



Vipac Engineers and Scientists Limited
Level 2, 146 Leichhardt Street, Spring Hill, QLD 4000 Australia
PO Box 47, Spring Hill, Qld, 4000 Australia
t. +61 7 3377 0400 | e. brisbane@vipac.com.au
w. www.vipac.com.au | A.B.N. 33 005 453 627 | A.C.N. 005 453 627

Charter Hall

Charter Hall - Lot 105 Flagstone Estate - Acoustics

Noise Impact Assessment

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Prepared For:		Prepared By:	
Charter Hall The Annex, Level 3/275 George St, 275 George Street Brisbane, Queensland, 4001, Australia Contact: Angus MacDonald Tel: 07 3228 2043		Vipac Engineers and Scientists Limited Level 2, 146 Leichhardt Street, Spring Hill, QLD 4000 Australia Tel: +61 7 3377 0400	
Author:	Matthew Leo	Project Engineer	
	24 Apr 2026		
Reviewer:	Patrick Drake	Senior Acoustic Consultant	
	24 Apr 2026		
Issued By:	Matthew Leo	Project Engineer	
	24 Apr 2026		
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Executive Summary

This Noise Impact Assessment has been prepared on behalf of CH Hydrangea Pty Ltd (Applicant) in support of a development application over land at Enterprise Drive, North Maclean QLD 4280, described as Lot 1 on SP352820. The PDA Development Application seeks approval for a Development Permit for Reconfiguring a Lot (1 into 2 lots) and a Material Change of Use for a Warehouse, Low Impact Industry, and Medium Impact Industry.

The proposed development comprises a speculative warehouse and/or industrial facility intended to operate 24 hours per day, 7 days per week. The assessment considers the potential noise emissions associated with the proposed operations and their impact on surrounding sensitive receptors.

Based on the adopted assessment criteria, predicted noise levels from the development have been evaluated at the nearest residential receptor locations. The results indicate that noise emissions are expected to comply with the relevant criteria during all time periods. Compliance is predicted to be achieved with the implementation of standard operational and noise management measures outlined in this report.

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1 Introduction

This Noise Impact Assessment has been prepared on behalf of CH Hydrangea Pty Ltd (Applicant) in support of a development application over land at Enterprise Drive, North Maclean QLD 4280 and described Lot 1 on SP352820 (site). This PDA Development Application seeks approval for the following aspects of development:

- Development Permit for Reconfiguring a lot – 1 into 2 lots, plus access easement.
- Development Permit for a Material Change of Use for a Warehouse, Low impact industry, and medium impact industry.

The proposed development seeks to facilitate the establishment of a speculative warehouse and/or industrial facility that will operate 24 hours a day, 7 days a week, and will be located on Proposed Lot 105.

The assessment consists of the following:

- Description of the project location and the surrounding area,
- Description of proposed acceptable operations,
- Applicable noise criteria for the project,
- Predicted potential noise levels from the project at the nearest property boundaries,
- Assessment of predicted noise levels against the noise criteria, and
- Noise mitigation recommendations where required.

Results were assessed against the noise emission standards for the Protection of General Amenity from Schedule 6 of the Logan City Council Planning Scheme 2015 criteria.

2 Project Location and Surrounding Area

The proposal is to develop the site at Lot 105 for a warehouse with an approximate GFA of 17,047m² on a total site area of 32,559m². The site is in the Greater Flagstone Priority Development Area and forms part of the Endorsed North Maclean Context Plan, with land surrounding the context plan area zoned primarily rural residential. The location of the project is shown in Figure 2-1 to Figure 2-3. The surrounding area can be classified as predominantly rural in nature.



Figure 2-1: Project Location



Figure 2-2 - Site Location and Surrounding Zoning

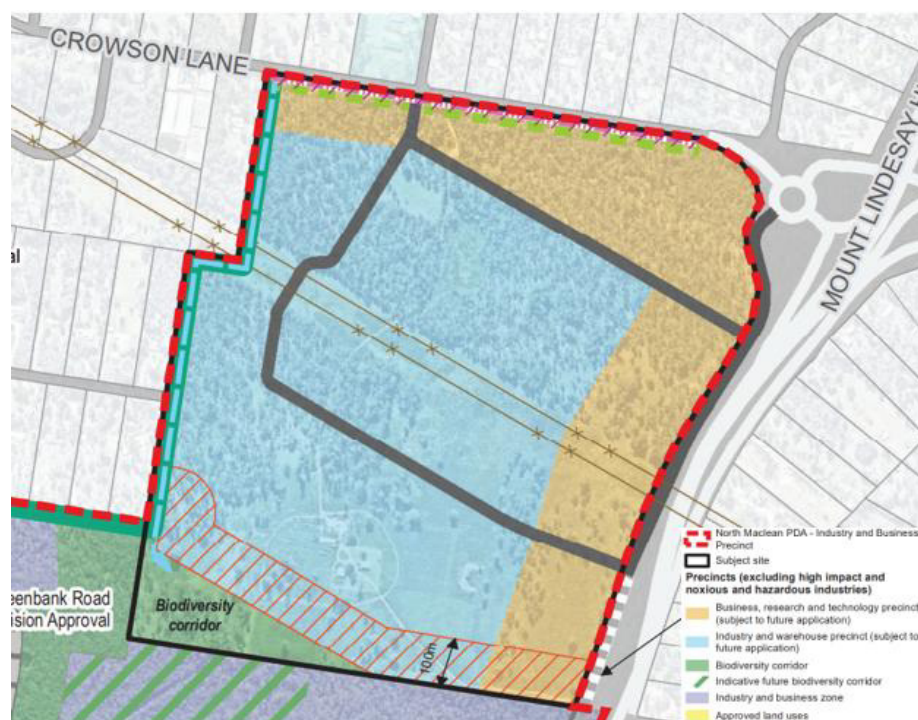


Figure 2-3 - Site Location and Proposed Precinct Zoning

3 Proposed Operations

The proposed development will consist of one warehouse with two tenancies and associated office, dock office, car park and hardstand. The facility is proposed to operate 24 hours, 7 days a week. The proposed site layout has been provided and is shown below in Figure 3-1. Figure 2-3 shows the zoning of the site and surrounding area.

