and ARIE Concept Master Plan.
S2	Mechanical plant on warehouse roofs of Lot M and N relocated to northern side	Reduce potential noise impacts to BAPS Temple	**Yes** – the roof mounted mechanical plant has been relocated to the northern side of the warehouse roofs of Lot M and N to maximise the distance to the BAPS Temple (see **Figure 9**). The requirements for roof mounted mechanical plant would be confirmed during detailed design. Applied to ARIE Concept Master Plan.
S3	Mechanical plant on warehouse roof of Lot A relocated to eastern side	Reduce potential noise emissions	**Yes** – the roof mounted mechanical plant has been relocated to the eastern side of the warehouse roof of Lot A (see **Figure 9**). The requirements for roof mounted mechanical plant would be confirmed during detailed design. Applied to ARIE Concept Master Plan.
S4	Parapet around roof mounted mechanical plant on Lots A, M, N and O	Reduce potential noise emissions by providing screening to roof mounted mechanical equipment.	**Yes** – 1.5 m parapets have been included around roof mounted mechanical plant at Lots A, M, N and O (see **Figure 9**). This reduces noise impacts at BAPS Temple and other nearby receivers. Applied to ARIE Concept Master Plan. The requirements for parapets would be confirmed during detailed design.

Ref.	Mitigation Option	Noise Impact/Benefit	Reasonable and Feasible to Apply
S5	Optimised site layout to minimise noise emissions from the site	Where possible, the site layout has been designed so that the warehouse buildings screen the noisier areas of the development (ie hardstands and truck routes) from the nearest receivers.	**Yes** – applied during design of both ARIE Lot O and ARIE Concept Master Plan.
S6	Limit vehicle movements	A reduction in vehicle volumes across the site could reduce noise emissions.	No – vehicle volumes are necessary for the tenant's operational requirements.
S7	Use broadband and/or ambient sensing alarms on trucks and forklifts where they are required to reverse during the night-time	Reduce potential for annoying noise emissions during the night-time from forklifts and trucks.	**Yes** – use broadband and/or ambient sensing alarms on forklifts and trucks where they are required to reverse during the night-time.
S8	Appropriate design of site layout to minimise the need for trucks to stop or brake outside of loading docks with line of sight to residential receivers	Minimise noise emissions, particularly from truck airbrakes.	**Yes** – applied during design of both ARIE Lot O and ARIE Concept Master Plan.
S9	Building material selection	Reduce breakout noise from internal warehouse activities	**Yes** – materials for warehouse and plant room facades and roofs selected during the detailed design stage of each warehouse would be selected so that any noise breakout from internal activities, including through louvres, openings or penetrations, would result in a negligible increase in overall noise emissions from the facility.
S10	Production of an Operational Noise Management Plan	This would detail the measures that could be used by the various tenants to minimise general noise emissions from the site, such as restricting the use of truck air brakes, where possible. Reference can be made to the Best Management Practice (BMP) and Best Available Technology Economically Available (BATEA) measures listed in the NPfI.	**Yes** – an Operational Noise Management Plan will be prepared for the ARIE, as required by Condition A18 of the Development Consent.
S11	Provide electrical mains power for refrigerated truck trailers at Lot M & O	Remove the need for onboard refrigeration engine idling during the night-time.	**Yes** – provision of external mains power for refrigerated truck trailers will be investigated further during detailed design.

Ref.	Mitigation Option	Noise Impact/Benefit	Reasonable and Feasible to Apply
S12	Source mitigation for Lot O Warehouse 1 external compressor	Apply source mitigation (such as low-noise fans, silencers, snouts, acoustic louvres) to the selected unit, as needed, to ensure the noise source is equivalent to the modelled level.	**Yes** – mitigated source levels have been included in the noise model. To be considered in unit selection and during detailed design.
Path Control			
P1	Awnings above hardstands	Reduce potential noise emissions from the site.	**Yes** – awnings have been included in the noise model as per the architectural drawings.
P2	Noise barriers	Reduce potential noise emissions from the site.	Not required
Receiver Control			
R1	Treatment to residential receiver properties	Not required	Not required
Verification			
V1	Detailed design operational assessment	Undertake review of the potential operational impacts when more detailed information is available at later design stages of project.	**Yes** – review of proposal should be completed during detailed design of ARIE Lot O, when tenant specific details are known regarding traffic requirements, mechanical plant design, cold storage equipment and plant room specification, etc. This review would confirm the noise predictions, impacts and mitigation requirements discussed in this report.
V2	Noise monitoring	Verify post-construction operational noise levels are compliant with the relevant noise limits.	**Yes** – verification monitoring expected to be required to be completed within three months of commencement of operation of ARIE Lot O.



Scale: 1:6,000 at A4
Coordinate System: GDA2020 / MGA zone 56

Drawn Date: 22-Jul-2026
Project Number: 610.31010

SLR

Data Source:
Nearmap Imagery

DISCLAIMER: All information within this document may be based on external sources. SLR Consulting Pty Ltd makes no warranty regarding the data's accuracy or reliability for any purpose.

Proposed Feasible and Reasonable Mitigation

FIGURE 9

H:\Projects-SLR\610.SYD\610.31010.00000 200 Aldington Road, MRP\06 SLR Data\05 Modelling\12 Lot Q\610.31010 Lot Q.qgz

8.0 Conclusion

SLR has been engaged to assess the potential operational noise impacts associated with the Lot O Modification of the Aldington Road Industrial Estate Concept Master Plan.

This report also addresses the construction and operational noise impacts for an additional SSD application for on-lot development of Lot O (SSD-96107226).

Noise during construction of Lot O is generally predicted to be below the Noise Management Levels, except at the closest building in the BAPS Temple. This receiver is currently under construction but has conservatively been assumed to be operational during the construction of Lot O.

Operational noise levels have been predicted from the staged ARIE with Lot O (including the staged Lots F, J, K and E), and the ARIE Concept Master Plan, to the surrounding sensitive receivers. Operational noise levels from the ARIE are predicted to comply with the relevant noise criteria at all receivers.

A range of feasible and reasonable operational noise mitigation and management measures have been evaluated and recommended to control potential operational noise impacts from the development.

Appendix A Acoustic Terminology

200 Aldington Road Industrial Estate

SSD-10479 Modification, Noise and Vibration Impact Assessment and SSDA for Lot O (SSD-96107226)

Stockland Fife Kemps Creek Pty Ltd

SLR Project No.: 610.31010.00001

Sound Level or Noise Level

The terms 'sound' and 'noise' are almost interchangeable, except that 'noise' often refers to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure. The human ear responds to changes in sound pressure over a very wide range with the loudest sound pressure to which the human ear can respond being ten million times greater than the softest. The decibel (abbreviated as dB) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or LP are commonly used to represent Sound Pressure Level. The symbol LA represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

'A' Weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to that of human hearing.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4,000 Hz), and less sensitive at lower and higher frequencies. Different sources having the same dBA level generally sound about equally loud.

