



Proposed Industrial Warehousing Estate
884-928 Mamre Road
Kemps Creek

ACOUSTIC REPORT



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1 Executive Summary

This report is in response to a request by Altis Property Partners to assess environmental noise impacts associated with the proposed industrial warehousing estate to be located at 884-928 Mamre Road, Kemps Creek. The environmental noise assessment was conducted in accordance with NSW Department of Planning and Environment's Secretary's Environmental Assessment Requirements, the Mamre Road Precinct DCP 2021 and the NSW Noise Policy for Industry. To facilitate the assessment, unattended noise monitoring was conducted in the vicinity of nearby sensitive receivers to establish the criteria for onsite activities.

The environmental noise assessment was conducted in accordance with Penrith City Council requirements and the NSW Department of Planning and Environment's Secretary's Environmental Assessment Requirements (SEARs) (Application Reference: *SSD-17647189*) which requires the following matters to be addressed:

Noise and Vibration – including:

- a quantitative noise and vibration impact assessment for construction and operation of the development, including traffic noise, undertaken by a suitably qualified person in accordance with the relevant Environment Protection Authority guidelines and including:

§ the identification of impacts associated with construction works, operational emission, and traffic generation at noise affected sensitive receivers, including the provision of operation noise contours and a detailed sleep disturbance assessment;

§ details of noise monitoring surveys, background noise levels, noise source inventory and worst-case noise emission scenarios;

§ consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area;

§ a cumulative impact assessment inclusive of impacts from other nearby existing and future developments;

§ details and analysis of the effectiveness of the proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs.

Table 1 provides a summary of the SEARs requirements and the locations within this report that they are addressed:

Table 1: SSD-17647189 SEARS requirements

Condition	Section References
§ the identification of impacts associated with construction works, operational emission, and traffic generation at noise affected sensitive receivers, including the provision of operation noise contours and a detailed sleep disturbance assessment;	Sections 5-8 detail the impacts associated with operational emission and traffic generation, including a sleep disturbance assessment Construction work noise is assessed in a separate report (ref: <i>1020168 R02D 884-928 Mamre Road Kemps Creek.docx</i>)
§ details of noise monitoring surveys, background noise levels, noise source inventory and worst-case noise emission scenarios;	Provided in Sections 2-5
§ consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area;	Accounted for in the assessment in Section 8
§ a cumulative impact assessment inclusive of impacts from other nearby existing and future developments;	Accounted for in the assessment in Section 8 in accordance with Industrial Noise Policy
§ details and analysis of the effectiveness of the proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs.	Provided in Section 9 with regards to operational noise Construction noise and vibration is assessed in a separate report (ref: <i>1020168 R02D 884-928 Mamre Road Kemps Creek CNVMP.docx</i>)

The acoustic assessment considers the cumulative impact of all stages of the proposed development to sensitive receivers in the vicinity of site and concludes that the proposed masterplan for warehouses and logistic hub is predicted to be satisfactory based on the provided recommendations. The review indicates that the current stage proposed of the master plan is considered viable with recommendations provided in Section 12 for the 24 hour operation of the site.

2 Introduction

This report is in response to a request by Altis Property Partners to assess environmental noise impacts associated with the proposed industrial warehousing estate to be located at 884-928 Mamre Road, Kemps Creek. The environmental noise assessment was conducted in accordance with Mare Road Precinct DCP requirements and the NSW Noise Policy for Industry and the NSW Department of Planning, Industry and Environment's *Secretary's Environmental Assessment Requirements* (SEARs). To facilitate the assessment, unattended noise monitoring was conducted in the vicinity of nearby sensitive receivers to establish the criteria for onsite activities.

3 Site Description

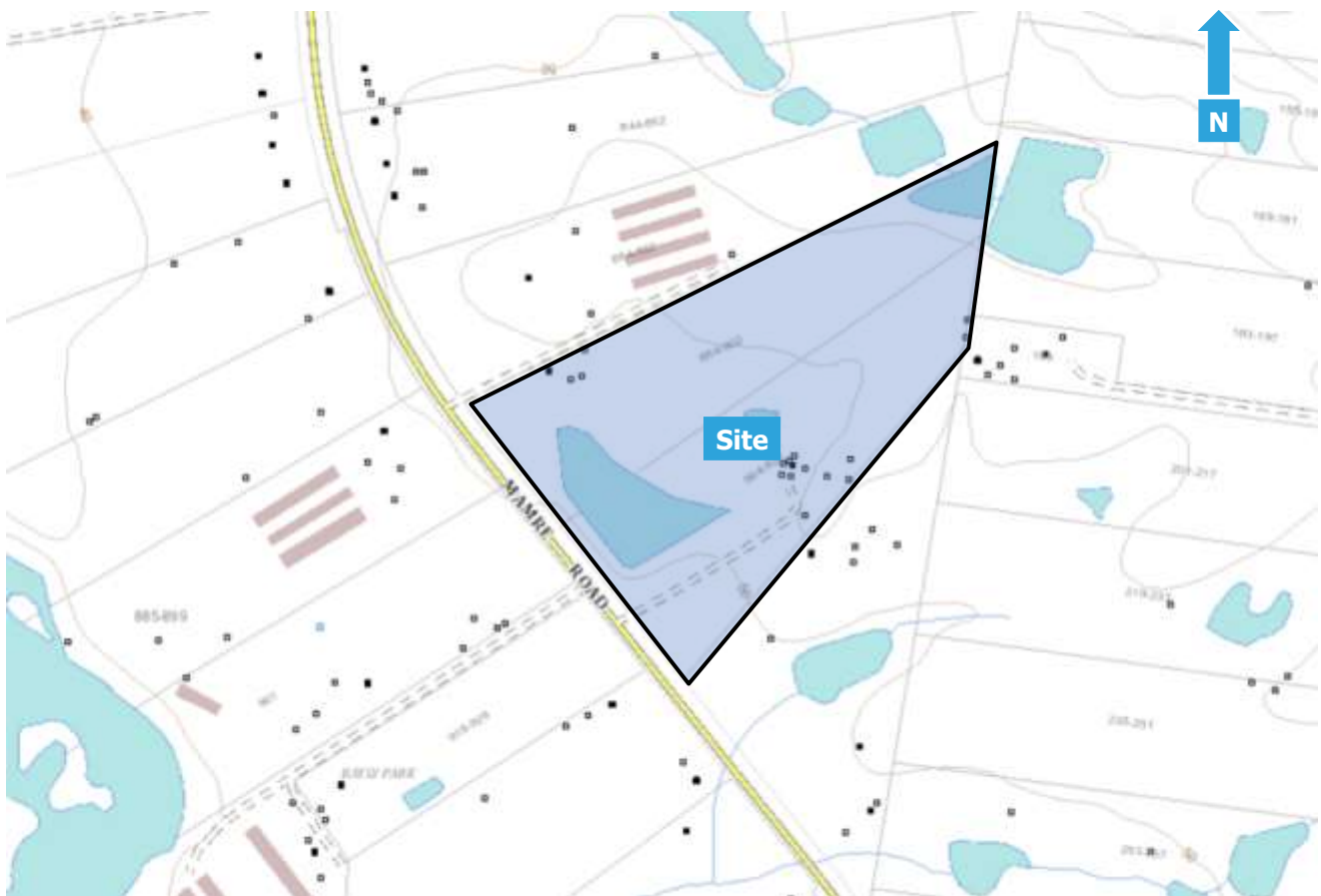
3.1 Site Location

The site is described by the following:

884-928 Mamre Road, Kemps Creek
Lots 52 & 53 on DP259135

Refer to Figure 1 for site location.

Figure 1: Site Location (Not to Scale)



A comprehensive site survey was conducted on the 30th September 2020 which identified the following:

- The site is currently located in IN1 – General Industrial as defined in the State Environmental Planning policy (Western Sydney Employment Area) 2009.
- Residential dwellings currently occupy the site and will be demolished to make way for the development.
- Mamre Road separates the site from residential dwellings and home industries to the southwest.
- Residential dwellings are located adjacent the northern, eastern and southern site boundaries.
- SSD applications have been lodged to demolish residential dwellings in the vicinity of the site and construct industrial warehousing estates including for the neighbour to the east. Construction works have also commenced on the residential dwelling to the north of the site.

3.2 Proposal

The proposal is described in the RTS report as follows:

- Demolition of existing dwelling houses and associated outbuildings;
- Bulk earthworks involving dam dewatering, cut and fill works and pad construction;
- A two-stage Torrens Title residual lot subdivision of the land under community management scheme consisting of:
 - Stage 1, comprising four (4) residue allotments; and
 - Stage 2, comprising 12 allotments, including Lot 2 to be a warehouse development. Lot 1 will be a community lot (bio-retention basin), Lot 3 will be dedicated for Mamre Road widening and Lots 5-12 will remain as residue allotments for future warehousing development (as part of separate Development Applications). Lot areas range from 1,481m² to 67,474m².
- Construction of internal public estate roads of 24m and 25.6m width and connections to existing and future local roads (including Mamre Road intersection works);
- Stormwater and drainage works including construction of onsite detention and bio-retention basins;
- Landscaping of bio retention basins and street tree planting;
- Infrastructure comprising civil works and utilities servicing;
- Construction of one warehouse and distribution centre in Proposed Lot 2 with a GFA of 39,177m²;
- Construction of retaining walls on the northern, southern and eastern boundaries;
- Construction of acoustic barriers; and
- Erection of Signage.

The current plan for the development consists of the following:

Figure 2: Site Layout

**Lot 1**

- Lot area of 5,409m²
- Lot reserved for bio-retention

Lot 2

- Lot area of 67,345m².
- Warehouse area of 40,291m² (GLA) and 39,161m² (GFA)
- Office area of 1,800m² (over 3 levels).
- Car Park with 215 car spaces.
- 22 On-grade loading docks and 7 recessed loading docks
- Access via proposed new access road linked to Mamre Road.

Lot 3

- Lot area of 1,481m²
- Land reserved for Mamre Road widening

Lot 5

- Lot area of 5,881m²
- Access via proposed new access road linked to Mamre Road.

Lot 6

- Lot area of 5,804m²
- Access via proposed new access road linked to Mamre Road.

Lot 7

- Lot area of 9,853m²
- Access via proposed new access road linked to Mamre Road.

Lot 8

- Lot area of 6,276m²
- Access via proposed new access road linked to Mamre Road.

Lot 9

- Lot area of 6,803m²
- Access via proposed new access road linked to Mamre Road.

Lot 10

- Lot area of 12,230m²
- Access via proposed new access road linked to Mamre Road.

Lot 11

- Lot area of 31,308m²
- Access via proposed new access road linked to Mamre Road.

Lot 12

- Lot area of 16,576m²
- Access via proposed new access road linked to Mamre Road.

Note if the site layouts change, further assessment may be required to determine the viability of the development site for 24-hour operation.

3.3 Acoustic Environment

The surrounding area is primarily affected by road traffic from Mamre Road with future development potential impacting sensitive receivers in the future.

4 Equipment

The following equipment was used to record noise levels:

- Rion Environmental Noise Monitors (SN# 00175548 and 00171587)
- Pulsar Model 105 Ltd Sound Calibrator (SN # 57417)

The Environmental Noise Monitors holds current NATA Laboratory Certification and were field calibrated before and after the monitoring period, with no significant drift from the reference signal recorded.