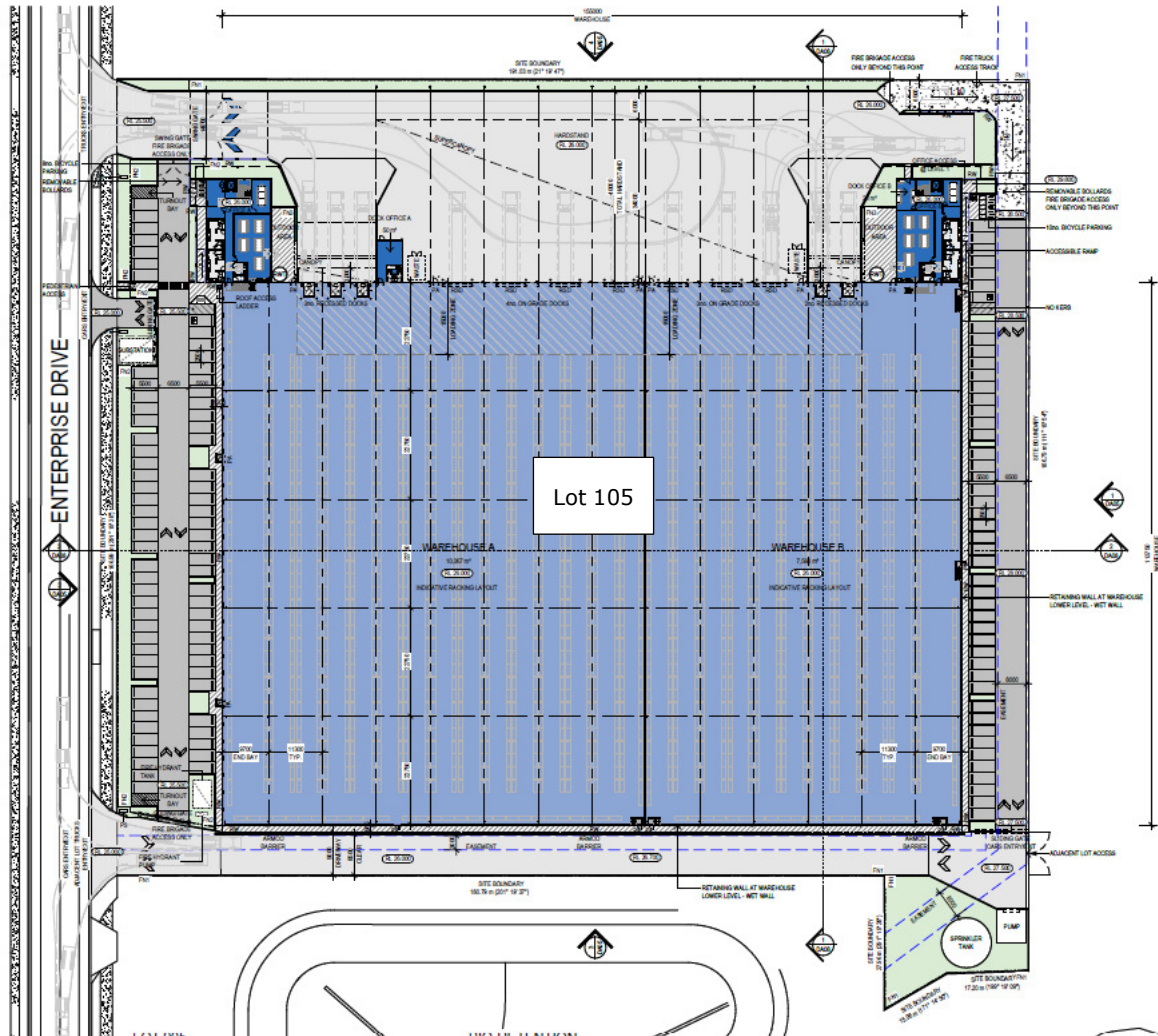


Figure 3-1: Layout of the Project Facility

4 Noise Monitoring

4.1 Previous Background Noise Monitoring Survey

Noise monitoring of the surrounding environment was captured in a preliminary assessment of the master plan estate. The noise monitoring was conducted by Acoustics RB Pty Ltd (report ref: RB/22-1390.M01 dated 13th July 2022) between the 21st and 26th of June 2022, in the location shown in Figure 4-1.



Figure 4-1: Previous Acoustics RB Noise Monitoring Location (Approx.)

The raw data from the noise monitoring was obtained from Charter Hall and processed in preparation for establishment with the appropriate criteria detailed in Section 5.2. The results processed by Vipac are shown in Table 4-1

Table 4-1: Monitoring Location Noise Levels

Dates	L _{Aeq}			L _{A10}			RBL			L _{A90}		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
21/06/2022	48	44	45	50	47	47	-	33	28	40	37	40
22/06/2022	48	45	45	51	48	47	36	33	29	42	37	41
23/06/2022	50	45	45	52	48	47	35	35	28	42	37	40
24/06/2022	49	50	-	51	53	-	37	-	-	43	45	-
Total	49	46	45	51	49	47	36	33	28	42	41	40

5 Criteria

5.1 EDQ

It is acknowledged that EDQ does not stipulate a specific noise criterion. In absence of this, this report will assess the proposed development against the criteria stated for the local government area the site is situated in – Logan City Council.

5.2 Logan City Council Planning Scheme

Schedule SC6.2.3 'Environmental Management' in the Logan City Council Planning Scheme 2015 stipulates noise emission standards for the protection of residential and general amenity. Table 3.2.1.1 – Noise emission standards for the protection of residential amenity stipulates the applicable criteria for the development and has been reproduced in Table 5-1. Table 3.2.1.2 – Noise emission standards for the protection of general amenity has been reproduced in Table 5-2.

Table 5-1: Noise Emission Standards for the Protection of Residential Amenity

Noise level at the boundary of premises			
Noise type	Time period	Monday to Saturday	Sunday and public holidays
Non-steady sound*	Day 7:00am – 6:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Evening 6:00pm to 10:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Night 10:00 – 7:00am	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 0 \text{ dB(A)}$ and $L_{Amax} \leq 60\text{dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 0 \text{ dB(A)}$ and $L_{Amax} \leq 60\text{dB(A)}$
Continuous noise*	Anytime	$L_{A90,T} \text{ plus } 0 \text{ dB(A)}$	$L_{A90,T} \text{ plus } 0 \text{ dB(A)}$

*As defined in AS1055.1 – 1997 Acoustics – Description and measurement of environmental noise.

Note – Adjustments for tonality and impulsiveness to be included in accordance with AS1055.1 – 1997 Acoustics – Description and measurement of environmental noise.

Table 5-2: Noise Emission Standards for the Protection of General Amenity

Noise level at the boundary of premises			
Noise type	Time period	Monday to Saturday	Sunday and public holidays
Non-steady sound*	Day 7:00am – 6:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 10 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Evening 6:00pm to 10:00pm	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 10 \text{ dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$
	Night 10:00 – 7:00am	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$ and $L_{Amax} \leq 80\text{dB(A)}$	$L_{Aeq,adj,T} \leq L_{A90} \text{ plus } 5 \text{ dB(A)}$ and $L_{Amax} \leq 60\text{dB(A)}$
Continuous noise*	Anytime	$L_{A90,T} \text{ plus } 5 \text{ dB(A)}$	$L_{A90,T} \text{ plus } 5 \text{ dB(A)}$

*As defined in AS1055.1 – 1997 Acoustics – Description and measurement of environmental noise.

Note – Adjustments for tonality and impulsiveness to be included in accordance with AS1055.1 – 1997 Acoustics – Description and measurement of environmental noise.

Given the closest receptors are in residentially zoned properties, if the residential criteria can be achieved at these receptors, then all other receptors (residential or otherwise) are predicted to comply with the residential **and** general amenity criteria.