A change of 1 dB or 2 dB in the level of a sound is difficult for most people to detect, whilst a 3 dB to 5 dB change corresponds to a small but noticeable change in loudness. A 10 dB change corresponds to an approximate doubling or halving in loudness. The table below lists examples of typical noise levels.

Sound Pressure Level (dBA)	Typical Source	Subjective Evaluation
130	Threshold of pain	Intolerable
120	Heavy rock concert	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 m	Very noisy
90	Construction site with pneumatic hammering	
80	Kerbside of busy street	Loud
70	Loud radio or television	
60	Department store	Moderate to quiet
50	General Office	
40	Inside private office	Quiet to very quiet
30	Inside bedroom	
20	Recording studio	Almost silent

Other weightings (eg B, C and D) are less commonly used than A-weighting. Sound Levels measured without any weighting are referred to as 'linear', and the units are expressed as dB(lin) or dB.

Sound Power Level

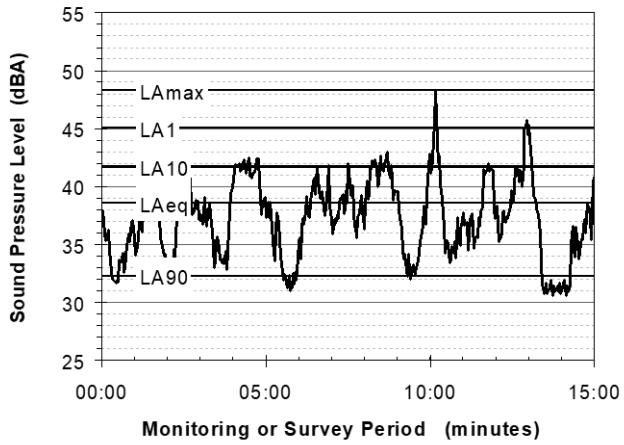
The Sound Power of a source is the rate at which it emits acoustic energy. As with Sound Pressure Levels, Sound Power Levels are expressed in decibel units (dB or dBA), but may be identified by the symbols SWL or LW, or by the reference unit 10^{-12} W.

The relationship between Sound Power and Sound Pressure is similar to the effect of an electric radiator, which is characterised by a power rating but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels L_{AN}, where L_{AN} is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the L_{A1} is the noise level exceeded for 1% of the time, L_{A10} the noise exceeded for 10% of the time, and so on.

The following figure presents a hypothetical 15 minute noise survey, illustrating various common statistical indices of interest.



Of particular relevance, are:

L_{A1} The noise level exceeded for 1% of the 15 minute interval.

L_{A10} The noise level exceeded for 10% of the 15 minute interval. This is commonly referred to as the average maximum noise level.

L_{A90} The noise level exceeded for 90% of the sample period. This noise level is described as the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

L_{Aeq} The A-weighted equivalent noise level (basically, the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.

Frequency Analysis

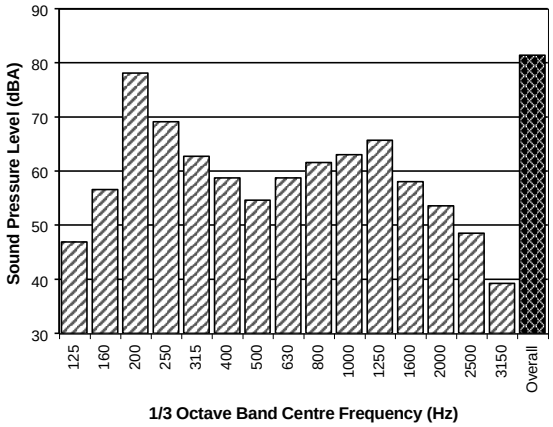
Frequency analysis is the process used to examine the tones (or frequency components) which make up the overall noise or vibration signal.

The units for frequency are Hertz (Hz), which represent the number of cycles per second.

Frequency analysis can be in:

- Octave bands (where the centre frequency and width of each band is double the previous band)
- 1/3 octave bands (three bands in each octave band)
- Narrow band (where the spectrum is divided into 400 or more bands of equal width)

The following figure shows a 1/3 octave band frequency analysis where the noise is dominated by the 200 Hz band. Note that the indicated level of each individual band is less than the overall level, which is the logarithmic sum of the bands.



Annoying Noise (Special Audible Characteristics)

A louder noise will generally be more annoying to nearby receivers than a quieter one. However, noise is often also found to be more annoying and result in larger impacts where the following characteristics are apparent:

- **Tonality** - tonal noise contains one or more prominent tones (ie differences in distinct frequency components between adjoining octave or 1/3 octave bands), and is normally regarded as more annoying than 'broad band' noise.
- **Impulsiveness** - an impulsive noise is characterised by one or more short sharp peaks in the time domain, such as occurs during hammering.
- **Intermittency** - intermittent noise varies in level with the change in level being clearly audible. An example would include mechanical plant cycling on and off.
- **Low Frequency Noise** - low frequency noise contains significant energy in the lower frequency bands, which are typically taken to be in the 10 to 160 Hz region.

Vibration

Vibration may be defined as cyclic or transient motion. This motion can be measured in terms of its displacement, velocity or acceleration. Most assessments of human response to vibration or the risk of damage to buildings use measurements of vibration velocity. These may be expressed in terms of 'peak' velocity or 'rms' velocity.

The former is the maximum instantaneous velocity, without any averaging, and is sometimes referred to as 'peak particle velocity', or PPV. The latter incorporates 'root mean squared' averaging over some defined time period.

Vibration measurements may be carried out in a single axis or alternatively as triaxial measurements (ie vertical, longitudinal and transverse).

The common units for velocity are millimetres per second (mm/s). As with noise, decibel units can also be used, in which case the reference level should always be stated. A vibration level V, expressed in mm/s can be converted to decibels by the formula 20 log (V/Vo), where Vo is the reference level (10^{-9} m/s). Care is required in this regard, as other reference levels may be used.