5 Receivers and Noise Monitoring Locations

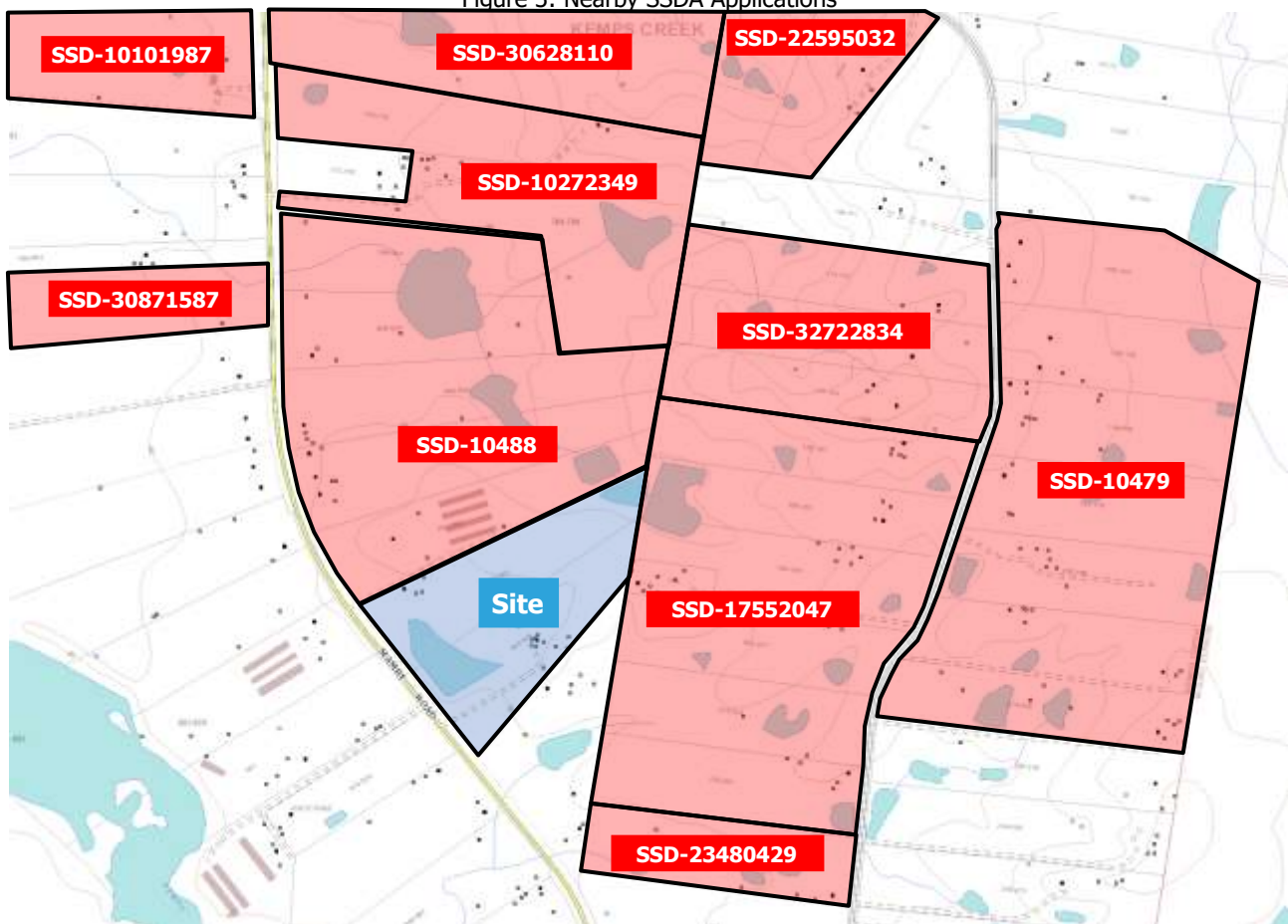
5.1 Nearby SSD Applications

To determine the location of the nearest sensitive receivers to the site, reference was made to the NSW Department of Planning, Industry and Environment's Major Projects website. The website was used to determine where land had been purchased by developers for the purpose of constructing industrial developments in the area. Based on discussion with the client and other developers, it has been determined that dwellings on this land are unoccupied, or likely to be vacated by residents prior to the completion of the development.

In particular, Altis has confirmed via correspondence with Frasers Property Industrial that only three dwellings on the site of the proposed Aldington Road Estate development (SSD-17552047) are occupied at the time of writing, with these dwellings to be vacated by June 2022 (refer to Appendices for a copy of correspondence). In addition, Altis has obtained verbal confirmation from Mirvac that dwellings located on the site for the approved Aspect Industrial Estate (SSD-10488) are currently unoccupied, with the commencement of earthworks imminent.

Therefore noise impacts from the site would be assessed to receivers located on land not subject to current SSD applications.

Figure 3: Nearby SSDA Applications



Based on the above, the nearest sensitive receivers that are currently not subject to current SSD Applications were identified and are presented in Section 5.2.

5.2 Receiver Locations

The nearest sensitive receiver locations that are not subject to State Significant Development Applications were identified as follows;

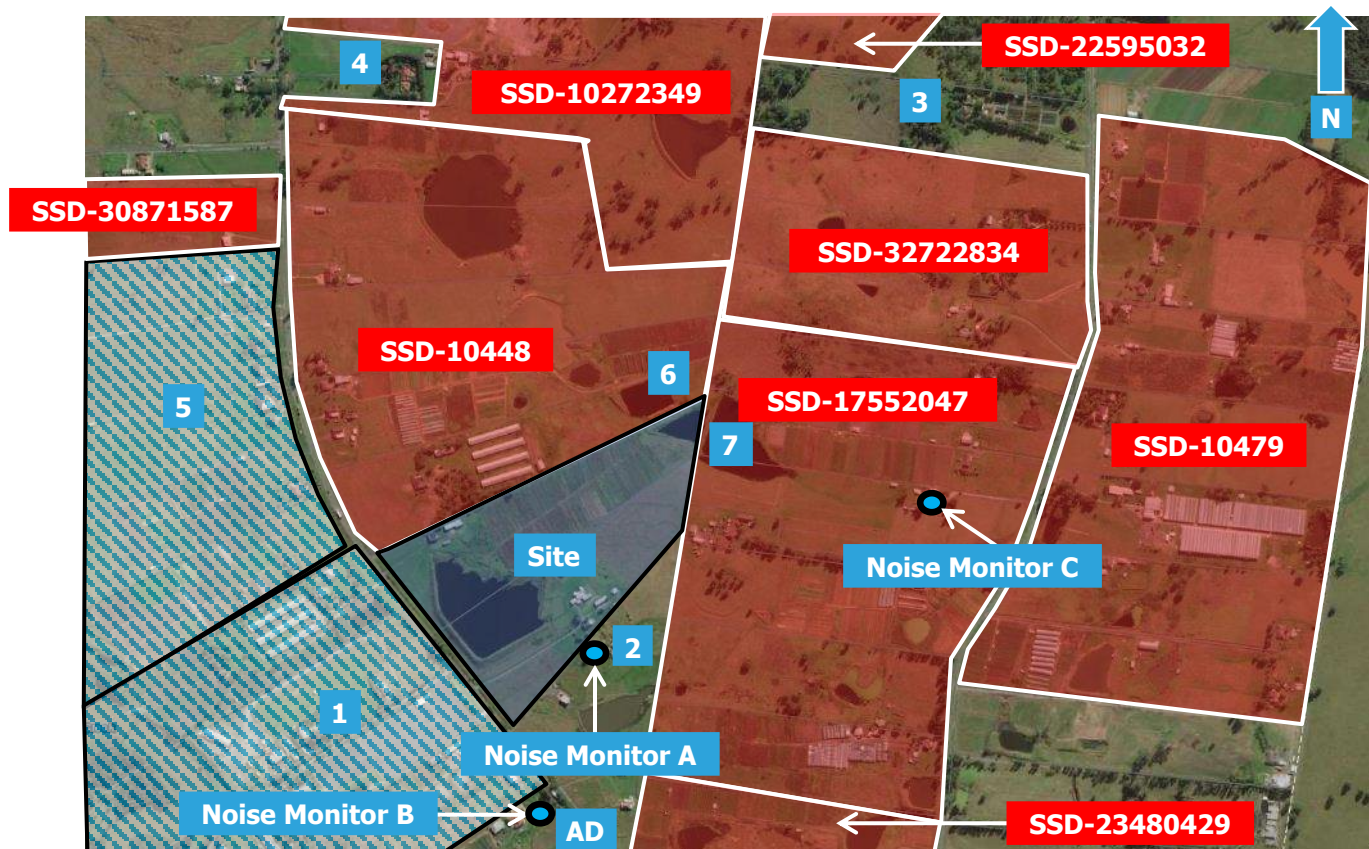
1. Mamre Road separates the site from residential dwellings at 885-899, 901, 917, 919-929 and 931 Mamre Road.
2. Single and two-storey residential dwellings are located adjacent the southern site boundary at 930-966 Mamre Road.
3. A single storey residential dwelling is located to the north east of the site at 99-111 Aldington Road.
4. A single storey residential dwelling is located to the north of the site at 772-782 Mamre Road.
5. Residential dwellings are located to the north west of the site from 819-883 Mamre Road.

In addition, the nearest industrial receivers proposed as part of State Significant Development Applications were identified:

6. A proposed industrial estate will be located adjacent the northern site boundary from 804-882 Mamre Road.
7. A proposed industrial estate will be located adjacent the western site boundary from 155-217 Aldington Road.

These locations were chosen as being representative of the nearest sensitive receivers to the proposed development. Refer to Figure 4 for these locations.

Figure 4: Receiver and noise monitoring locations



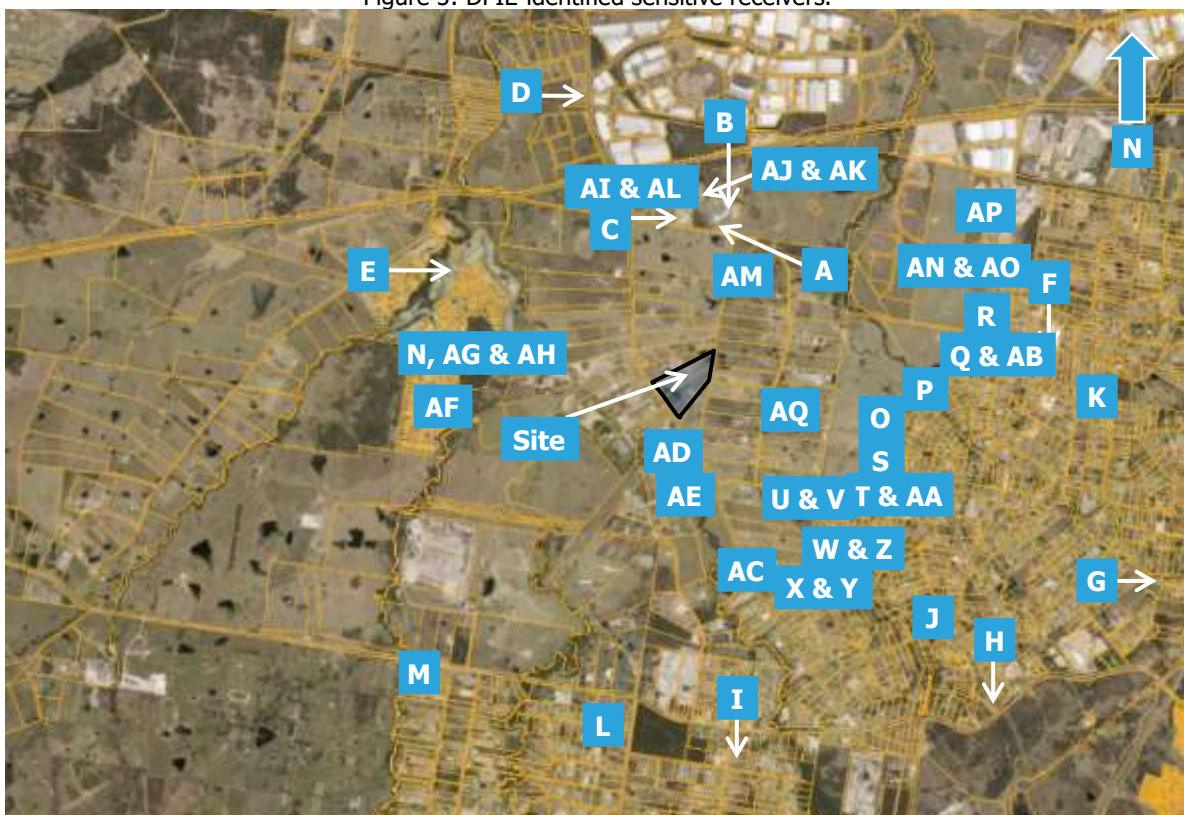
5.3 Distant Receivers

Distant sensitive receivers with the potential to be affected by long-term cumulative noise have been identified as follows:

- A. Emmaeus Catholic College is located approximately 1.8km to the north of the site.
- B. Emmaeus Retirement Village is located approximately 2km to the north of the site.
- C. Mamre Anglican School is located approximately 1.8km to the north of the site.
- D. A childcare centre is located approximately 3.5km to the north of the site.
- E. A golf club is located approximately 3.3km to the west of the site.
- F. St. Narsai Assyrian Christian College is located approximately 3.4km to the east of the site.
- G. Peter and Paul Assyrian Church is located approximately 5km to the east of the site
- H. Irfan College is located approximately 4.6km to the south of the site.
- I. Christadelphian Heritage College is located approximately 4.3km to the south of the site.
- J. Residential dwellings in Mount Vernon are located approximately 2.2km to the south east of the site.
- K. Residential dwellings in Horsley Park are located approximately 3.1km to the east of the site.
- L. Residential dwellings in Kemps Creek are located approximately 3.2km to the south of the site.
- M. Residential dwellings in Badgerys Creek are located approximately 3.5km to the south west of the site.
- N. Residential dwellings in Luddenham are located approximately 2.3km to the west of the site.