The noise levels from Table 4-1 have been used to determine the project noise criteria which has been tabulated in Table 5-3.

Table 5-3: LCC Project Noise Criteria

Noise Type	Time period	Monday to Sunday inc. Public Holidays L_{Aeq} dB(A) *
Non-steady sound	Day 7:00am – 6:00pm	47 dB(A)
	Evening 6:00pm to 10:00pm	46 dB(A)
	Night 10:00 – 7:00am	40 dB(A) and $L_{Amax} \leq 60$ dB(A)
Continuous noise	Day 7:00am – 6:00pm	42 dB(A)
	Evening 6:00pm to 10:00pm	41 dB(A)
	Night 10:00 – 7:00am	40 dB(A)

*The criteria for residential amenity is the same for Monday-Saturday and Sundays including public holidays.

6 Noise Level Predictions

6.1 Noise Sensitive Receptors

This assessment will focus on the nearest sensitive receptors outlined below and shown in Figure 6-1. The LCC Planning Scheme Policy requires demonstration of compliance at the boundary of the premises as per Table 5-3. This noise assessment will present noise emissions at the boundary of the closest residential premises below.

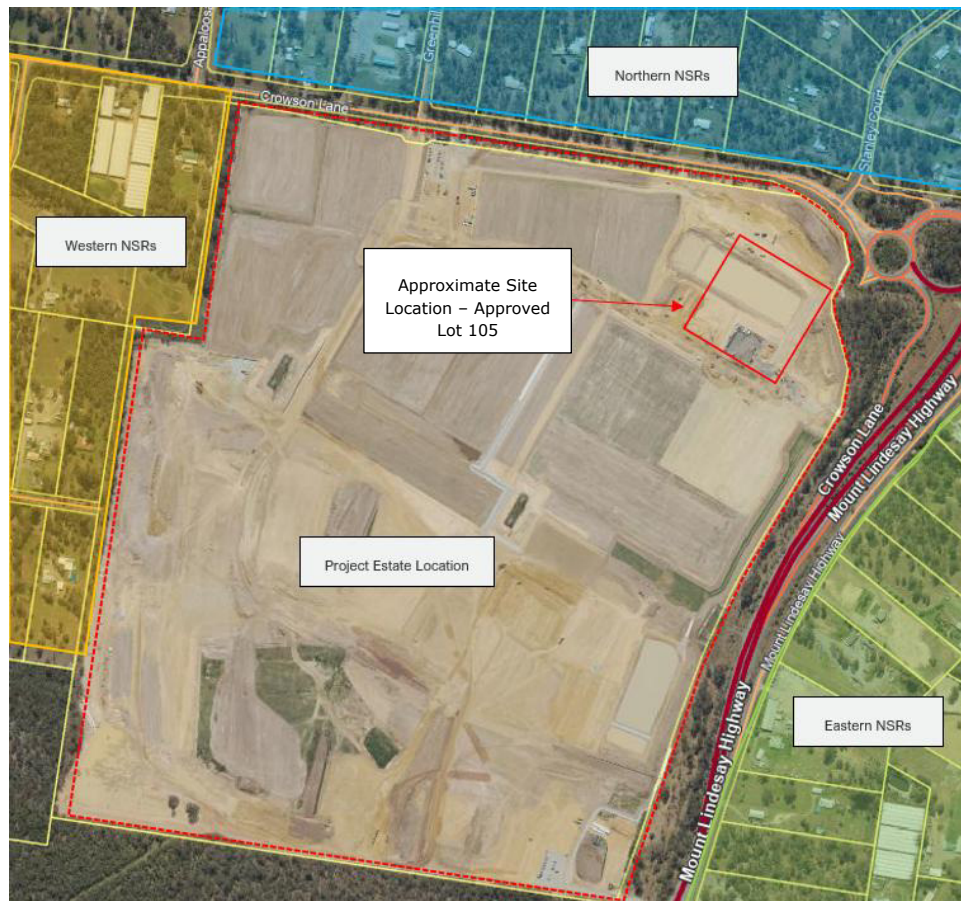


Figure 6-1: Noise Sensitive Receptors

Eastern NSRs:

- 4524-4652 Mount Lindsay Highway.

Northern NSRs:

- 1-23 Stanley Court.
- 61-109 Crowson Lane.

Western NSRs:

- 142-152 Rosina Road.

6.2 Methodology and Assumptions

Noise modelling has been undertaken using the SoundPLAN 8.2 computational noise modelling software package. Vipac have undertaken numerous noise modelling and impact assessments previously using SoundPLAN for a range of projects, including infrastructure developments and industrial projects.

ISO 9613 has been used as the calculation methodology within the SoundPLAN noise model. ISO 9613 is an extensively used methodology around the world since it was published in 1996. Using this methodology within computer based noise modelling programs allows for precise calculations accounted for multiple sound transmission paths, reflections, screening/shielding, etc. Weather conditions which promote noise propagation (i.e. source to receptor wind directions)

from part of the ISO 9613 methodology. Source to receptor winds however will not always occur, therefore prediction noise emissions during these conditions can be considered a worst case meteorological scenario.

6.2.1 Reference Information

Design drawings and information for the proposed facility were provided to Vipac for this assessment. The following drawings and specifications were used for the noise impact assessment:

- 'Site & Ground Floor Plan – Drawing No. DA02', provided by Watson Young received 16/04/2026,
- Design Levels TIN provided by Charter Hall received 21/04/2026,
- '250604 – Bulk Earthworks Surface – DWG' site elevation data provided by Northrop on 06/05/2025, and
- Schedule 6 of the Logan City Council Planning Scheme 2015 (Version 9.1).

6.2.2 Noise Sources

Proposed equipment information for the site has been assumed based on the anticipated use of the site (i.e. warehousing, low or medium impact industry). Noise levels from similar equipment associated the proposed operations on site have been sourced from previous Vipac studies (unless stated otherwise) and were predicted at the NSR locations detailed in section 6.1. Noise sources are shown below in Table 6-1, their locations are shown in Figure 6-2, with detailed modelling assumptions provided in Section 6.2.3.

Table 6-1: Equipment Sound Pressure Levels

Noise Source	Sound Power Level (SWL) L _w dB(A) L _{Aeq}	Sound Power Level (SWL) L _w dB(A) L _{Max}
Passenger Vehicle Pass By	70 (Leq 30 dB(A) per meter @ 10km/hr)	67
Passenger Vehicle Ignition	87	90
Passenger Vehicle Door Close ¹	92	99
Heavy Vehicle Passby	109 (Leq 69 dB(A) per meter @ 10km/hr)	89
Heavy Vehicle Reverse Beeping ^{1,2}	107	112
Electric forklift (loading/unloading outside on loading dock)	90	94
Electric forklift (loading/unloading inside warehouse)		
Welding Converter (inside warehouse)	98	102
Rattle Gun (inside warehouse)	106	112
Angle Grinder (inside warehouse)	104	109
Air Compressor (inside warehouse)	94	98
Table Saw (hose cutting) (inside warehouse)	91	94

¹ Includes 2 dB(A) adjustment to account for impulsiveness characteristics in accordance with AS1055.