Human Perception of Vibration

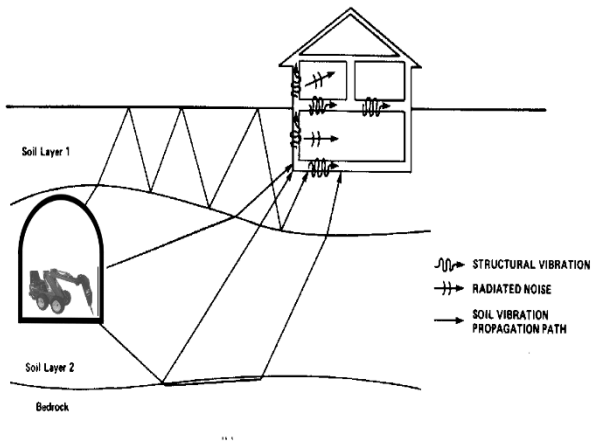
People are able to 'feel' vibration at levels lower than those required to cause even superficial damage to the most susceptible classes of building (even though they may not be disturbed by the motion). An individual's perception of motion or response to vibration depends very strongly on previous experience and expectations, and on other connotations associated with the perceived source of the vibration. For example, the vibration that a person responds to as 'normal' in a car, bus or train is considerably higher than what is perceived as 'normal' in a shop, office or dwelling.

Ground-borne Noise, Structure-borne Noise and Regenerated Noise

Noise that propagates through a structure as vibration and is radiated by vibrating wall and floor surfaces is termed 'structure-borne noise', 'ground-borne noise' or 'regenerated noise'. This noise originates as vibration and propagates between the source and receiver through the ground and/or building structural elements, rather than through the air.

Typical sources of ground-borne or structure-borne noise include tunnelling works, underground railways, excavation plant (eg rockbreakers), and building services plant (eg fans, compressors and generators).

The following figure presents an example of the various paths by which vibration and ground-borne noise may be transmitted between a source and receiver for construction activities occurring within a tunnel.



The term 'regenerated noise' is also used in other instances where energy is converted to noise away from the primary source. One example would be a fan blowing air through a discharge grill. The fan is the energy source and primary noise source. Additional noise may be created by the aerodynamic effect of the discharge grill in the airstream. This secondary noise is referred to as regenerated noise.

Appendix B Construction Noise Sources

200 Aldington Road Industrial Estate

SSD-10479 Modification, Noise and Vibration Impact Assessment and SSDA for Lot O (SSD-96107226)

Stockland Fife Kemps Creek Pty Ltd

SLR Project No.: 610.31010.00001

Construction Scenario Descriptions

Equipment	Back Hoe (7.5 tonne JCB)	Circular Saw[1]	Concrete Mixer Truck	Concrete Pump	Elevated Working Platform	Excavator (22 tonne)	Hand Tools	Mobile Crane - Franna	Pneumatic hammer[1]	Roller - Vibratory (12 tonne)[1]	Semi Trailer	Suction Truck	Truck	Ute	Total Sound Power Level (dBA)
Sound Power Level (dBA)	102	106	103	106	97	99	94	98	114	109	106	100	107	98	
Assumed on-time in any 15 minutes	15	15	7.5	7.5	15	7.5	15	7.5	5	15	5	15	5	15	
Site Establishment	X					X				X					110
Stage 1 - Services	X					X	X						X		106
Stage 2 - Excavation	X					X	X		X			X	X		111
Stage 3 - Substructure			X	X		X							X		107
Stage 4 - Superstructure		X	X	X	X		X	X			X		X		110
Stage 5 - External works			X				X							X	103
Stage 6 - Fit out							X							X	99

Note 1: Equipment classed as 'annoying' in the ICNG and requires a 5 dB correction.

Note 2: Sound power level data is taken from the TfNSW *Construction Noise and Vibration Strategy* (CNVG-R and CNVG-PTI), AS2436-2010 and DEFRA Noise Database.

Appendix C Operational Noise Contours

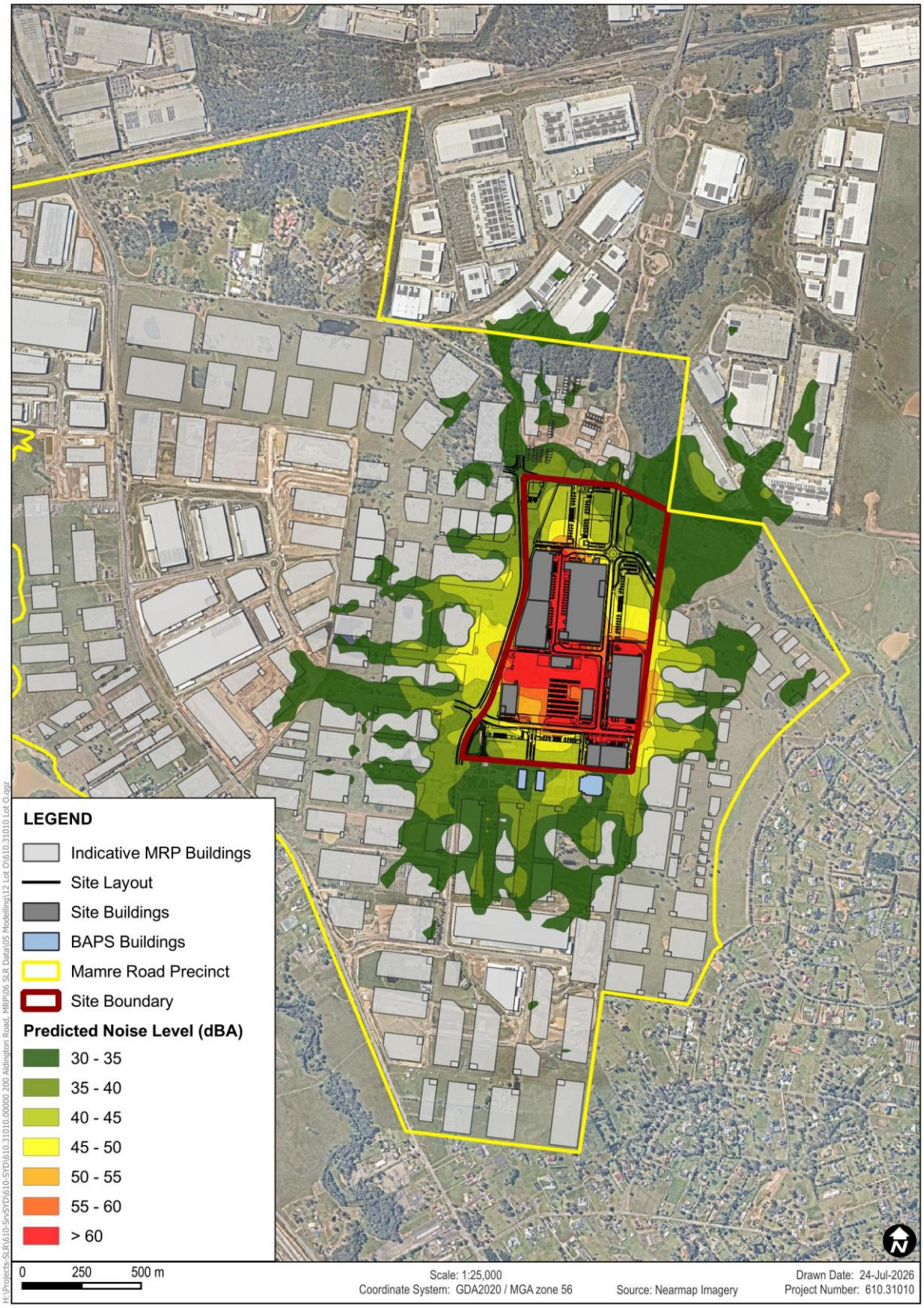
200 Aldington Road Industrial Estate

SSD-10479 Modification, Noise and Vibration Impact Assessment and SSDA for Lot O (SSD-96107226)