Refer to Figure 5 for receiver locations.

Figure 5: DPIE-identified sensitive receivers.



Additional receiver locations identified by DPIE to be included in the assessment are as follows:

Table 2: DPIE Additional Receivers

Receiver	GPS coordinates	Description/Comments
O	-33.852352, 150.810442	Residential dwelling / Distant Receiver
P	-33.846976, 150.818277	Residential dwelling / Distant Receiver
Q	-33.841444, 150.824180	Residential dwelling / Distant Receiver
R	-33.836337, 150.823928	Residential dwelling / Distant Receiver
S	-33.857030, 150.808758	Residential dwelling / Distant Receiver
T	-33.859400, 150.807159	Residential dwelling / Distant Receiver
U	-33.860122, 150.804938	Residential dwelling / Distant Receiver
V	-33.863238, 150.801886	Residential dwelling / Distant Receiver
W	-33.864984, 150.800089	Residential dwelling / Distant Receiver
X	-33.864609, 150.796779	Residential dwelling / Distant Receiver
Y	-33.867462, 150.802610	Residential dwelling / Distant Receiver
Z	-33.858562, 150.811526	Residential dwelling / Distant Receiver
AA	-33.854177, 150.813355	Residential dwelling / Distant Receiver
AB	-33.846255, 150.825344	Residential dwelling / Distant Receiver
AC	-33.866712, 150.794671	Residential dwelling / Distant Receiver
AD	-33.852140, 150.786278	Residential dwelling / Near Receiver
AE	-33.855995, 150.789059	Residential dwelling / Distant Receiver
AF	-33.848685, 150.761068	Residential dwelling / Distant Receiver
AG	-33.843199, 150.761143	Residential dwelling / Distant Receiver
AH	-33.839325, 150.765713	Residential dwelling / Duplicates Distant Receiver N
AI	-33.831984, 150.786967	School / Duplicates Distant Receiver C
AJ	-33.831286, 150.793061	College / Duplicates Distant Receiver A
AK	-33.829165, 150.792879	Retirement village / Duplicates Distant Receiver B
AL	-33.830045, 150.788925	Residential dwelling / Distant Receiver
AM	-33.836221, 150.795958	Residential dwelling / Distant Receiver
AN	-33.843740, 150.816836	Vacant land / Distant Receiver
AO	-33.840898, 150.816493	Vacant land / Distant Receiver
AP	-33.836299, 150.821836	Residential dwelling / Distant Receiver
AQ	-33.851109, 150.799364	BAPT Temple / Distant Receiver

5.4 Unattended Noise Monitoring

Rion NL42 and Rion NL52 environmental noise monitors were placed at 930-966 Mamre Road (location A), 1003 Mamre Road (location B) and 25 Aldington Road (location C) as shown in Figure 4 to measure existing ambient noise levels. These locations were selected as they were representative of the nearest sensitive residential receivers. The noise monitors were set to record noise levels between 20th to 28th of May 2019 (location A), 20th to 27th of March 2020 (location B) and 25th May to 1st June 2021 (location C).

The noise monitors were set to "A" weighting, Fast response and 15 minute statistical intervals. The microphones were approximately 1.4 metres above ground level. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055 '*Acoustics – Description & Measurement of Environmental Noise*'.

6 Existing background noise levels

The following tables present the measured existing ambient noise levels from the unattended noise survey. Any periods of inclement weather or extraneous noise are omitted from the measured data prior to determining the overall results.

6.1 Meteorological conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (<http://www.bom.gov.au/climate/data>), shown in Table 3 below.

Table 3: Meteorological conditions – Badgerys Creek

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Speed (km/h)	Direction	Speed (km/h)	Direction
Noise Monitor A						
Monday	20/05/2019	0	4	ENE	11	N
Tuesday	21/05/2019	0.2	Calm	-	11	NNE
Wednesday	22/05/2019	0	4	NNE	17	E
Thursday	23/05/2019	0	4	SE	9	N
Friday	24/05/2019	0	4	E	9	NNE
Saturday	25/05/2019	0	4	N	7	NNE
Sunday	26/05/2019	0	9	NNW	15	WSW
Monday	27/05/2019	0	17	NNW	33	W
Tuesday	28/05/2019	0	11	W	13	WSW
Noise Monitor B						
Friday	20/03/2020	0	-	Calm	-	NW
Saturday	21/03/2020	0	6	S	22	ESE
Sunday	22/03/2020	0	-	Calm	17	BE
Monday	23/03/2020	0	11	SW	2	ESE
Tuesday	24/03/2020	0	6	SSE	11	ENE
Wednesday	25/03/2020	0	4	ENE	17	ESE
Thursday	26/03/2020	27.2	11	WSW	15	SE
Noise Monitor C						
Tuesday	25/05/21	0.2	2	E	7	NNE
Wednesday	26/05/21	0	7	WSW	19	SW
Thursday	27/05/21	0	4	S	19	WSW
Friday	28/05/21	0	17	SW	17	SSW
Saturday	29/05/21	0	20	SW	19	SSW
Sunday	30/05/21	0	24	SW	11	SW
Monday	31/05/21	0	4	SE	Calm	-
Tuesday	1/06/21	0	2	SE	7	N

6.2 Ambient background noise level

6.2.1 Receiver 2

The measured rating background noise levels (RBL) were determined in accordance with the NSW Noise Policy for Industry, with levels for the different monitoring locations presented in Table 4.

Table 4: Measured L90 noise levels (Monitor A)

Day	Date	Receiver 2 (Monitor A)					
		Background L90 dBA			Ambient $L_{eq,period}$ dBA		
		Day	Evening	Night	Day	Evening	Night
Monday	20/05/2019	x	44.8	38.6	x	58.4	57.7
Tuesday	21/05/2019	40.3	44.4	40.4	57.5	53.3	54.9
Wednesday	22/05/2019	42.2	45.4	35.3	55.8	53.8	53.1
Thursday	23/05/2019	40.6	46.1	41.0	55.6	52.7	55.8
Friday	24/05/2019	40.8	46.5	39.9	56.7	54.4	51.6
Saturday	25/05/2019	39.6	42.3	32.8	52.4	50.1	48.3
Sunday	26/05/2019	41.7	40.6	36.8	51.5	51.0	57.9
Monday	27/05/2019	50.4	42.3	34.7	61.7	52.5	55.9
RBL		41	45	38	56	53	55

High wind speeds recorded on Monday 27th May 2019 were found to have affected the measured noise levels during the day time period, therefore the data was omitted from the results.

6.2.2 Receivers 1, 4 & 5

The measured rating background noise levels (RBL) were determined in accordance with the NSW Noise Policy for Industry, with levels for the different monitoring locations presented in Table 5.

Table 5: Measured L90 noise levels (Monitor B)

Day	Date	Receivers 1, 4 & 5 (Monitor B)					
		Background L90 dBA			Ambient $L_{eq,period}$ dBA		
		Day	Evening	Night	Day	Evening	Night
Friday	20/03/2020	x	47.2	41.7	x	60.4	57.5
Saturday	21/03/2020	45.4	41.5	41.3	58.2	56.0	53.3
Sunday	22/03/2020	43.0	42.4	40.4	57.8	57.1	57.7
Monday	23/03/2020	48.3	46.2	39.8	61.4	58.3	58.0
Tuesday	24/03/2020	46.4	41.7	40.6	61.4	58.4	58.6
Wednesday	25/03/2020	48.3	49.8	43.2	62.1	59.9	58.7
Thursday	26/03/2020	49.8	49.6	39.8	61.6	59.4	58.8
RBL		46	46	41	61	58	58

Heavy rainfall recorded on Thursday 26th March 2020 was found to have affected the measured noise levels during the day time period, therefore the data was omitted from the results.

6.2.3 Receiver 3

The measured rating background noise levels (RBL) were determined in accordance with the NSW Noise Policy for Industry, with levels for the different monitoring locations presented in Table 6.

Table 6: Measured L90 noise levels (Monitor C)

Day	Date	Receiver 3 (Monitor C)					
		Background L90 dBA			Ambient $L_{eq,period}$ dBA		
		Day	Evening	Night	Day	Evening	Night
Tuesday	25/05/21	x	41.3	37.8	x	45.9	44.8
Wednesday	26/05/21	36.5	41.7	38.2	52.6	50.2	44.7
Thursday	27/05/21	39.9	38.5	34.1	54.0	44.6	43.9
Friday	28/05/21	42.4	37.3	34.9	54.6	43.8	41.8
Saturday	29/05/21	40.2	36.8	32.8	54.1	42.4	40.0
Sunday	30/05/21	34.8	36.8	33.6	53.7	42.9	47.3
Monday	31/05/21	31.5	35.6	38.2	51.2	44.3	45.9
Tuesday	1/06/21	35.7	38.2	36.7	50.7	44.0	48.3
RBL		36	38	36	54	44	45

Refer to Section 14.2 for graphical representation of the measured noise levels at each receiver.

7 Noise Criteria

The relevant noise criteria was determined in accordance with the Penrith City Council Development Control Plan 2014, State Environmental Planning Policy Western Sydney Employment Area, AS 2021:2015: *Acoustics – Aircraft noise intrusion – Building siting and construction* and the NSW Noise Policy for Industry 2017.

7.1 Mamre Road Precinct DCP 2021

The site is located within the Mamre Road Precinct of the Western Sydney Employment Area, therefore the relevant criteria for environmental noise impacts is contained within the Mamre Road Precinct Development Control Plan (DCP) 2021 policies with Section 4.3.1 referenced. The document states that:

"Objectives

- a) To ensure noise and vibration do not adversely impact human health and amenity.*
- b) To ensure building design adequately protects workers from noise and vibration.*

Controls

- 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.*
- 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).*
- 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.*
- 4) An Acoustic Report shall be prepared for developments within 500m of rural-residential areas and other sensitive receivers, including educational establishments.*
- 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.*
- 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.*
- 7) Building design is to incorporate noise amelioration features. Roof elements are to control potential breakout noise, having regard to surrounding topography.*
- 8) Boundary fences are to incorporate noise amelioration features and control breakout noise having regard to developments adjoining rural-residential areas."*

Further reference is made to the Noise Policy for Industry and NSW Road Noise Policy.

7.2 State Environmental Planning Policy Western Sydney Employment Area 2009

Clauses 23 and 33D of the State Environmental Planning Policy for Western Sydney Employment Area 2009 state the following in relation to noise:

"Clause 23

(2) The consent authority must not grant consent to development on land to which this clause applies unless it is satisfied that –

(d) noise generation from fixed sources or motor vehicles associated with the development will be effectively insulated or otherwise minimised, and

(e) the development will not otherwise cause nuisance to residents, by way of hours of operation, traffic movement, parking, headlight glare, security lighting or the like.

Clause 33D

(3) Before determining a development application for development to which this clause applies, the consent authority—

(a) must consider whether the development will result in an increase in the number of dwellings or people affected by aircraft noise, and

(b) must consider the location of the development in relation to the criteria set out in Table 2.1 (Building Site Acceptability Based on ANEF Zones) in AS 2021:2015, and

(c) must be satisfied that the development will meet the indoor design sound levels set out in Table 3.3 (Indoor Design Sound Levels for Determination of Aircraft Noise Reduction) in AS 2021:2015."

Further reference is made to AS 2021:2015: *Acoustics – Aircraft noise intrusion – Building siting and construction*.

7.2.1 AS 2021:2015 *Acoustics – Aircraft Noise Intrusion – Building siting and construction*

With regard to requirement 3b of SEPP WSEA 2009 Clause 33D, Table 2.1 of AS 2021:2015 specifies the following requirements for building siting in relation to ANEF contours:

Table 7: Building Siting in relation to Aircraft noise

Building type	ANEF zone of site		
	Acceptable	Conditionally acceptable	Unacceptable
Light industrial	Less than 30 ANEF	30 to 40 ANEF	Greater than 40 ANEF
Other industrial	Acceptable in all ANEF zones		

Table 3.3 of AS 2021:2015 sets limits for noise intrusion when a new development is located in an area within the ANEF (Aircraft Noise Exposure Forecast) contours of 20-25 or 25-30:

Table 8: Indoor sound design levels for aircraft noise

Building type and activity	Indoor design sound level dB(A)
Commercial buildings, offices and shops	
Drafting, open offices	65
Industrial	
Inspection, analysis, precision work	75
Light machinery, assembly, bench work	80

Part of the site is located within the 25-30 ANEF Contours for Western Sydney Airport, with the remainder located within the 20-25 contour. Therefore, the development satisfies requirement 3b (30 ANEF) of Clause 33D of SEPP WSEA 2009. As a requirement 3c makes reference to Table 3.3, therefore site requires assessment to determine compliance with the indoor sound design levels specified in Table 8.