² Includes 5 dB(A) adjustment to account for tonality characteristics

6.2.3 Modelling Assumptions

For vehicle/external noise, the following information has been used in the modelling:

- Source locations are detailed in Figure 6-2.
- All vehicle generation for the site has been based on the traffic generation trips detailed in the RTA 'Guide to Traffic Generating Developments' for Warehouse usage, as shown in Table 6-2.
 - This generation rate is consistent with the rates used in the Service Road Assessment report for the estate, produced by Bitzios Consulting (report ref: P5949.002L) dated 15th of February 2023 and the Traffic Impact Assessment report by Bitzios Consulting (report ref: P5708.001R) dated 15th August 2023.
- All movements have been based on 'Daily Vehicle Trips', with the assumption the rate accounts for 24 hours of operation.
 - Considering the scale of the proposed development it is expected that nighttime operation after 10pm will be less than the day and evening periods. Notwithstanding, heavy vehicle movements during the night periods have been based on the 'Daily Vehicle Trips' traffic generation rates.

Table 6-2: Site Vehicle Generation – Daily Vehicle Trips

Land Use	Traffic Generation Rates
	Daily Vehicle Trips
Warehouses	4 trips per 100m ² GFA

- For all movements:
 - The total GFA of the Warehouse is 17,047m²
 - This equates to approximately 681 vehicle movements per day.
 - It is assumed approximately 33% of the total vehicle movements will be heavy vehicles as per the Bitzios Consulting report.
 - This equates to approximately 225 heavy vehicle movements per day, or approximately 9 movements per hour
 - heavy vehicle daily movements have been split 60%/10%/30% for day, evening, and night periods respectively
 - The remaining 67% vehicle split is attributed to light passenger vehicle movements, equating to approximately 456 movements per day.
 - Light passenger vehicle daily movements have been split 60%/10%/30% for day, evening, and night periods respectively on the assumption the majority of movements will be driven by staff arriving and leaving in the day and night (i.e. before 7am) periods.
- Heavy vehicle and passenger vehicle pass bys have been modelled as line noise sources at 2m and 0.5m above ground respectively.
- Truck reversing beepers have been modelled as point sources at 2m above ground.
- Heavy vehicle movements are inclusive of vehicles accessing the site for waste collection and sweep trucks for cleaning.
- Forklift operations are primarily expected to occur internally, but also occasionally externally as the loading and unloading of vehicles is conducted.
 - External Forklift usage associated with loading/unloading product, as a worst case, is assumed to occur for each heavy vehicle movement.
 - The forklift is assumed to manoeuvre in and out of the warehouse while doing so.
 - The model accounts for an approximately 50/50 inside/outside split of time for the forklift unloading/loading a vehicle.
 - Loading/unloading is assumed to take approximately 5 minutes for each truck.

- All internal noise sources have been assumed to occur for 50% of the time during the day and evening periods and 25% of the time during the night period.
- Mechanical plant is anticipated to operate 24/7.
- All vehicle movements were assumed to travel at 20km/h.
- Noise level predictions have been made at 4.2m above ground level.

For all internal warehouse noise, the following information has been used in order to model a conservative operation assumption:

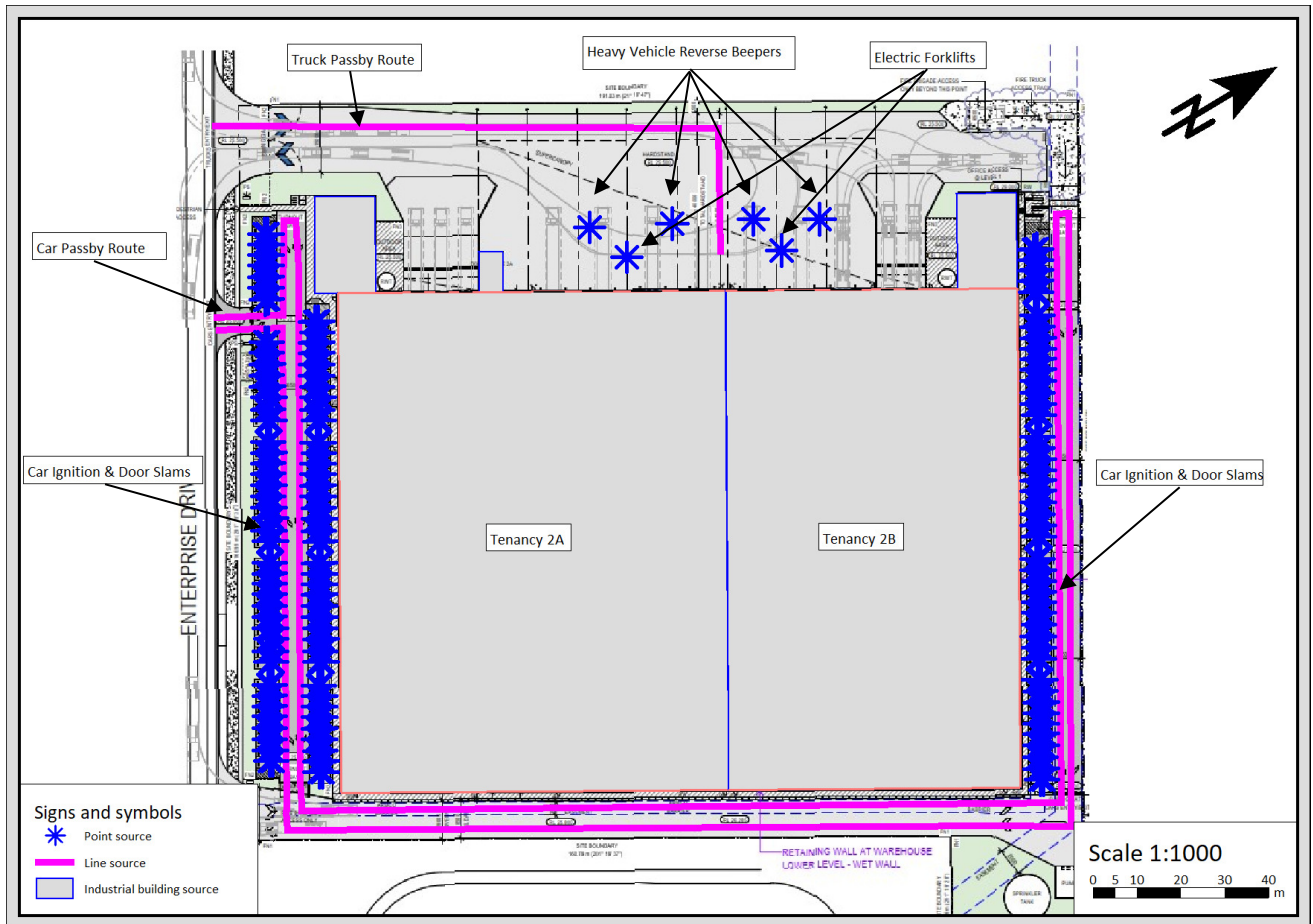
- Roof/Ceiling Material: It is assumed the warehouse construction and roof will be sheet metal, assumed to have a BMT (base metal thickness) of 0.42mm, which provides an approximate R_w rating of 18 (prediction shown in Appendix C).
- Wall Material: Vipac have assumed a standard concrete tilt panel wall construction up to 2.4m, with standard sheet metal façade to the roof with no insulation. For the purposes of a conservative assessment, all facades and roof has been modelled as sheet metal, providing an approximate R_w rating of 18 (prediction shown in Appendix C).
- A total of 20 electric forklifts are assumed to be used within the warehouse. All 20 have been dispersed evenly throughout the warehouse.
 - Forklift noise sources have been modelled as a point source at 1.0m above ground.
- Floor: Concrete slab.
- The internal warehouse noise is a sum of all noise sources inside the entire area contributing to one diffusive noise environment.
- Roller doors have been modelled as open.
- Roller doors for the recessed loading dock area dimensions are 3m wide and 3.5m high.
- Remaining roller doors are 7m wide and 5.5m high.
- Building height is modelled to be approximately 14m.