Stockland Fife Kemps Creek Pty Ltd

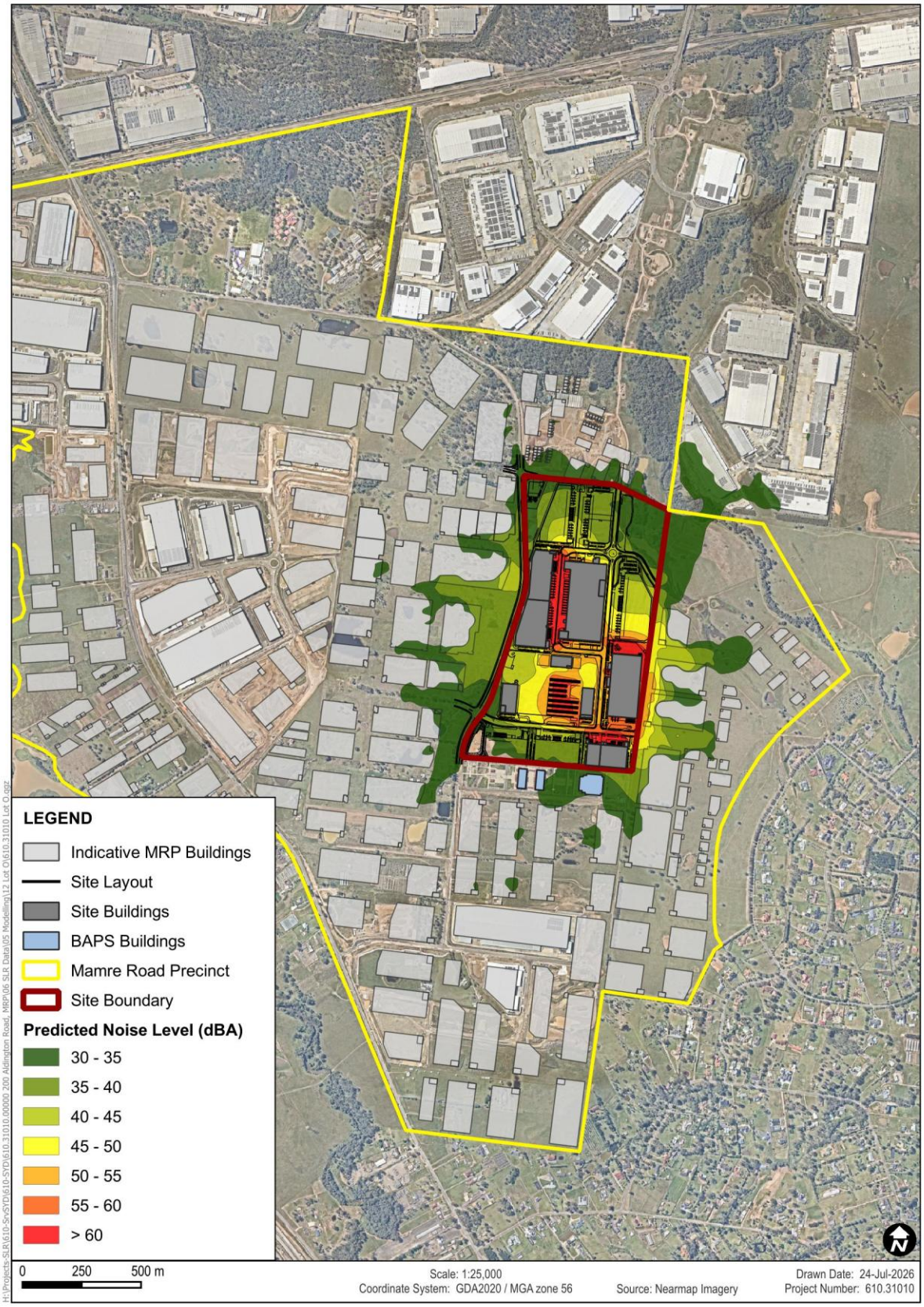
SLR Project No.: 610.31010.00001

Staged ARIE – Daytime Grid Noise Map – Neutral Weather



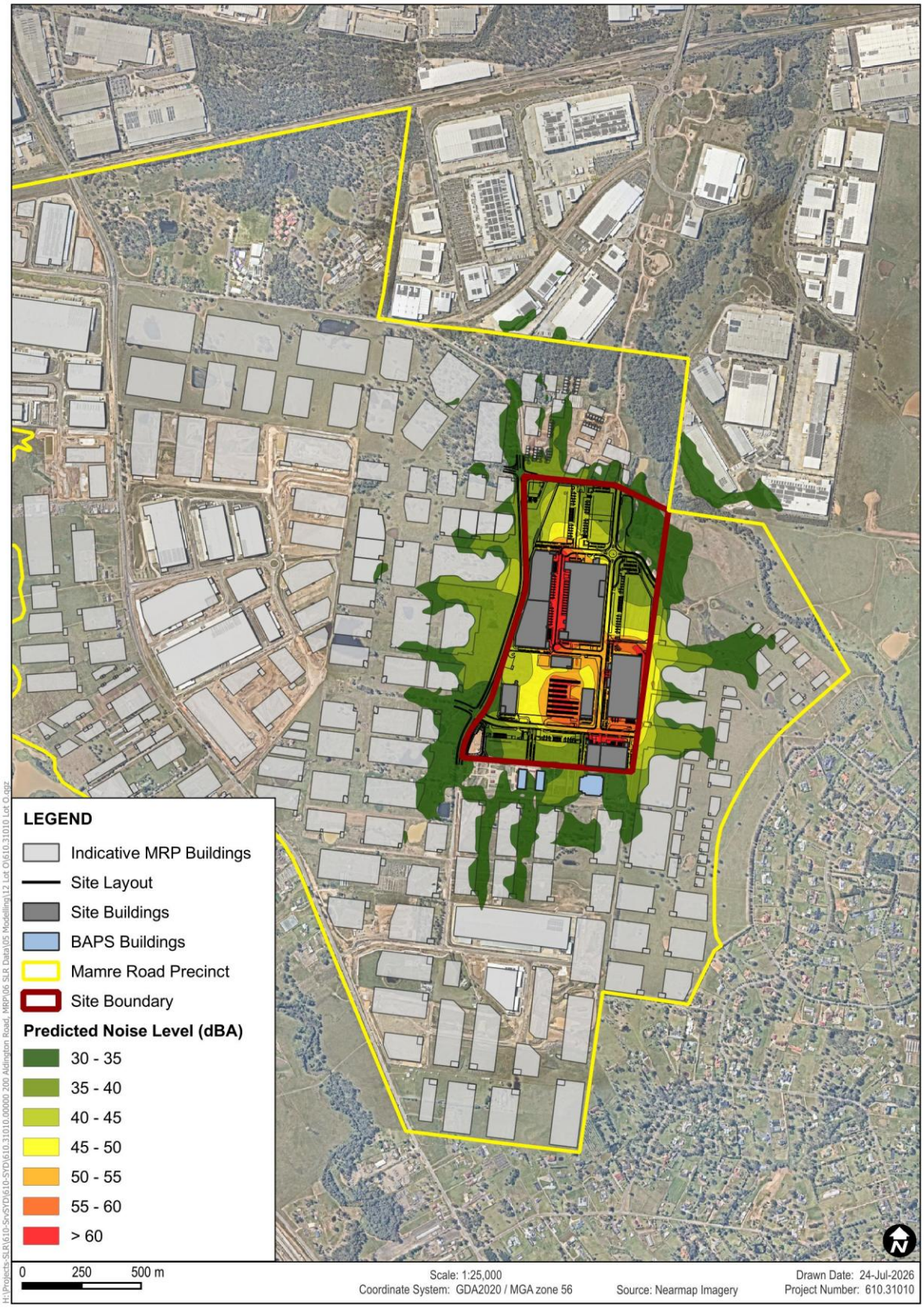