7.3 Secretary's Environmental Assessment Requirements (SEARs)

The issued Secretary's Environmental Assessment Requirements (SEARs) (Application Reference: *SSD-17647189*) requires the following matters to be addressed:

Table 9: SSD-17647189 SEARS requirements

Condition	Section References
§ the identification of impacts associated with construction works, operational emission, and traffic generation at noise affected sensitive receivers, including the provision of operation noise contours and a detailed sleep disturbance assessment;	Sections 5-8 detail the impacts associated with operational emission and traffic generation, including a sleep disturbance assessment Construction work noise is assessed in a separate report (ref: <i>1020168 R02D 884-928 Mamre Road Kemps Creek.docx</i>)
§ details of noise monitoring surveys, background noise levels, noise source inventory and worst-case noise emission scenarios;	Provided in Sections 2-5
§ consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area;	Accounted for in the assessment in Section 8
§ a cumulative impact assessment inclusive of impacts from other nearby existing and future developments;	Accounted for in the assessment in Section 8 in accordance with Industrial Noise Policy
§ details and analysis of the effectiveness of the proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs.	Provided in Section 9 with regards to operational noise Construction noise and vibration is assessed in a separate report (ref: <i>1020168 R02D 884-928 Mamre Road Kemps Creek CNVMP.docx</i>)

7.4 Noise Policy for Industry

Assessment of noise in accordance with NSW EPA Noise Policy for Industry (2017) has two main components: intrusiveness and amenity criteria. These are compared to each other (after conversion of amenity noise level to LAeq,15min equivalent level) to determine the overall project noise trigger level.

7.4.1 Intrusiveness noise level

The intrusiveness noise level is based on the $L_{Aeq(15\text{ min})}$ associated with commercial activity being less than or equal to the measured L_{A90} Rating Background Level + 5dB as per section 2.3 of the policy. A modifying factor should also be added where appropriate to allow for tonality, impulsiveness, and intermittency or low frequency effects.

7.4.2 Amenity noise level

The amenity noise level is determined in accordance with Section 2.4 of the policy based on the land use and relevant noise criteria specified in Tables 2.2 and 2.3.

The Noise Policy for Industry sets out acceptable noise levels for various locations. Determination of which residential receiver category applies is described in Table 2.3 of the policy.

Table 10: Receiver category (Table 2.3 of the Noise Policy for Industry)

Receiver category	Typical planning zoning – standard instrument	Typical existing background noise levels	Description
Rural residential	RU1 – primary production RU2 – rural landscape RU4 – primary production small lots R5 – large lot residential E4 – environmental living	Daytime RBL <40 dB(A) Evening RBL <35 dB(A) Night RBL <30 dB(A)	Rural – an area with an acoustical environment that is dominated by natural sounds, having little or no road traffic noise and generally characterised by low background noise levels. Settlement patterns would be typically sparse. Note: Where background noise levels are higher than those presented in column 3 due to existing industry or intensive agricultural activities, the selection of a higher noise amenity area should be considered.
Suburban residential	RU5 – village RU6 – transition R2 – low density residential R3 – medium density residential E2 – environmental conservation E3 – environmental management	Daytime RBL <45 dB(A) Evening RBL <40 dB(A) Night RBL <35dB(A)	Suburban – an area that has local traffic with characteristically intermittent traffic flows or with some limited commerce or industry. This area often has the following characteristic: evening ambient noise levels defined by the natural environment and human activity.
Urban residential	R1 – general residential R4 – high density residential B1 – neighbourhood centre (boarding houses and shop-top housing) B2 – local centre (boarding houses) B4 – mixed use	Daytime RBL > 45 dB(A) Evening RBL > 40 dB(A) Night RBL >35 dB(A)	Urban – an area with an acoustical environment that: • is dominated by 'urban hum' or industrial source noise, where urban hum means the aggregate sound of many unidentifiable, mostly traffic and/or industrial related sound sources • has through-traffic with characteristically heavy and continuous traffic flows during peak periods • is near commercial districts or industrial districts • has any combination of the above.

To determine the appropriate receiver category, the following observations were made:

- All residential receivers are zoned IN1 – General Industrial.
- The surrounding acoustical environment for receivers 1, 4 & 5 consists of through traffic with characteristically heavy and continuous traffic during peak periods, and is located near industrial districts, corresponding to the description of the urban category.
- The surrounding acoustical environment for receiver 2 consists of characteristically heavy and continuous traffic during peak periods with night-time ambient noise levels defined by the natural environment and human activity. This corresponds most closely to the suburban category.
- The surrounding acoustical environment for receiver 3 is dominated by natural sounds with little to no road traffic.
- The measured ambient noise levels presented in Section 6.2 correspond to the typical RBLs of the urban category for Receivers 1, 4 & 5, the suburban category for Receiver 2, and the rural category for Receiver 3.

- Receivers 1 to 5 have rural-residential land use rights pending the purchase of these lots for the construction of industrial developments as part of the Mamre Road Precinct project.
- Receivers 6 & 7 are industrial receivers and would be assessed against the industrial criteria.
- Receivers A, C, D & F are schools or educational facilities and would be assessed against the 'school classroom' criteria
- Receiver B is a residential aged-care facility and would be considered a residential receiver.
- Receivers B & J to N are located in areas where the surrounding acoustic environment is dominated by local traffic with limited local industry, characterised by evening ambient noise levels consisting primarily of natural and human activity.
- Receiver E is a golf club and would be assessed against the 'Active Recreation Area' criteria.
- Receivers O to AQ are assessed against the relative zonings and cumulative criteria.

Therefore receivers 1 to 5 would be assessed against the rural residential criteria, receivers 6 & 7 would be assessed against the industrial criteria. Receivers A, C, D & F would be assessed against the 'school classroom' criteria, receivers B & J to N would be assessed against the rural criteria and Receiver E would be assessed against the 'Active Recreation Area' criteria.

7.4.3 Amenity noise levels in areas of high traffic

Areas affected by a certain level of traffic noise may be high enough to make noise from an industrial source effectively inaudible. In such cases the project amenity noise level may be derived from the $L_{Aeq, period}$ minus 15 dBA on the condition all of the following apply:

- Traffic noise is identified as the dominant noise source at the site.
- The existing traffic noise level is 10 dB or more above the recommended amenity noise level for the area.
- It is highly unlikely traffic noise levels will decrease in the future.

Applicability is to be determined for each assessment period.

7.4.4 Modifying factors

The Noise Policy for Industry includes correction factors such as tonal noise, low-frequency noise, intermittent noise and duration. Where two or more modifying factors are present, the maximum adjustment to a noise source level is 10dBA (excluding duration correction).

7.5 Project noise trigger level

To determine the project trigger noise level, the amenity noise level must first be standardised to an equivalent $L_{Aeq, 15min}$ in order to compare to the intrusiveness noise level. This is done in accordance with Sections 2.2 and 2.4 of the policy as follows;

$$L_{Aeq, 15min} = L_{Aeq, period} + 3dB$$

To ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise.

Therefore, based on the measured data presented in Section 5.2, the project specific noise limits are determined.

7.5.1 Amenity noise levels in areas near an existing or proposed cluster of industry

To account for impacts from multiple industrial noise sources to sensitive receivers near an existing or proposed cluster of industry, the following equation can be used to determine the project amenity level for an individual project:

$$\text{Individual project amenity noise level} = 10\log(10^{(\text{ANL}-5\text{dB}/10)}/N)$$

Where

ANL = relevant recommended amenity noise level

N = number of proposed additional premises

Where it can be demonstrated that existing levels of industrial noise are more than 5dB below the relevant recommended amenity noise level, the formula can be modified as shown below:

$$\text{Individual project amenity noise level} = 10\log(10^{(\text{ANL}/10)}/N)$$

No industrial noise sources are currently operating in the vicinity of the nearest receivers, therefore existing industrial noise levels are more than 5dB below the relevant recommended amenity noise level and the modified formula would apply.

To determine the cumulative criteria for the proposed development, the following must be considered:

- Each masterplan development will undertake calculation to account for the cumulative (combined) noise impacts from onsite activities associated with their development including all individual lots within the site to sensitive receivers. The assessment takes into account the cumulative effect of the development without the need to adjust the amenity criteria for the masterplan development individual lots.
- The surrounding area may be considered as a greenfield area, with individual developments in the surrounding area comprised of multiple lots for each Development Application. Each assessment when assessed by the acoustic engineer will combine all noise sources from the lots within the development site to determine the noise impacts, therefore accounting for the cumulative effect of their development regardless of the number of lots proposed within the site.
- Therefore, to determine the cumulative criteria, we need to consider the potential number of development sites, not the individual warehouses located within each development to calculate any adjustments to the criteria.
- The combined noise impacts from each development takes into account the cumulative effect regardless of how many warehouse/buildings are located within the development site, the analysis includes all noise impacts occurring simultaneously in the analysis. Therefore, to calculate the adjustment for the cumulative criteria, consideration is required based on the number of developments in proximity to the receiver, not individual buildings.
- Once the cumulative criteria has been established using the above method, if individual assessment for buildings within the development site are undertaken, then the cumulative criteria must be adjusted. You cannot use the same cumulative criteria used for the masterplan for a single building within the site, adjustment to the criteria must account for the number of building/lots within the site to ensure the individual building/lot assessment complies with the criteria. This means the cumulative criteria must be adjusted based on the number of lots within the development site to ensure the overall site still complies with the criteria used for the masterplan assessment.

Based on the review of the area, there is the potential for up to 5 masterplan development sites to impact the immediate receivers considered in this assessment. This number will increase for receivers located at greater distances, but it should also be understood that noise from the sites will be further attenuated due to screening and increased separation distances, making noise impacts from the sites imperceptible. Based on the interactive mapping tool on the NSW Major Projects website, there is potential for up to 78 nearby masterplan developments sites to impact more distant receivers considered in this assessment.

7.5.2 Sleep disturbance noise level

Sleep disturbance is based on the maximum noise level of events from premises during the night-time period. The Noise Policy for Industry defines sleep disturbance as a noise from a premise at a residential location that exceeds:

- LAeq,15min 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or
- LAFmax 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,

7.5.3 Intrusiveness noise criteria

The intrusiveness noise levels are as follows;

Table 11: Intrusiveness noise levels

Time period	Receiver 1, 4 & 5 & AD	Receiver 2	Receiver 3	Receivers 6 & 7
	Criteria Leq (15min) dB(A)	Criteria Leq (15min) dB(A)	Criteria Leq (15min) dB(A)	Criteria Leq (15min) dB(A)
Day (7am-6pm Mon-Sat; 8am-6pm Sun)	51	46	41	N/A*
Evening (6pm-10pm)	51	50	43	N/A*
Night (10pm-7am Sun-Fri, 10pm-8am Sat)	46	43	41	N/A*

7.5.4 Amenity criteria

Based on Section 2.4 of the policy with adjustment for additional proposed industrial premises, the amenity noise levels are as follows;

Table 12: Amenity noise levels

Time period	Receiver 1 to 5 & AD		Receivers 6 & 7
	Recommended Amenity Criteria Leq(period) dBA	Adjusted Criteria Leq(15min) dB(A)	Recommended Amenity Criteria Leq(15min) dBA
Day	50	46*	70
Evening	45	41*	70
Night	40	36*	70

*Note: in accordance with Sections 2.2 and 2.4 of the policy, a +3dBA correction was added to convert $L_{Aeq,period}$ to $L_{Aeq,15min}$. In accordance with the Departments request, receivers 1 to 5 have been classed as rural residential for the purposes of this assessment.

7.5.5 Project specific noise criteria

The project noise trigger level is the lower (that is, the most stringent) value of the intrusiveness and amenity noise levels. Therefore the project noise trigger levels are as follows:

Table 13: Project criteria

Time period	Receivers 1, 2, 4, 5 & AD	Receiver 3	Receivers 6 & 7
	Criteria $L_{eq}(15min)$ dB(A)	Criteria $L_{eq}(15min)$ dB(A)	Criteria $L_{eq}(15min)$ dB(A)
Day	46	41	70
Evening	41	41	70
Night	36	36	70

7.5.6 Sleep disturbance

The sleep disturbance noise levels are as follows;

Table 14: Sleep disturbance criteria

Time period	Receivers 1, 4, 5 & AD		Receiver 2		Receiver 3	
	Criteria $L_{eq}(15min)$ dBA	Criteria L_{AFmax} dBA	Criteria $L_{eq}(15min)$ dBA	Criteria L_{AFmax} dBA	Criteria $L_{eq}(15min)$ dBA	Criteria L_{AFmax} dBA
Night	46	56	43	53	41	52

7.5.7 Long-term cumulative noise impacts to distant receivers in the Mamre Road Precinct

Correspondence from the NSW Department of Planning, Industry and Environment (received by Acoustic Works on 06/07/2021) made the following request:

"Long-term cumulative noise impacts need to be assessed at the most-affected receivers in Mount Vernon, Horsley Park, Kemps Creek, Luddenham (near Twin Creeks Golf & Country Club), including nearby schools, retire village, places of worship and residential receivers."