Table 6-3 summarises the number of movements/activity assumptions.

Table 6-3: Movement/Activity Assumptions

Noise Source	Assumed events per D/E/N period or % per hour
	EDQ/LCC
Passenger Vehicle Pass By	274/46/137
Passenger Vehicle Ignition	
Passenger Vehicle Door Close (2 events per movement)	548/92/274
Heavy Vehicle Passby	135/23/68
Heavy Vehicle Reverse Beeping	30 seconds per heavy vehicle movement.
Electric forklift (loading/unloading outside on loading dock)	5 minutes per heavy vehicle movement.
Electric forklift (loading/unloading inside warehouse)	50% per hour
Welding Converter (inside warehouse)	
Rattle Gun (inside warehouse)	
Angle Grinder (inside warehouse)	
Air Compressor (inside warehouse)	
Table Saw (hose cutting) (inside warehouse)	

It is noted the above assumptions of events per period/percentage of time is considered conservative and, in reality, is likely to be less frequent. This provides for a worst-case assessment.



7 Results

7.1 Predicted Noise Levels at NSRs

Worst case predicted cumulative noise emissions from the project have been compared against the noise criteria outlined in Section 5. The assessment has calculated cumulative noise emissions **to the nearest property boundary**. The predicted noise levels at the property boundary are shown in Table 7-1. Noise contour maps showing predicted noise level contour lines across the development have been included in Appendix A. A noise source contribution sample at the most exposed NSR has also been included in Appendix B.

Table 7-1: Predicted LAeq Noise Emissions

NSR	Predicted Noise Levels, LAeq			
	Day	Evening	Night	
Criteria	47dB(A)	46dB(A)	40dB(A)	60dB(A) L _{AMax}
1-23 Stanley Court	36	36	33	40
2-10 Stanley Court	39	38	36	47
51-59 Crowson Lane	42	40	40	51
61-69 Crowson Lane	40	39	38	49
71-79 Crowson Lane	39	37	37	48
81-89 Crowson Lane	37	35	35	47
91-99 Crowson Lane	35	34	33	45
101-109 Crowson Lane	34	32	31	43
141-147 Rosina Road	22	21	20	29
142-148 Rosina Road	24	23	22	32
142-152 Crowson Lane	26	25	24	35
4524-4534 Mount Lindesay Highway	32	31	29	30
4536-4542 Mount Lindesay Highway	32	32	29	31
4544-4554 Mount Lindesay Highway	32	32	29	34
4556-4564 Mount Lindesay Highway	32	32	30	35
4566-4574 Mount Lindesay Highway	32	31	29	35
4576-4584 Mount Lindesay Highway	31	30	28	35
4586-4600 Mount Lindesay Highway	29	29	26	34
4602-4622 Mount Lindesay Highway	27	26	24	33
4624-4632 Mount Lindesay Highway	26	25	23	33
4634-4642 Mount Lindesay Highway	25	24	22	32
4644-4652 Mount Lindesay Highway	25	24	22	32

Noise levels are predicted to comply during all time periods without the need for acoustic mitigation.

7.2 Preliminary Mechanical Plant Noise Assessment

A reverse calculation was conducted to determine the allowable component noise source level of onsite mechanical plant prior to the inclusion of any potential acoustic treatment/screening.

The location of the mechanical equipment was assumed to be located on the nearest edge of the rooftop to the nearest receptor.

Based on the night time criteria detailed in Section 5 and assessment to the nearest site boundary, the allowable mechanical noise levels without mitigation are presented in Table 7-2.

Table 7-2: Mechanical Plant Predictions

NSR	Assumed Nearest Plant Location	Total allowable SWL from the total mechanical plant to achieve compliance, L_{eq} dB(A)
		Night
Nearest Site Boundary	Warehouse Rooftop	93

If compliance can be achieved at the assumed nearest plant location, then all other possible plant locations are expected to comply due to increased separation distance.

Acoustic treatment/screening of mechanical plant may result in higher allowable noise source levels. A detailed mechanical plant assessment should be conducted prior to the final selection of plant equipment. Compliance with the noise limits should then be checked once plant selections are finalised.

8 Recommendations

Noise generated by the proposed development has been assessed for compliance at the nearest property boundaries. The recommendations detailed below specify the treatment requirements for best practice management measures to ensure the potential for nuisance is minimised.

8.1 Mechanical Plant Noise

Because detailed plant selections are not available at this stage, it is not possible to carry out a detailed examination of the noise control measures that may be required to achieve the noise targets for mechanical plant.

Plant may need to be acoustically treated to achieve the criteria detailed in Section 5 to prevent noise emissions from adversely impacting the surrounding properties. This may include selecting the quietest plant possible, or treating the plant equipment with enclosures, barriers, duct lining, silencers, etc.

A mechanical plant noise assessment should be conducted by a suitably qualified acoustic consultant once plant selections are finalised.