Note: Contours at 1.5m above existing ground elevation.

Staged ARIE – Evening Grid Noise Map – Neutral Weather



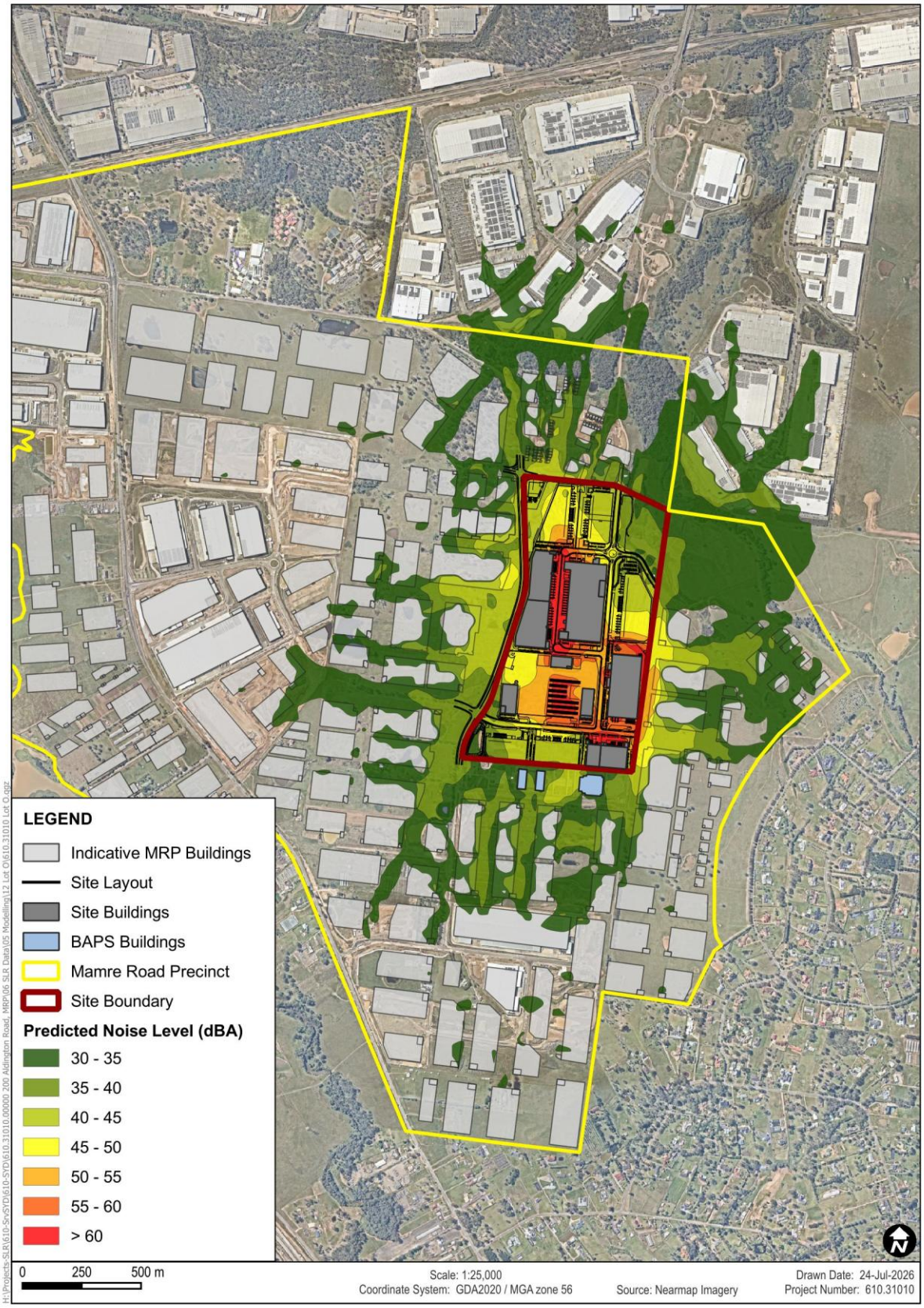
Note: Contours at 1.5m above existing ground elevation.