The receivers nominated in Section 5.1 are the nearest sensitive receivers in the Mamre Road Precinct, with other sensitive receivers in Mount Vernon, Horsley Park, Kemps Creek or Luddenham located further away and in locations screened from the site. The applicable criteria for these receivers is detailed in Table 15. The Intrusiveness Criteria are not presented as the cumulative amenity criteria are below the minimum RBLs in all cases.

Table 15: Cumulative Amenity Criteria (Distant Receivers)

Receiver	Amenity Criteria $L_{eq}(period)$ dB(A)			Cumulative Amenity Criteria $L_{eq}(15min)$ dB(A)			Sleep disturbance criteria L_{Amax} dB(A)
	Day	Evening	Night	Day	Evening	Night	Night
A (Emmaeus Catholic College)	35 internal / 45 external*			16 internal / 26 external			-
B (Emmaeus Retirement Village)	50	45	40	34	29	24	52
C (Mamre Anglican School)	35 internal / 45 external*			16 internal / 26 external			-
D (Childcare Centre)	35 internal / 45 external*			16 internal / 26 external			-
E (Golf Club)	55			36			-

Receiver	Amenity Criteria Leq(period) dB(A)			Cumulative Amenity Criteria Leq(15min) dB(A)			Sleep disturbance criteria LAmax dB(A)
	Day	Evening	Night	Day	Evening	Night	Night
F (St Narsai Assyrian College)	35 internal / 45 external*			16 internal / 26 external			-
G (St Peter and Paul Assyrian Church)	40 internal / 50 external*			21 internal / 31 external			-
H (Irfan College)	35 internal / 45 external*			16 internal / 26 external			-
I (Christadelphian Heritage College)	35 internal / 45 external*			16 internal / 26 external			-
J (Mount Vernon Residential Receivers)	50	45	40	34	29	24	52
K (Horsley Park Residential Receivers)	50	45	40	34	29	24	52
L (Kemps Creek Residential Receivers)	50	45	40	34	29	24	52
M (Badgerys Creek Residential Receivers)	50	45	40	34	29	24	52
N (Luddenham Residential Receivers)	50	45	40	34	29	24	52
O to AQ (excluding AD)	50	45	40	34	29	24	52

*Note that for receivers where the assessment location is internal a 10dBA reduction from external to internal noise levels was assumed in accordance with Section 2.6 of the Noise Policy for Industry (2017)

As the criteria for distant receivers are below the existing background noise levels in the area, compliance can not be confirmed at these receivers by conducting attended measurements. Compliance could be confirmed by visiting the receiver and determining if noise from the site is inaudible.

7.6 NSW Road Noise Policy 2011

The NSW Road Noise Policy outlines the criteria for any increase in the total traffic noise level at the location due to a proposed project or traffic generating development. Therefore the following criteria applies:

Table 16: Road traffic noise assessment criteria for residential land uses

Road Category	Type of project/development	Total traffic noise level – dB(A)	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeway/arterial/sub-arterial roads and transitways	Existing Residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,15hr}$ 60 (external)	$L_{Aeq,9hr}$ 55 (external)

In addition to the assessment criteria outlined in Tables 3-5 of the NSW Road Noise Policy, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development must be considered. Residences experiencing increases in total traffic noise level above the relative increase criteria in Table 6 of the policy should also be considered for mitigation as described in Section 3.4 of the policy. Table 6 of the Road Noise Policy is presented below:

Table 17: Relative increase criteria for residential land uses

Road Category	Type of project/development	Total traffic noise level increase – dB(A)	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeway/arterial/sub-arterial roads and transitways	New road corridor/redevelopment of existing road/land use development with the potential to generate additional traffic on existing road	Existing traffic $L_{Aeq(15hr)} + 12dB$ (external)	Existing traffic $L_{Aeq(9hr)} + 12dB$ (external)

For other existing sensitive land uses (as outlined in Table 4 of the policy) the relative increase criteria should be applied to the respective $L_{Aeq,period}$ for that land use type, except for open space. For projects where the main subject is a local road, the relative increase criterion does not apply.

When the existing traffic noise levels already exceeds the L_{Aeq} 15hour and L_{Aeq} 9hr noise limits, the development should not increase the existing traffic noise levels by more than 2dB(A) as stated in Section 3.4 of the NSW Road Noise Policy 2011.

7.7 Assessing Vibration: A Technical Guideline 2006

7.7.1 Types of vibration

There are three types of vibration as classified in the guide;

- Continuous - vibration continues uninterrupted for a defined period (usually throughout daytime and/or night-time). This type of vibration is assessed on the basis of weighted RMS (root mean squared) acceleration values.
- Impulsive - rapid build up to a peak followed by a damped decay that may or may not involve several cycles. The duration is short, typically less than 2 seconds. Impulsive vibration (no more than three occurrences in an assessment period) is assessed on the basis of acceleration values.

- Intermittent - interrupted periods of continuous (e.g. a drill) or repeated periods of impulsive vibration (e.g. a pile driver), or continuous vibration that varies significantly in magnitude. Assessed on the basis of vibration dose values.

7.7.2 Acceptable values for continuous and impulsive vibration (1-80Hz)

The relevant criteria for continuous and impulsive vibration are as follows;

Table 18: Preferred weighted RMS vibration acceleration values

Type	Location	Assessment period	Preferred values m/s ²		Maximum values m/s ²	
			z-axis	x- and y-axes	z-axis	x- and y-axes
Continuous vibration	Critical areas	Day or night time	0.005	0.0036	0.01	0.0072
	Residences	Day time	0.01	0.0071	0.02	0.014
		Night time	0.007	0.005	0.014	0.01
	Offices, schools, educational institutions and places of worship	Day or night time	0.02	0.014	0.04	0.028
	Workshops	Day or night time	0.04	0.029	0.08	0.058
Impulsive vibration	Critical areas	Day or night time	0.005	0.0036	0.01	0.0072
	Residences	Day time	0.3	0.21	0.6	0.42
		Night time	0.1	0.071	0.2	0.14
	Offices, schools, educational institutions and places of worship	Day or night time	0.64	0.46	1.28	0.92
	Workshops	Day or night time	0.64	0.46	1.28	0.92

7.7.3 Acceptable values for intermittent vibration

Intermittent vibration is assessed using the vibration dose value (VDV) root-mean-quad method. VDV accumulates the vibration energy received over the daytime and night-time periods. The vibration dose methodology is as per standard BS 6472–1992.

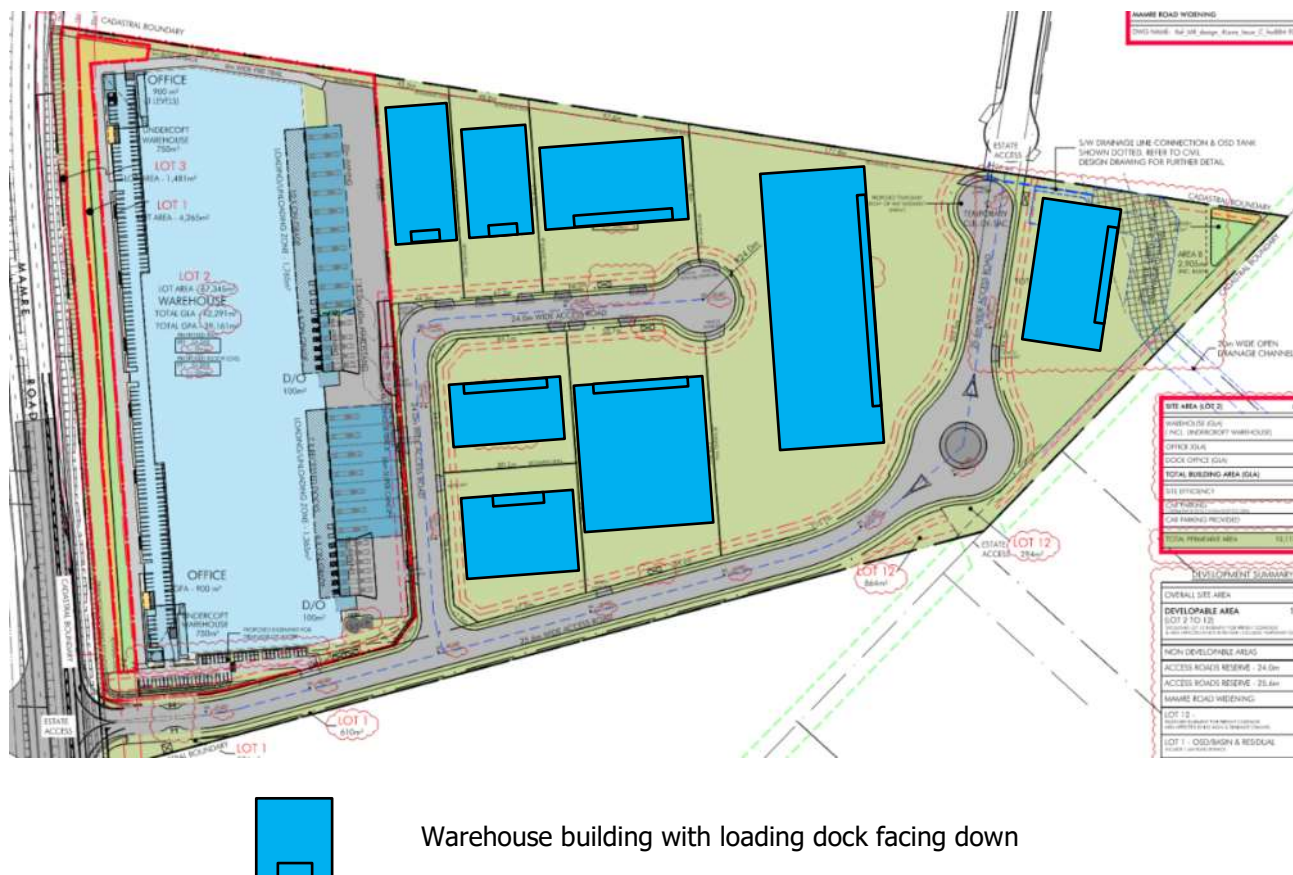
8 Environmental Assessment

8.1 Onsite activities

Noise associated with the development outlined in Stages 1 and 2 has been assessed using 3D SoundPLAN modelling generated in accordance with ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*, showing the predicted worst-case 15 minute noise impacts associated with typical warehouse activities such as trucks, forklifts, reverse alarms, mechanical plant and carpark activities. As SoundPLAN calculations do not return results in LAeq,15min format, the worst case number of events for each 15 minute period was assumed to be taking place continuously throughout each time period. Barrier screening, topographical screening, air absorption and ground absorption were calculated in accordance with ISO 9613-2. Predictions also include corrections for the prevailing meteorological conditions in accordance with ISO 9613-2: 1996 and Fact Sheet D of the Noise Policy for Industry.

As no building layout was available for Lots 5-12, an indicative layout was assumed based on layouts of similar developments and discussions with the architect. Figure 6 presents the assumed layout.

Figure 6: Assumed Warehouse Layout – Lots 5-12



8.1.1 Modelling Assumptions

Noise levels from each warehouse has been modelled based on the following assumptions:

- Warehouse heights of approximately 14.6m above concrete pad level and building envelope construction of standard sheet metal construction.
- Warehouse walls facing loading dock account for loading bay doors being open. A total of 116 truck loading bay doors, continuously open day, evening and night, are included in the model.
- On-site heavy truck movements on the hard stands from the access road boundaries to or from the respective loading bays according to the predicted peak 15-minute traffic volumes per Lot, as detailed in Table 21.
- Forklifts operating continuously in each lot, both indoors and outdoors including reverse alarms.
- 10 cars entering or exiting each lot every 15 minutes.
- Roof mounted AC plant. This was assessed based on the equipment source noise levels detailed in Table 22.
- Typical worst-case noise source levels as presented in Table 22.
- Remaining lots assumed with rooftop mechanical plant located on warehouse roofs and operated continuously day, evening and night; no roof top screening is assumed for this plant.
- Ground absorption was modelled based on the assumptions outlined in Table 19 for the proposed development and any proposed or existing developments for surrounding area.