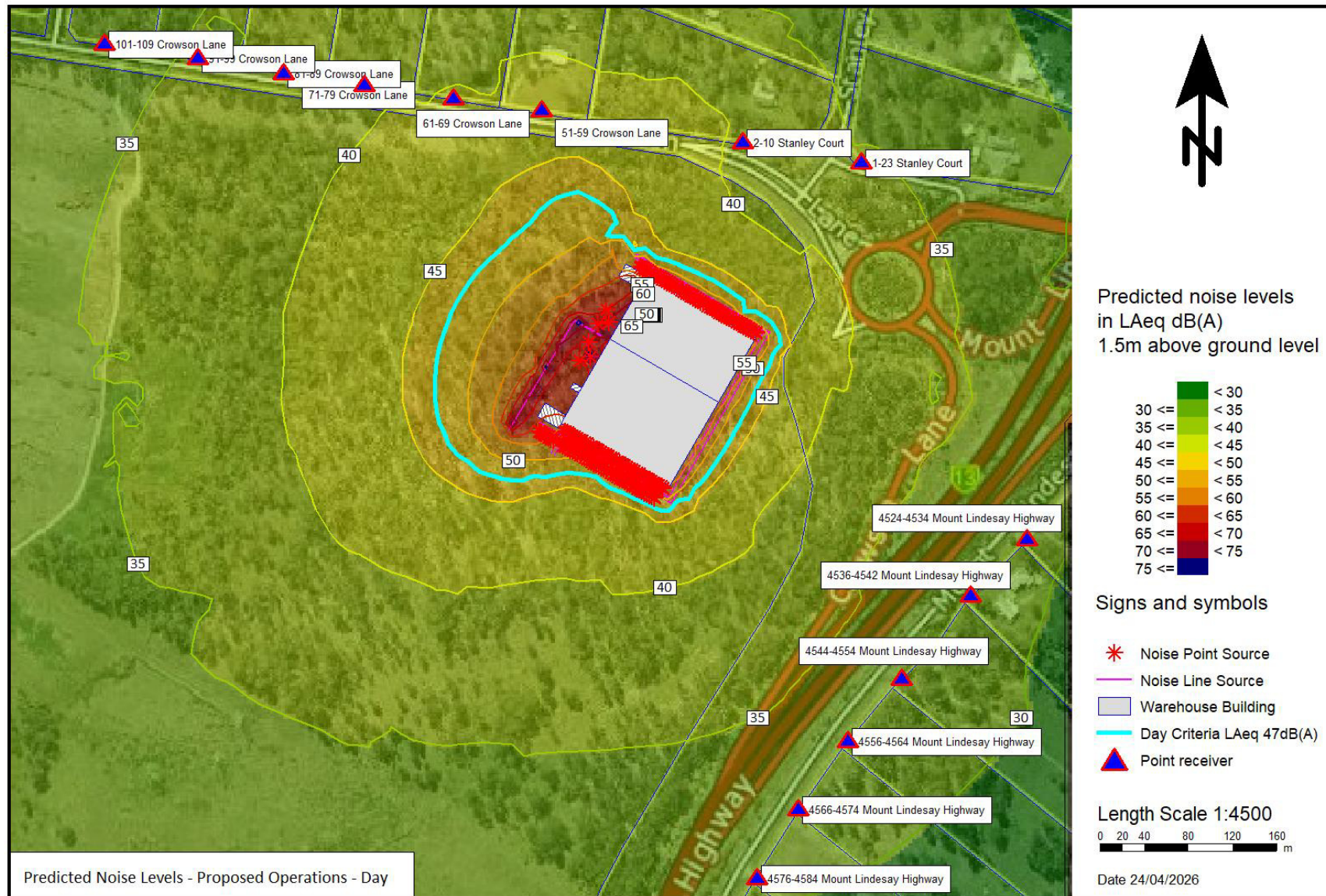
9 Conclusion

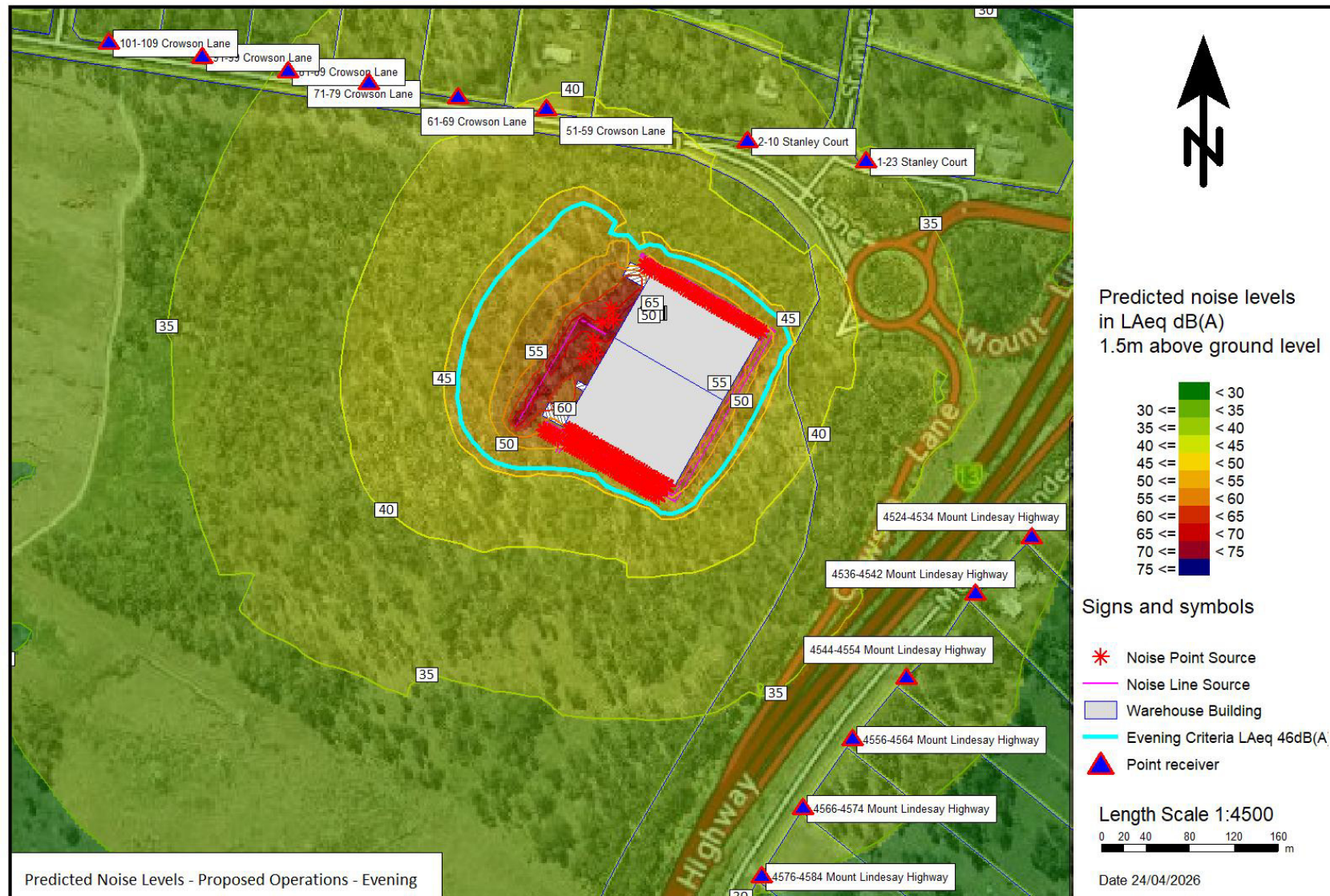
Vipac has conducted a noise impact assessment for the proposed development Lot 105 of the Flagstone Industrial Estate in North Maclean. Potential noise emissions from the development were predicted to the nearest sensitive receptor locations and compared against the noise criteria as Section 5.