Staged ARIE – Night-time Grid Noise Map – Neutral Weather



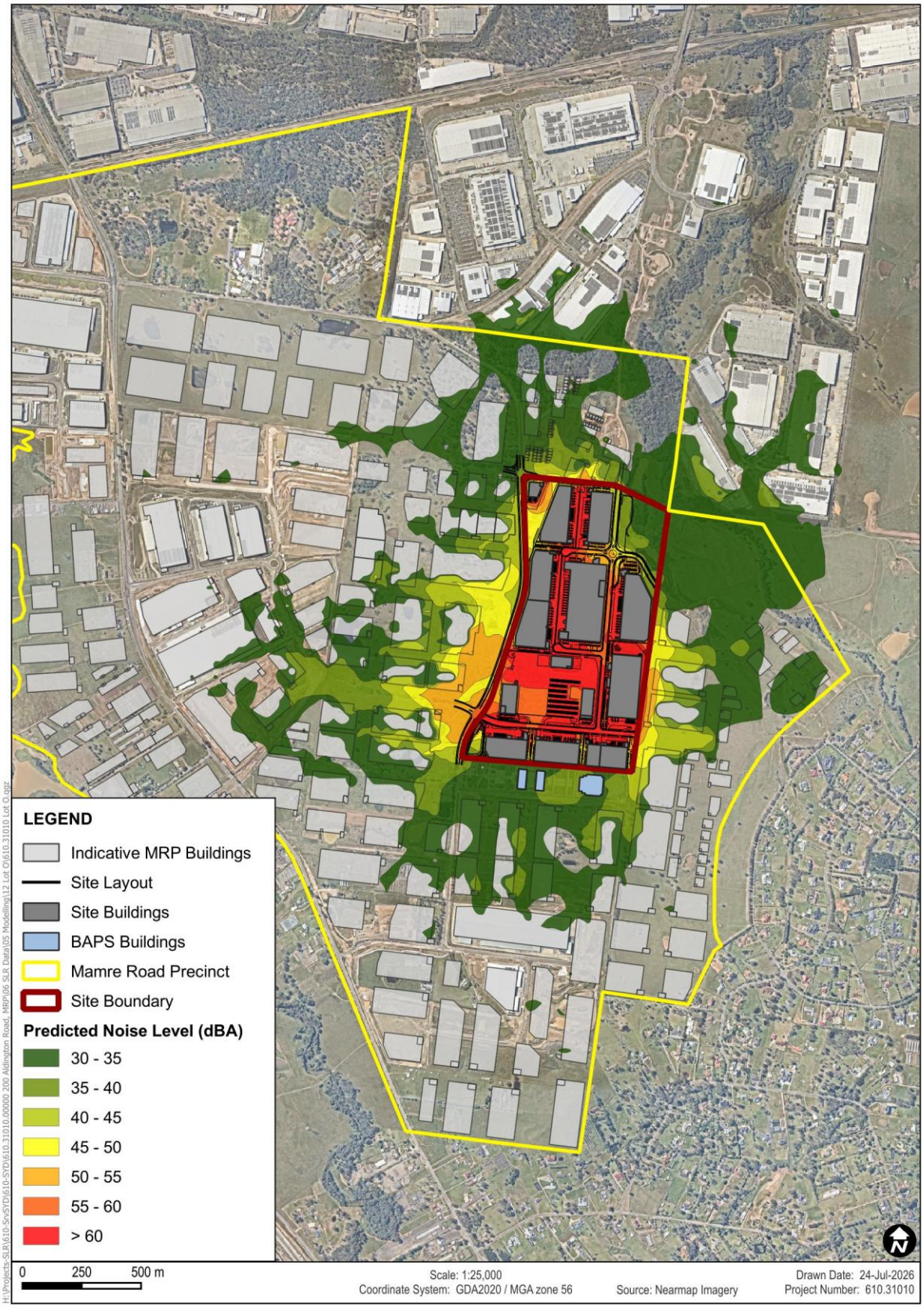
Note: Contours at 1.5m above existing ground elevation.

Staged ARIE – Night-time Grid Noise Map – Noise Enhancing Weather



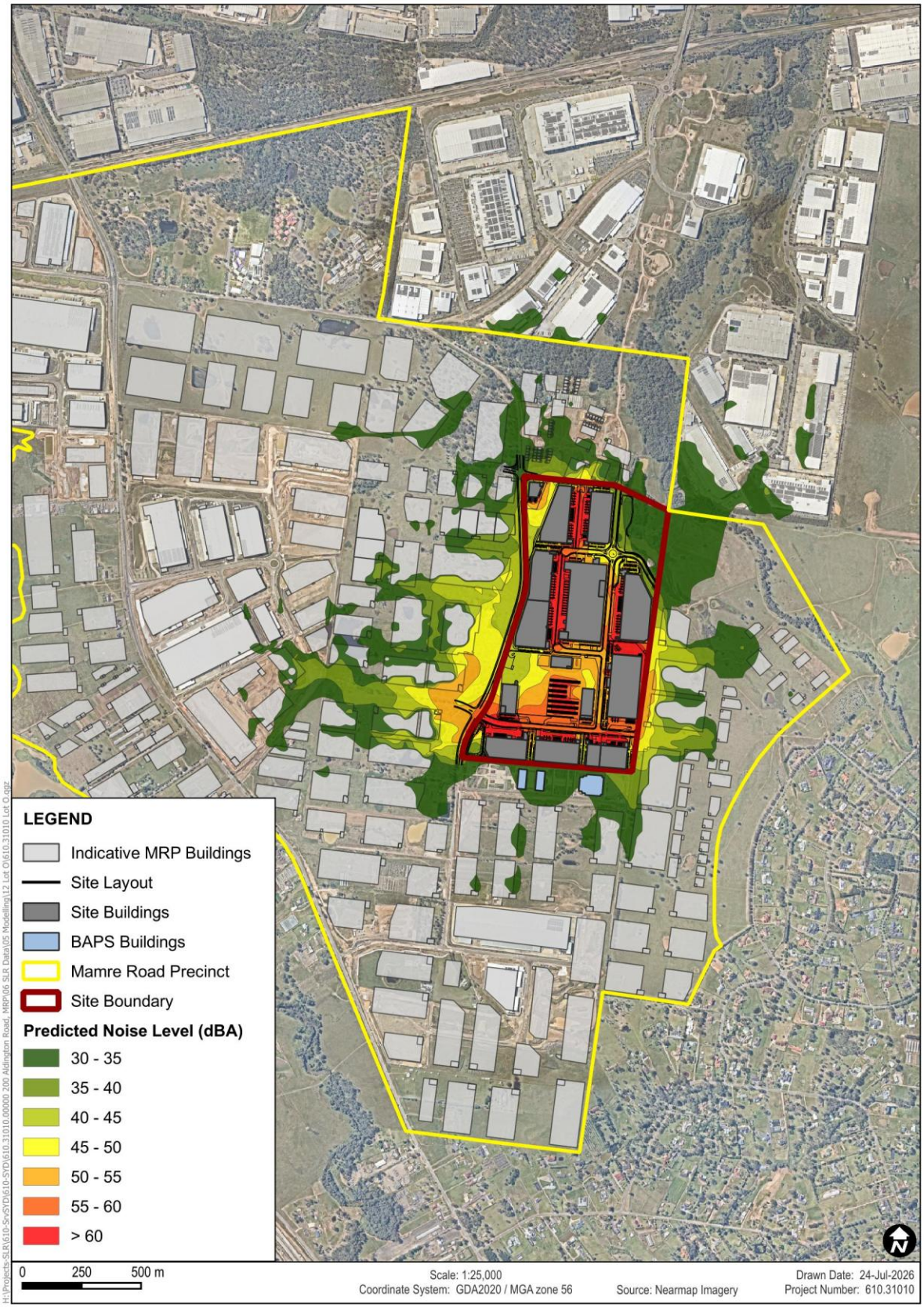
Note: Contours at 1.5m above existing ground elevation.