Table 19: Ground absorption assumptions

Ground Type	Category	Assumed absorption coefficient
Ground where an industrial development is proposed (irrespective of specific landscape plans)	Totally reflective	0
Surface of a body of water (e.g. dams, rivers)	Totally reflective	0
Existing paved road or hardstand	Totally reflective	0
Existing unsealed road	Totally reflective	0
Tamped Ground	Totally Reflective	0
Landscaped grass (e.g. lawns)	More absorptive	0.7
Paddocks	Mostly absorptive	0.8
Bushland ground surface	Mostly absorptive	0.8

- C_{met} was calculated in SoundPLAN based on annual wind statistics for Penrith Lakes AWS (refer to Appendices for a graphical representation of the statistics used).
- In accordance with Fact Sheet D of the Noise Policy for Industry, noise-enhancing meteorological conditions were adopted for all assessment periods, including a Stability F temperature inversion layer.
- Due to the inversion layer, the Penrith Lakes AWS monthly mean minimum temperature for July of 5°C was used in all noise modelling.
- Receiver heights were assumed at 1.5m above ground level for single storey receivers and 4.5m above ground level for two storey receivers.

To determine the number of noise events taking place, reference was made to the Traffic Management Accessibility Plan (TMAP) prepared by Ason Group (ref: P1509r03v9, dated 29/09/2022), which made the following predictions for peak hour traffic volumes onsite:

Table 20: Predicted Peak Hour Traffic Volumes

Source Description	Hourly Traffic Volumes (veh/h)		
	All Vehicles	Heavy Vehicles (27%)	Light Vehicles (73%)
AM Peak (7am-8am)	202	55	147
PM Peak (5pm-6pm)	211	57	154
Average Peak	207	56	151

Based on the average peak hour traffic volumes, the number of events per 15 minutes was derived as follows:

- The average peak hour traffic volumes were assumed to be occurring for the entire daytime period.
- Traffic volumes were assumed to reduce during the evening and night periods (75% of peak hour volumes in the evening and 50% in the night).
- The area of each lot was divided by the total area of the site to determine the percentage of total site area occupied by each lot. This percentage was assumed as the percentage of traffic going to that lot. This was given by:

$$V_{\text{lot}} = (V_{\text{site,Peak}} \times (A_{\text{lot}}/A_{\text{site}})) \times \begin{matrix} 1 \text{ (day)} \\ 0.75 \text{ (eve)} \\ 0.5 \text{ (night)} \end{matrix}$$

Where:

V_{lot} is the traffic volume generated by each lot

$V_{\text{site,Peak}}$ is the average peak hour traffic volume generated by the site

A_{lot} is the area of the individual lot under consideration

A_{site} is the total area of the site

1 (day) / 0.75 (eve) / 0.5 (night) accounts for reductions in volume in the evening and night periods

- The volume for each lot was divided by 4 and rounded up to the nearest whole number for a conservative assessment (even if this exceeded the predictions of the TMAP), with the results presented in Table 21.

Table 21: Predicted Peak 15-minute traffic volumes per lot

Lot	Vehicles per 15 minutes (Day)			Vehicles per 15 minutes (Evening)			Vehicles per 15 minutes (Night)		
	All Vehicles	Heavy Vehicles	Light Vehicles	All Vehicles	Heavy Vehicles	Light Vehicles	All Vehicles	Heavy Vehicles	Light Vehicles
Lot 2	22	6	16	17	5	12	11	3	8
Lot 5	3	1	2	3	1	2	2	1	1
Lot 6	3	1	2	3	1	2	2	1	1
Lot 7	6	2	4	6	2	4	6	2	4
Lot 8	4	2	2	4	2	2	4	2	2
Lot 9	4	2	2	4	2	2	4	2	2
Lot 10	6	2	4	6	2	4	4	2	2
Lot 11	11	3	8	9	3	6	6	2	4
Lot 12	7	2	5	6	2	4	4	1	3
Entire Site	66	21	45	58	20	38	43	16	27

The volumes for light vehicles were assumed to be the number of events for car-related activities, with the heavy vehicle volumes assumed to be the number of events for truck-related activities.

Forklifts were assumed to be operating continuously, with the number of forklifts on each lot the same as the number of truck events.

Levels for the individual events were calculated over a 15 minute-period (including all applicable corrections at the receivers for the modelling) with the resulting $L_{Aeq,15min}$ values used for the assessment. Measurements of vehicles included acceleration, deceleration, idling and braking of the vehicles. For a worst case scenario, half of all trucks were assumed to be equipped with refrigerator units. The itemised noise source list is presented in Table 22. Car park activities were calculated in accordance with the NORDTEST General Prediction Method: 2019.

Table 22: Typical Worst-case Source Emission Industrial Warehousing and Manufacturing Activities

Source Description	Source type	Sound Power L_W	Sound Power L_{Wmax}^*	Source duration (s)	Source Height above ground RL (m)	Event category as per Table 21
Heavy Truck movements (10km/h) (semi-trailer & B-double)	Line	60.1dBA/m	95 dBA	30**	1	Heavy Vehicles
Truck Venting Airbrake (semi-trailer & B-double)	Point	110dBA	114dBA	1	1	Heavy Vehicles
Truck Door Closure (semi-trailer & B-double)	Point	92dBA	98dBA	1	2.5	Heavy Vehicles
Truck Reversing including alarm (10km/h) (semi-trailer & B-double)	Line	78dBA/m	103dBA	2	2.5	Heavy Vehicles
Truck Starting(semi-trailer & B-double)	Point	97dBA	101dBA	2	1	Heavy Vehicles
Truck idling(semi-trailer & B-double)	Point	93dBA	96dBA	900	2.5	Heavy Vehicles (half)
Refrigerated Truck Idling (semi-trailer)	Point	98dBA	101dBA	900	2.5	Heavy Vehicles (half)
Forklift reverse alarm	Line	72dBA/m	106dBA	30**	1	Heavy Vehicles
Forklift Unloading	Point	92dBA	95dBA	900	1	Heavy Vehicles
Forklift Passby	Line	68dBA/m	104dBA	30**	1	Heavy Vehicles
Lot 2 Warehouse roof Smoke exhaust fans (including use for general ventilation). 20x VD10DC34A-6HFF	Point	64dBA (40% general ventilation)	64dBA (40% general ventilation) 88dBA (emergencies)	Continuous	1m above roof	n/a
Lot 2 Office roof Office outdoor A/C units – evenly split between two separate offices	Point	90 dBA		Continuous	1m above roof	n/a
2xDaikin REYQ22BYM						
2xDaikin REYQ14BYM	Point	83 dBA				
Daikin REYQ12BYM	Point	83 dBA				
Daikin RXC100AV1A	Point	71 dBA				
Daikin RZAC71CV1	Point	68 dBA				
Daikin RZA71CV1	Point	68 dBA				
Roof top mechanical plant All Lots	Point	77dBA	80dBA	Continuous	1m above associated roof	n/a
Voice Conversation	Point	78dba	81dBA	Continuous	1.5	n/a
Car starting	Point	84dBA	86dBA	2	0.5	Light Vehicles
Car door closure	Point	83dBA	85dBA	1	0.5	Light Vehicles
Car driving on asphalt <30km/h	Line	47dBA/m	81dBA	30**	0.5	Light Vehicles

*Note that L_{max} events were assessed as point sources at worst-case locations in relation to each receiver.

**Note the duration of each line source is determined by the length of the travel line and the speed of the source. The duration presented is valid for the L_{Wmax} events only.

Noise modelling for all trucks referenced in Table 22 were based on heavy combination vehicles (semi trailers) with single or b-double trailers. All modelling assumes a worst-case scenario where all truck movement/activities use heavy articulated vehicles, whose noise levels exceed those of smaller heavy rigid vehicles.

To account for noise inside the buildings, Acoustic Works has previously measured building internal reverberant noise levels of a wide range of industrial warehousing and manufacturing activities. Based on these previous on-site measurements of existing facilities, the following internal reverberant sound pressure levels (L_{eq}) at the internal facades have been assumed for each of the 12 buildings included in the model.

- Day: L_p reverberant level 70 dBA
- Evening: L_p reverberant level 69 dBA
- Night: L_p reverberant level 63 dBA

This level of noise at the internal facades accounts for typical worst-case source emission of industrial warehousing and manufacturing activities. Examples of significant equipment accounted for in the assumed reverberant noise source data are as follows:

- *Workshop equipment:* for example electric hand tools such as drill, grinder, drop saw; air powered equipment such as rattle gun, linisher, sandblaster and spray painting equipment.
- *Manufacturing equipment:* for example injection moulding machinery, CNC machinery and production line automation.
- *Warehouse and logistics:* for example gas or diesel powered lifting equipment such as forklift and telescopic boom movements, loading and unloading manoeuvres and reversing with alarm.

It is noted that the assumed building internal reverberant sound pressure levels represent noise levels below the OHS hearing protection threshold.

8.2 Cumulative Noise Impact Assessment (Nearest Receivers)

The following assessment of noise impacts to sensitive receivers is based on the criteria established using the cumulative criteria specified in Section 2.4.2 of the Noise Policy for Industry, which takes into account the potential impacts from multiple sources within the site and surrounding area and the current SEAR's specified requirements (ref: SSD-17552047). The noise source levels at the receiver locations are shown in Table 23. L_{Aeq} results are not shown where the calculated total is less than 0dBA.

Table 23: Project specific noise levels (Receivers 1 to 7)

Receiver	Project Specific Criteria Leq,15min dBA			Predicted Noise Impacts Leq,15min dBA			Complies (Yes/No)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
1	46	41	36	35	34	29	Yes	Yes	Yes
2	46	41	36	40	39	36	Yes	Yes	Yes
3	41	41	36	20	19	17	Yes	Yes	Yes
4	46	41	36	22	21	19	Yes	Yes	Yes
5	46	41	36	29	28	24	Yes	Yes	Yes
6	70	70	70	45	44	43	Yes	Yes	Yes
7	70	70	70	44	43	42	Yes	Yes	Yes

Compliance with the cumulative impact criteria is predicted for all onsite activities at the receiver locations during the proposed operating hours on the condition the recommendations detailed in Section 12 are implemented.

Figures 7 to 9 present a graphical representation of the predicted noise levels.

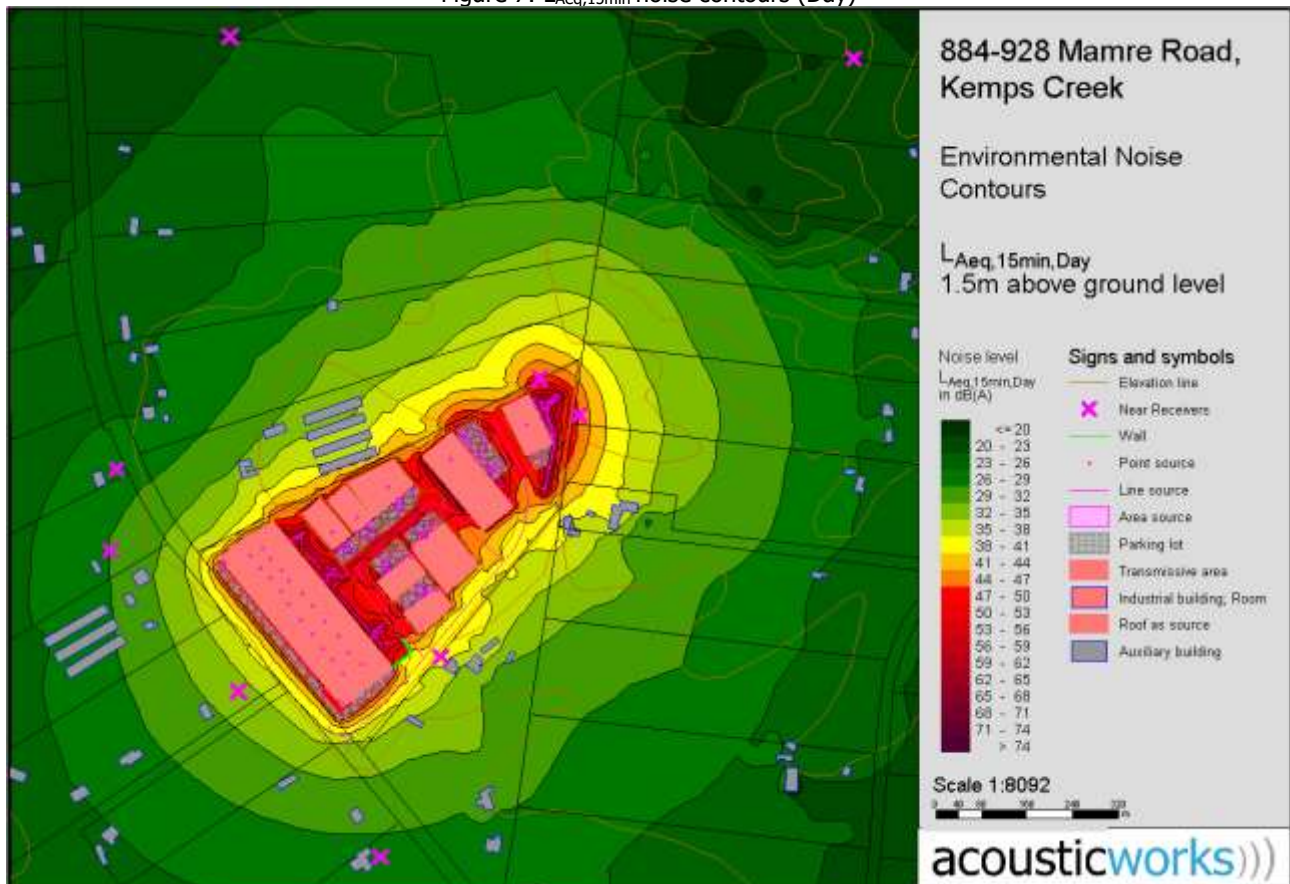
Figure 7: L_{Aeq,15min} noise contours (Day)