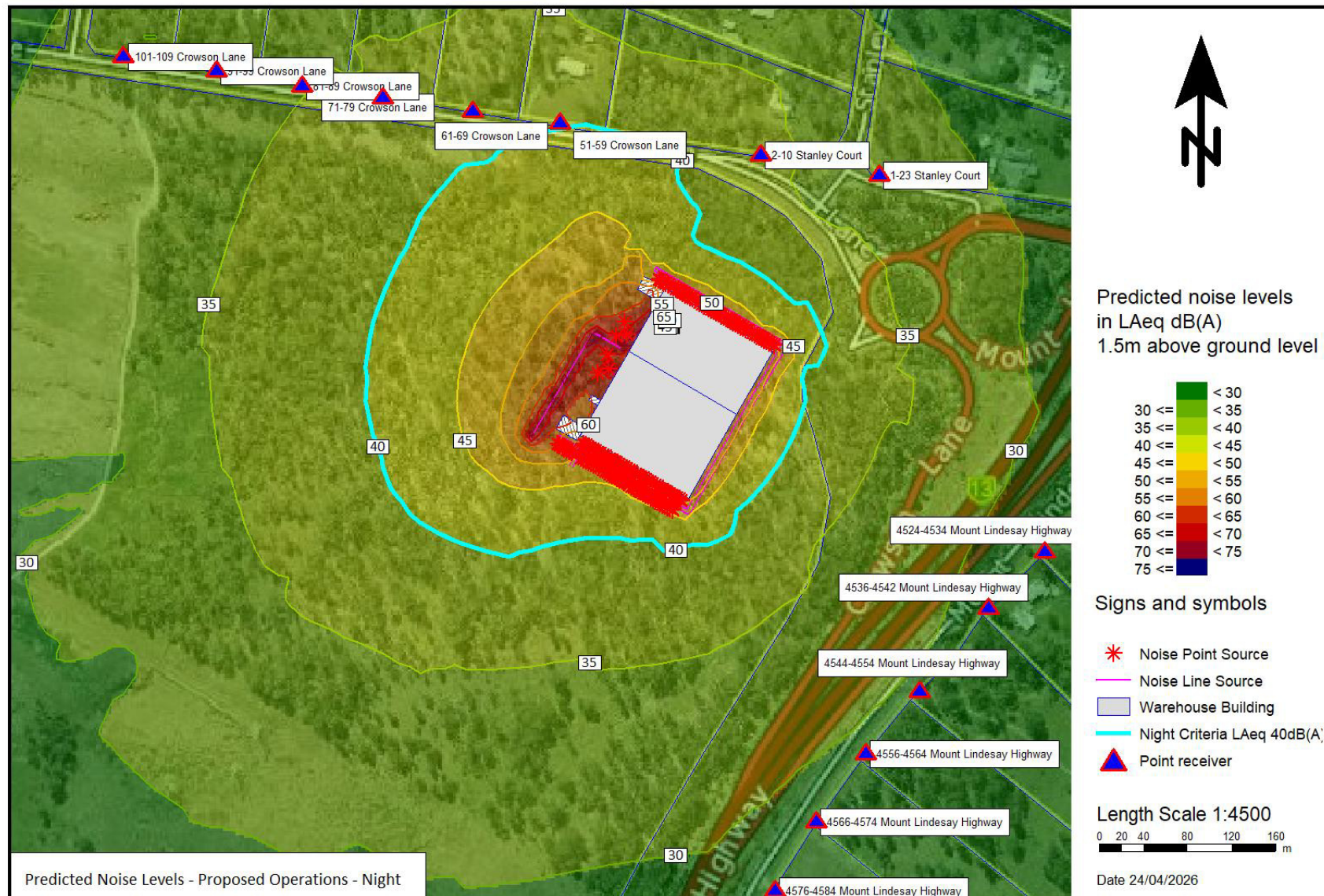
Noise levels are predicted to comply with the noise criteria with the implementation of the recommendations outlined in this report.