ARIE Master Plan – Daytime Grid Noise Map – Neutral Weather



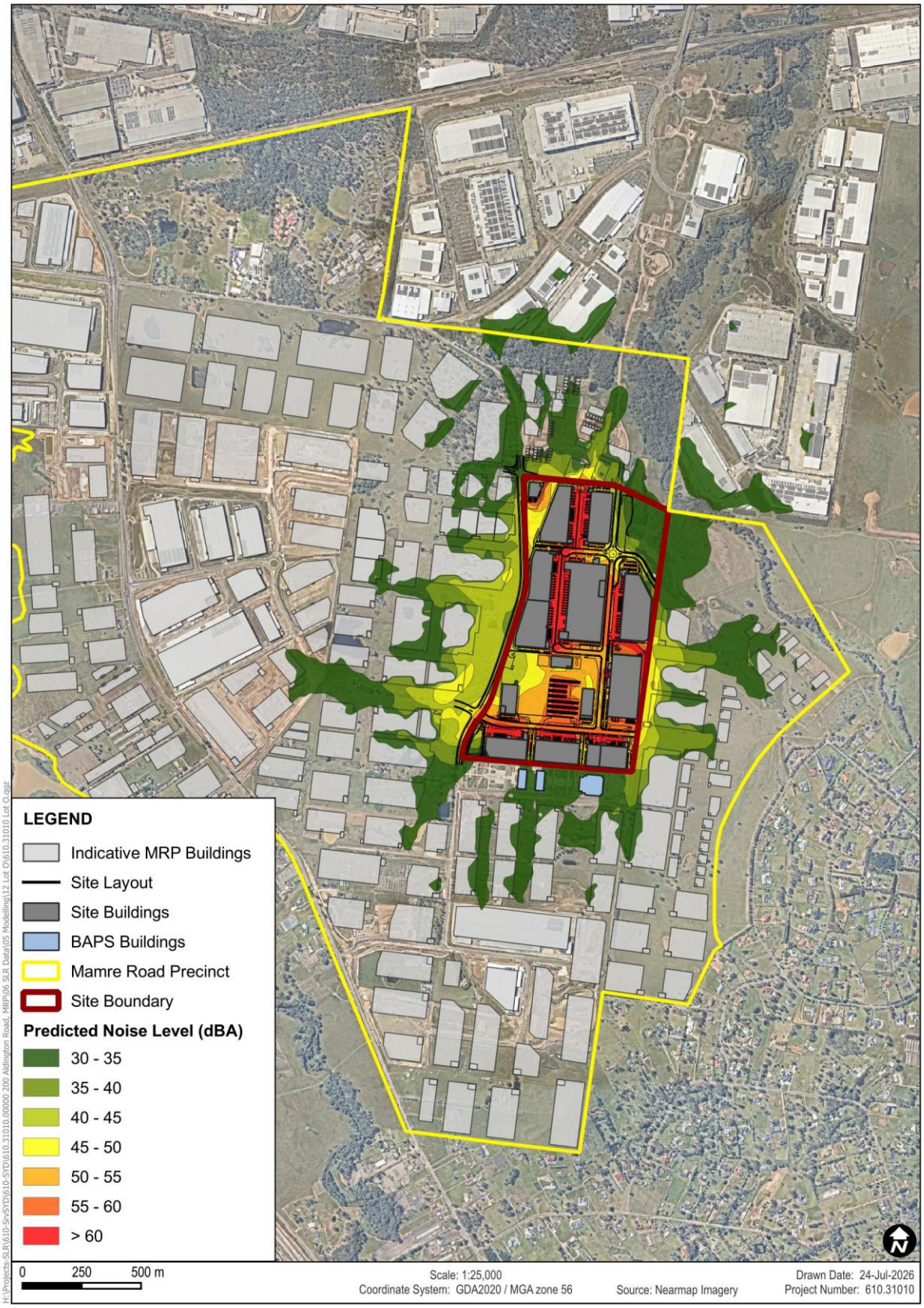
Note: Contours at 1.5m above existing ground elevation.