Figure 8: $L_{Aeq,15min}$ noise contours (Evening)

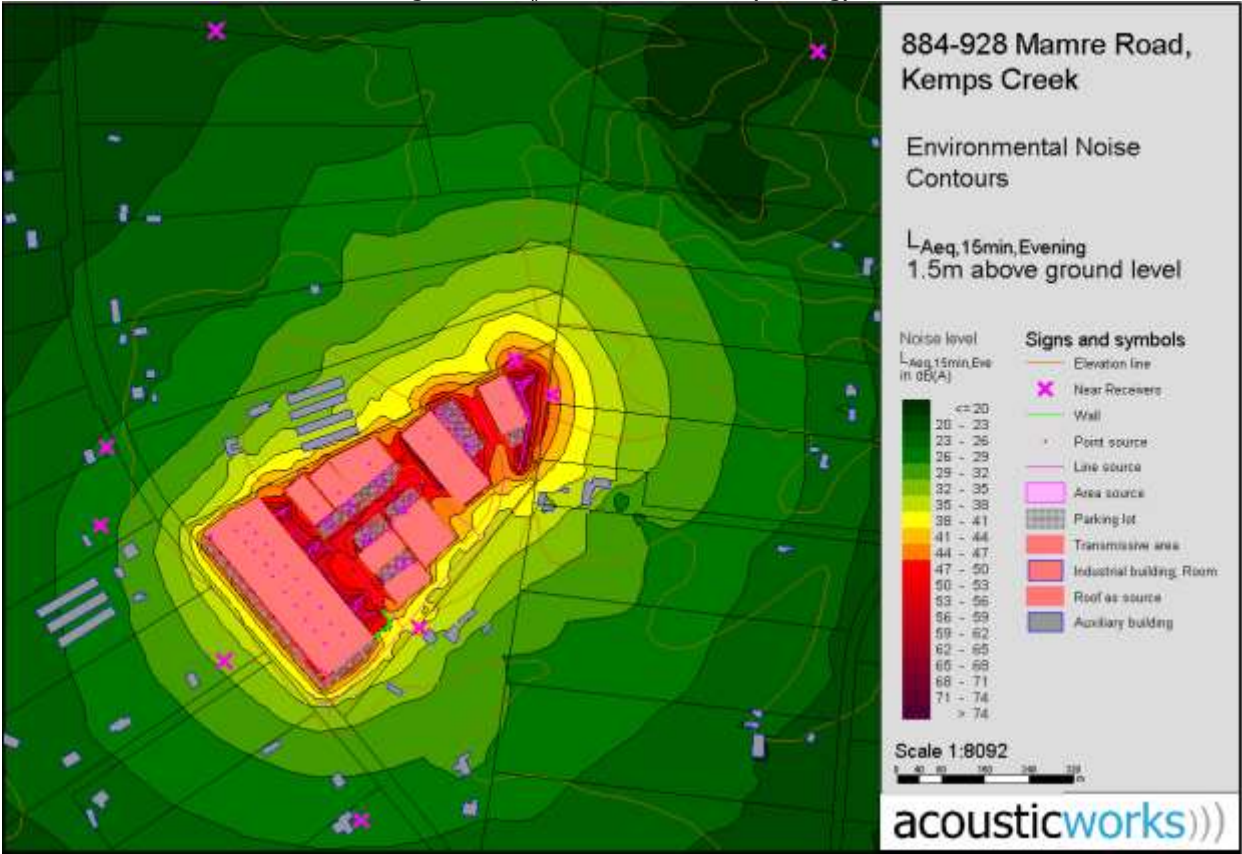
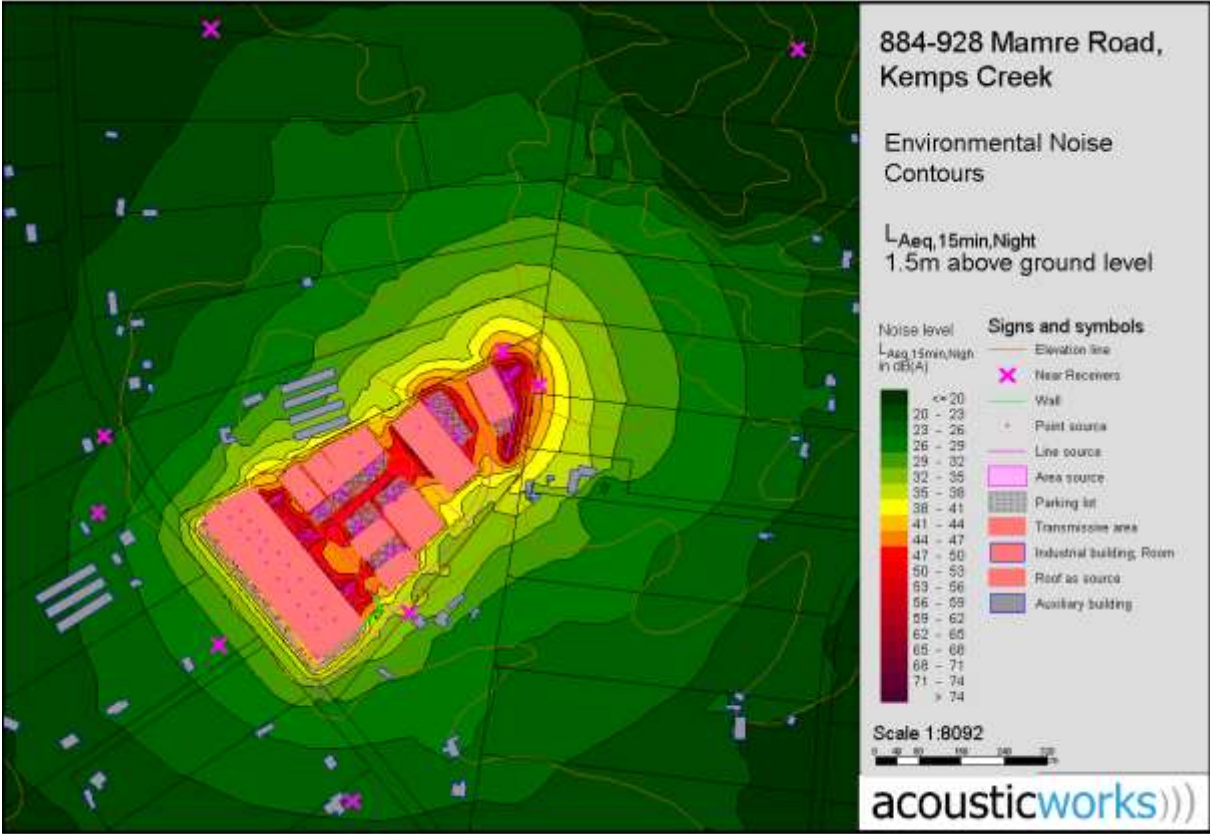


Figure 9: $L_{Aeq,15min}$ noise contours (Night)



8.3 Cumulative Noise Impact Assessment (Distant Receivers)

The predicted cumulative noise impacts to receivers A to AN is shown in Table 24. LAeq results are not shown where the calculated total is less than 0dBA.

Table 24: Project specific noise levels (Receivers A to N)

Receiver	Project Specific Criteria Leq,15min dBA			Predicted Noise Impacts Leq,15min dBA			Complies (Yes/No)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
A	16 internal / 26 external			4 / 14	-	-	Yes	Yes	Yes
B	34	29	24	12	11	8	Yes	Yes	Yes
C	16 internal / 26 external			4/ 14	-	-	Yes	Yes	Yes
D	16 internal / 26 external			- / 8	-	-	Yes	Yes	Yes
E	36	36	36	10	9	6	Yes	Yes	Yes
F	16 internal / 26 external			- / 6	-	-	Yes	Yes	Yes
G	21 internal / 31 external			- / 4	- / 3	- / -	Yes	Yes	Yes
H	16 internal / 26 external			- / 4	- / 3	- / -	Yes	Yes	Yes
I	16 internal / 26 external			- / 7	- / 6	- / 2	Yes	Yes	Yes
J	34	29	24	7	6	2	Yes	Yes	Yes
K	34	29	24	7	6	3	Yes	Yes	Yes
L	34	29	24	7	6	2	Yes	Yes	Yes
M	34	29	24	5	4	1	Yes	Yes	Yes
N	34	29	24	13	12	9	Yes	Yes	Yes
O	34	29	24	12	11	8	Yes	Yes	Yes
P	34	29	24	10	8	6	Yes	Yes	Yes
Q	34	29	24	8	7	4	Yes	Yes	Yes
R	34	29	24	7	6	3	Yes	Yes	Yes
S	34	29	24	12	11	8	Yes	Yes	Yes
T	34	29	24	12	11	8	Yes	Yes	Yes
U	34	29	24	14	13	10	Yes	Yes	Yes
V	34	29	24	11	10	7	Yes	Yes	Yes
W	34	29	24	11	10	6	Yes	Yes	Yes
X	34	29	24	13	12	9	Yes	Yes	Yes
Y	34	29	24	10	9	5	Yes	Yes	Yes
Z	34	29	24	11	10	7	Yes	Yes	Yes
AA	34	29	24	11	10	7	Yes	Yes	Yes
AB	34	29	24	7	6	3	Yes	Yes	Yes
AC	34	29	24	12	11	8	Yes	Yes	Yes
AD*	41	41	36	28	27	24	Yes	Yes	Yes
AE	34	29	24	21	20	17	Yes	Yes	Yes
AF	34	29	24	12	10	7	Yes	Yes	Yes
AG	34	29	24	11	10	7	Yes	Yes	Yes
AH	34	29	24	13	12	9	Yes	Yes	Yes
AI	16 internal / 26 external			4/14	-	-	Yes	Yes	Yes
AJ	16 internal / 26 external			4/14	-	-	Yes	Yes	Yes
AK	34	29	24	12	11	8	Yes	Yes	Yes
AL	34	29	24	13	12	10	Yes	Yes	Yes
AM	34	29	24	17	16	14	Yes	Yes	Yes
AN	34	29	24	10	9	6	Yes	Yes	Yes

Receiver	Project Specific Criteria $L_{eq,15min}$ dBA			Predicted Noise Impacts $L_{eq,15min}$ dBA			Complies (Yes/No)		
	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
AO	34	29	24	10	9	6	Yes	Yes	Yes
AP	34	29	24	8	6	3	Yes	Yes	Yes
AQ	21 internal / 31 external			9/19	8/18	6/16	Yes	Yes	Yes

*Assessed as a "Near receiver"

Compliance with the cumulative impact criteria is predicted for all onsite activities at receivers A to AQ during the proposed operating hours on the condition the recommendations detailed in Section 12 are implemented. Refer to Figures 10 to 12 for a visual representation of the predicted noise levels.