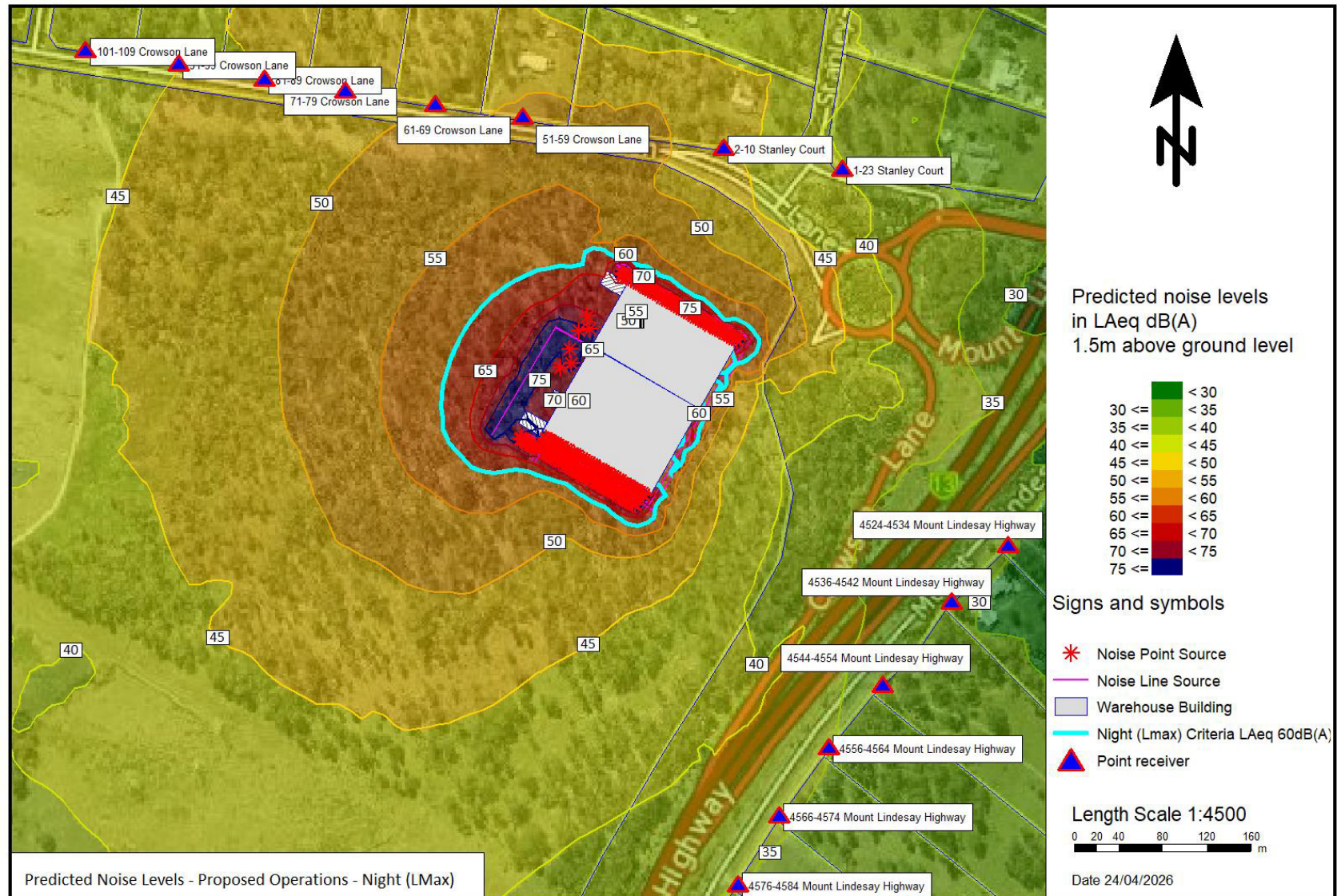


Appendix A Noise Contour Maps









Appendix B Source Contribution Sample at Most Exposed NSR

Warehouse 5/Lot 2										9
Contribution level - Lot 2 - No Mitigation - SPC - dBA										
Source	Source group	Source type	Ld dB(A)	Le dB(A)	Ln dB(A)					
Receiver 51-59 Crowson Lane	FIG F	dB(A)	Lmax,lim	dB(A)	dB(A)	Ld 42.1	dB(A)	Le 40.4	dB(A)	Ln 39.
Heavy Vehicle Passby	Default industrial noise	Line		38.9	35.5	36.8				
External Electric Forklift	Default industrial noise	Point		30.0	26.7	27.9				
Tenancy 2B-Roof 01	Default industrial noise	Area		30.2	30.2	27.1				
External Electric Forklift	Default industrial noise	Point		29.0	25.8	27.0				
Tenancy 2B-Roller Door 3	Default industrial noise	Area		29.9	29.9	26.9				
Tenancy 2A-Roof 01	Default industrial noise	Area		29.2	29.2	26.1				
Tenancy 2B-Roller Door 2	Default industrial noise	Area		29.1	29.1	26.0				
Tenancy 2B-Roller Door 1	Default industrial noise	Area		28.5	28.5	25.5				
Tenancy 2B-North Facade	Default industrial noise	Area		28.5	28.5	25.5				
Tenancy 2B-Western Facade	Default industrial noise	Area		28.1	28.1	25.1				
Tenancy 2A-Western Facade	Default industrial noise	Area		26.9	26.9	23.9				
Tenancy 2B-Recessed Door 1	Default industrial noise	Area		23.1	23.1	20.1				
Reverse Beeper	Default industrial noise	Point		16.8	13.4	14.7				
Reverse Beeper	Default industrial noise	Point		16.4	13.1	14.3				
Reverse Beeper	Default industrial noise	Point		15.9	12.5	13.7				
Reverse Beeper	Default industrial noise	Point		15.3	11.9	13.2				
Tenancy 2B-Recessed Door 2	Default industrial noise	Area		15.0	15.0	12.0				
Tenancy 2A-Roller Door 4	Default industrial noise	Area		14.8	14.8	11.8				
Tenancy 2A-Roller Door 3	Default industrial noise	Area		13.8	13.8	10.8				
Tenancy 2A-Roller Door 2	Default industrial noise	Area		13.6	13.6	10.6				
Tenancy 2A-Roller Door 1	Default industrial noise	Area		13.5	13.5	10.5				
Tenancy 2A-Southern Facade	Default industrial noise	Area		10.2	10.2	7.2				
Tenancy 2A-Recessed Door 3	Default industrial noise	Area		8.7	8.7	5.6				
Passenger Vehicle Passby	Default industrial noise	Line		7.5	4.1	5.4				
Tenancy 2B-Eastern Facade	Default industrial noise	Area		7.7	7.7	4.7				
Tenancy 2A-Recessed Door 1	Default industrial noise	Area		7.1	7.1	4.1				
Tenancy 2A-Eastern Facade	Default industrial noise	Area		7.0	7.0	4.0				
Tenancy 2A-Recessed Door 2	Default industrial noise	Area		5.7	5.7	2.7				
Car Door Closure	Default industrial noise	Point		-4.9	-13.2	-8.1				
Car Door Closure	Default industrial noise	Point		-7.5	-15.8	-10.7				
Car Door Closure	Default industrial noise	Point		-7.6	-15.8	-10.7				
Car Door Closure	Default industrial noise	Point		-7.7	-16.0	-10.9				
Car Door Closure	Default industrial noise	Point		-7.8	-16.1	-11.0				
Car Door Closure	Default industrial noise	Point		-9.4	-17.7	-12.6				
Car Door Closure	Default industrial noise	Point		-9.9	-18.2	-13.1				
Car Door Closure	Default industrial noise	Point		-10.2	-18.5	-13.4				
Car Door Closure	Default industrial noise	Point		-10.2	-18.5	-13.4				
Car Door Closure	Default industrial noise	Point		-10.4	-18.7	-13.6				
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SoundPLAN 8.2

Appendix C .4BMT Sheet Metal R_w Prediction

Sound Insulation Prediction (v9.0.20)

Program copyright Marshall Day Acoustics 2017

Margin of error is generally within $R_w \pm 3$ dB

Key No: 1709

Job Name:

Job Proj:

Date: 25/09/2023

File Name:

Initials: patricid

Notes:



R_w	18 dB
C	0 dB
Ctr	-2 dB

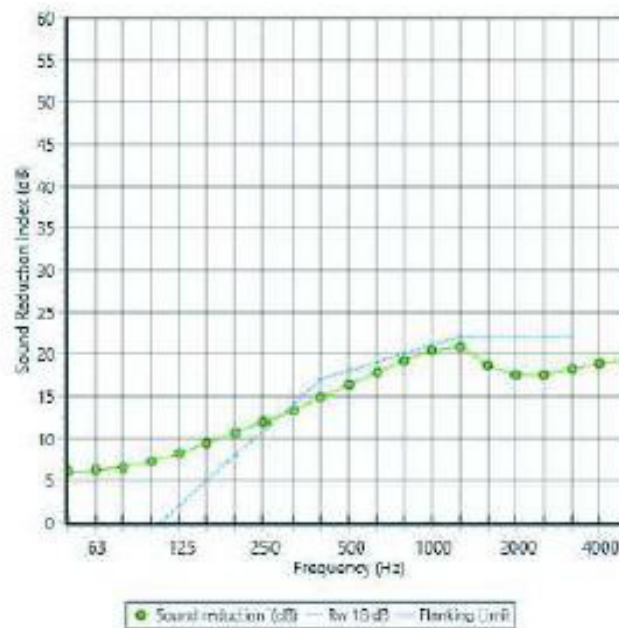
Panel Size = 2.7m x 4.0m

Partition surface mass = 0.12 kg/m²

System description

Panel 1 = 1 x 0.4 mm Custom Ob (0.55mm)

freq (Hz)	R (dB)	R (dB)
50	6	
63	6	6
80	7	
100	7	
125	8	8
160	9	
200	11	
250	12	12
315	13	
400	15	
500	16	16
630	18	
800	19	
1000	20	20
1250	21	
1600	19	
2000	18	18
2500	18	
3150	18	
4000	19	19
5000	19	



Appendix D Development Plans