ARIE Master Plan – Evening Grid Noise Map – Neutral Weather



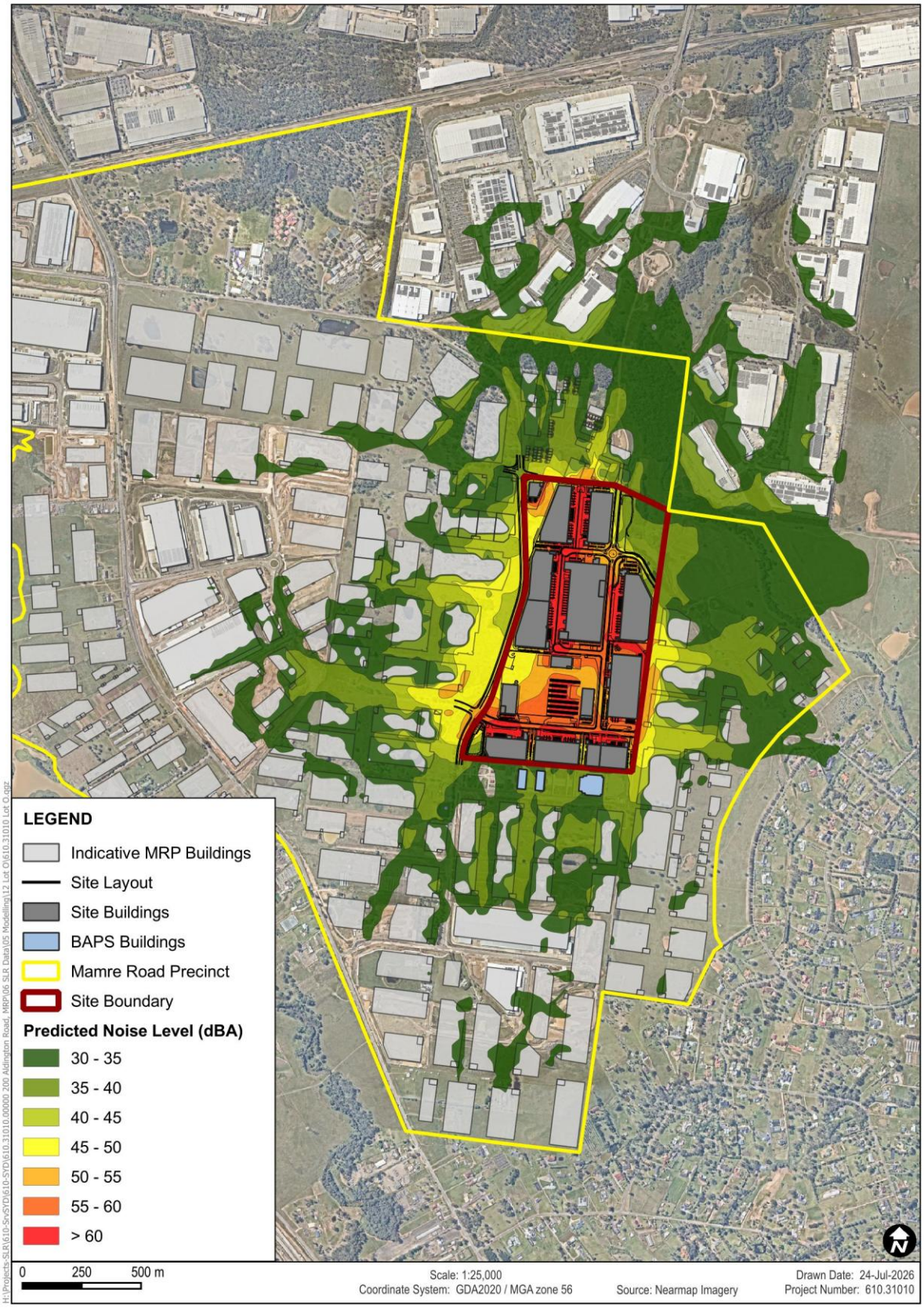
Note: Contours at 1.5m above existing ground elevation.

ARIE Master Plan – Night-time Grid Noise Map – Neutral Weather

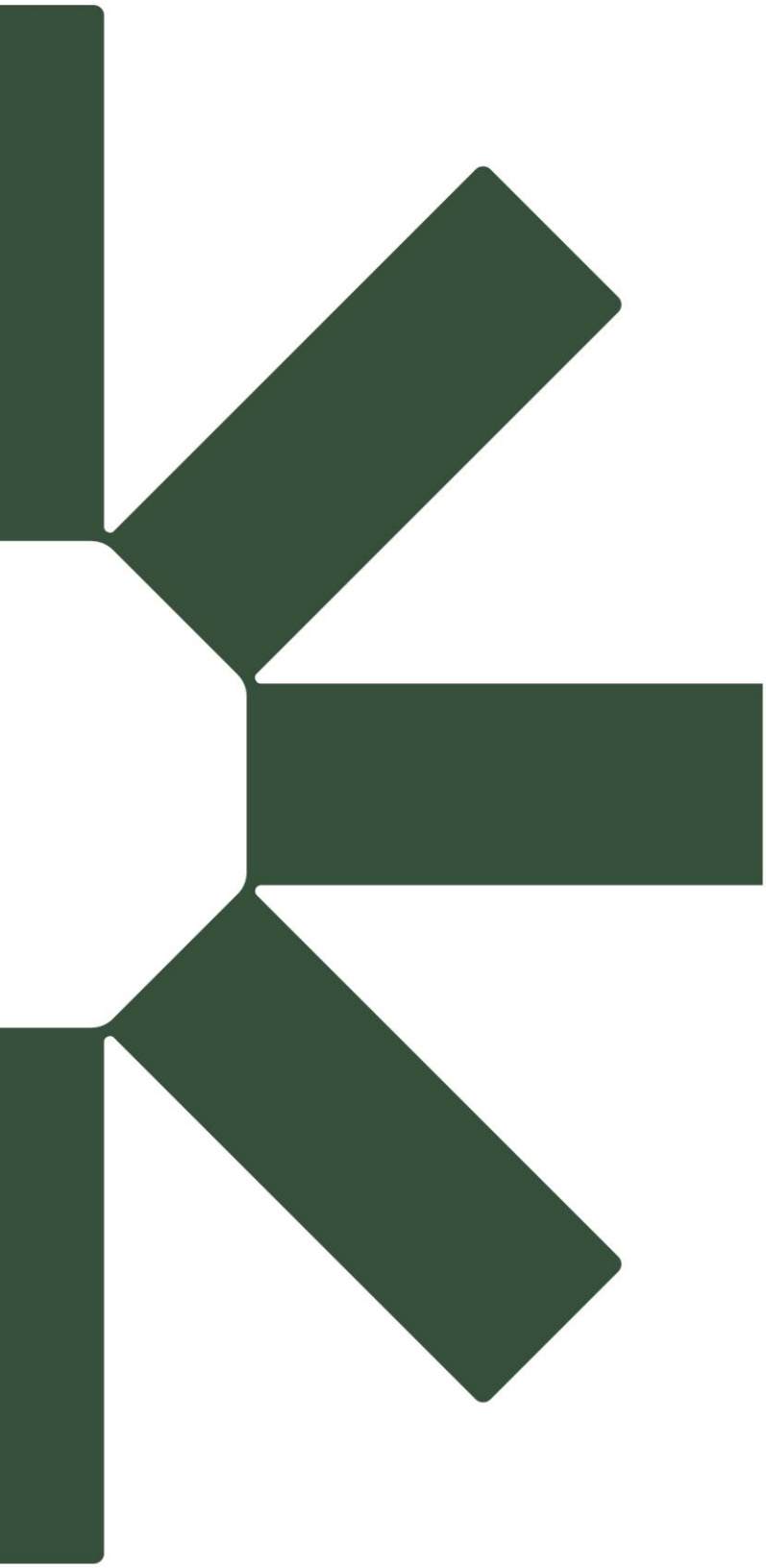


Note: Contours at 1.5m above existing ground elevation.

ARIE Master Plan – Night-time Grid Noise Map – Noise Enhancing Weather



Note: Contours at 1.5m above existing ground elevation.



Making Sustainability Happen