Figure 10: $L_{Aeq,15min}$ noise contours (Day)

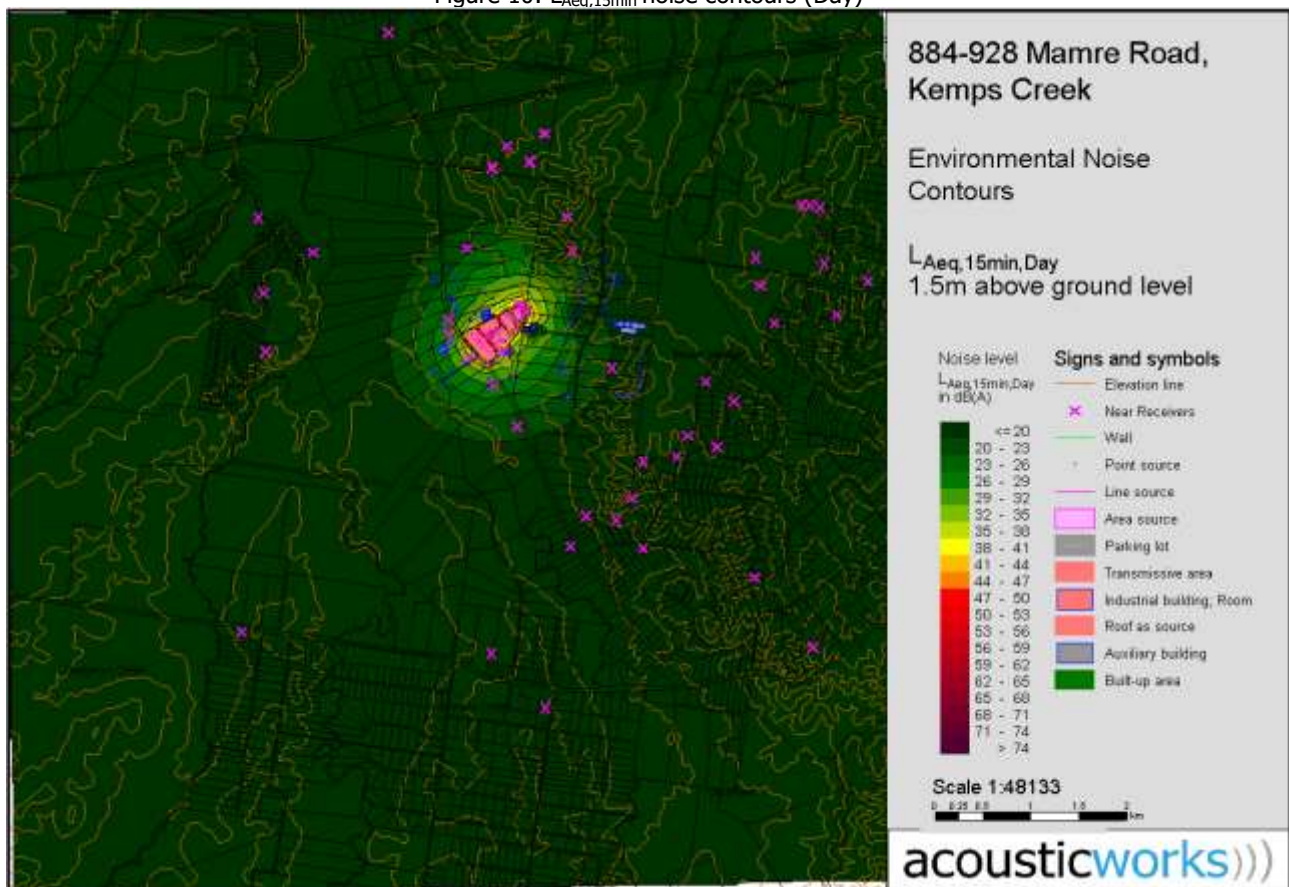


Figure 11: $L_{Aeq,15min}$ noise contours (Evening)

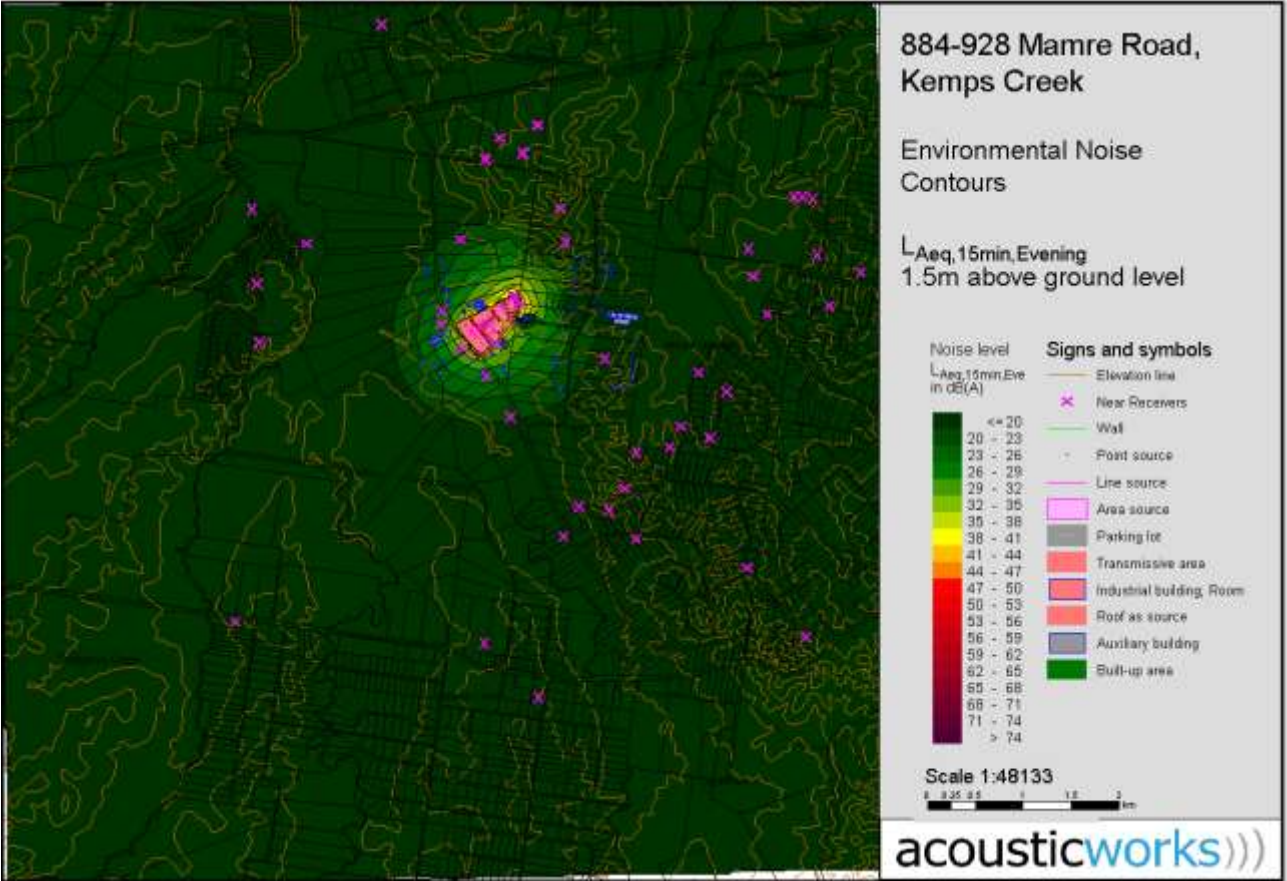
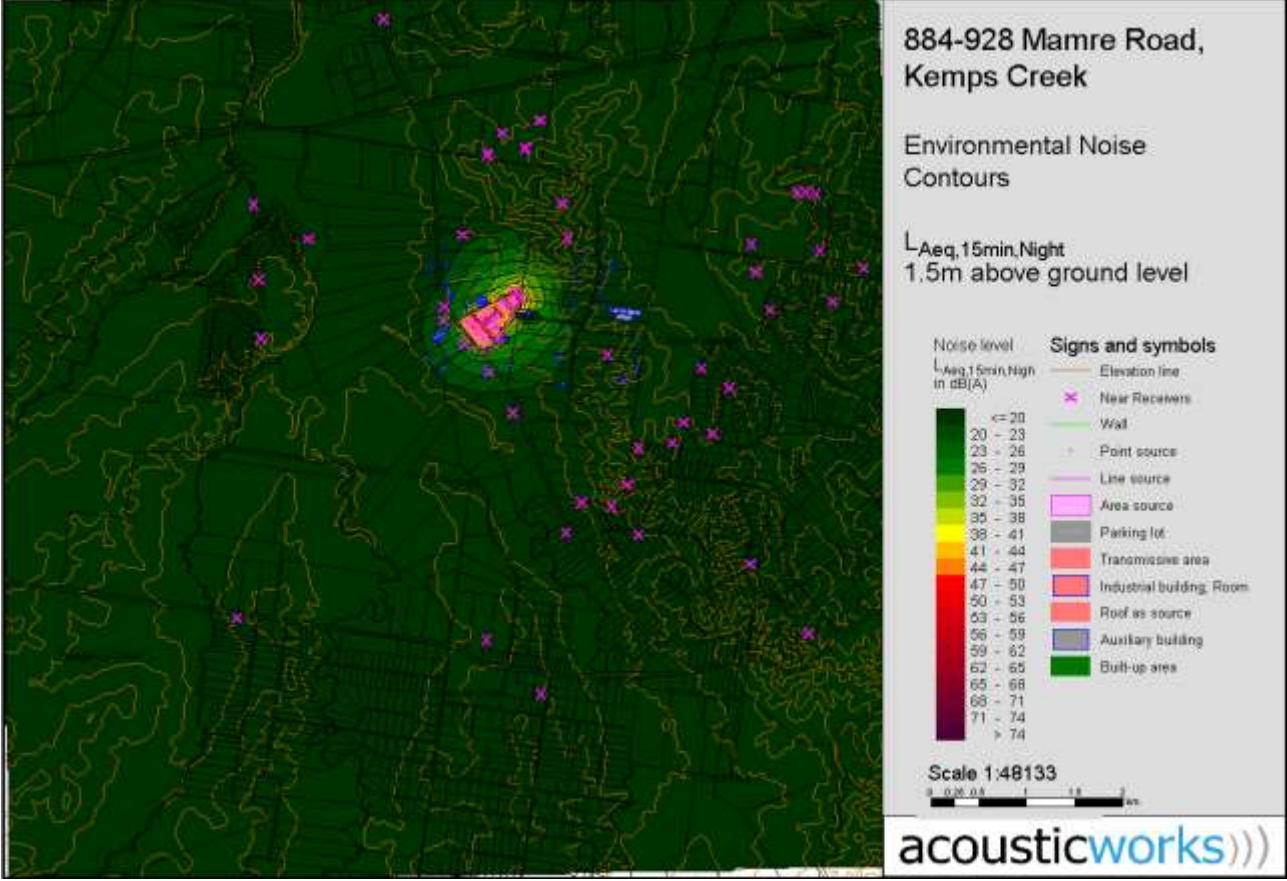


Figure 12: $L_{Aeq,15min}$ noise contours (Night)



8.4 Sleep disturbance criteria

The noise source levels and predicted levels of noise at the receiver locations are shown in Table 25. The calculations were undertaken to determine if noise impacts are predicted to comply with the sleep disturbance criteria for 24/7 operation.

Table 25: Sleep Disturbance noise levels (Receivers 1 to 5)

Receivers		Sleep Disturbance							
1. 885-899, 901, 917, 919-929 & 931 Mamre Rd (W) 2. 930-966 Mamre Rd (S) 3. 99-111 Aldington Road (N) 4. 772-782 Mamre Road (N) 5. 819-883 Mamre Road (NW)		LWMax dB(A)	Distance (m)	Barrier (height (m))	Barrier screening dB	Building/Topo Screening dB	Building TL dB	Dist atten. @ 600ft/dB	LWMax dB(A) Night
Description									LWMax
Criteria									56
1	Truck passby	95	216					-54.7	40
	Truck reverse alarm	103	216			-20		-54.7	28
	Truck air brakes	114	216			-20		-54.7	39
	Truck door closing	98	216			-20		-54.7	23
	Truck starting	101	216			-20		-54.7	26
	Truck idle	96	216			-20		-54.7	21
	Truck idle w/ Refrigerator Unit	101	216			-20		-54.7	26
	Mechanical Plant Deck	80	125			-20		-49.9	10
	Forklift reverse	106	123			-8		-49.8	48
	Forklift unloading	95	123			-8		-49.8	37
	Forklift passby	104	123			-8		-49.8	46
	Car door closure	88	127					-50.1	38
	Car passby	80	128					-50.1	30
	Car start	88	128					-50.1	38
	Voice conversation	81	125					-49.9	31
	Total								
Criteria									53
2	Truck passby	95	96	6	-9			-47.6	38
	Truck reverse alarm	103	96	6	-9			-47.6	46
	Truck air brakes	114	96	6	-13			-47.6	53
	Truck door closing	98	96	6	-9			-47.6	41
	Truck starting	105	96	6	-9			-47.6	48
	Truck idle	96	96	6	-9			-47.6	39
	Truck idle w/ Refrigerator Unit	101	96	6	-9			-47.6	44
	Mechanical Plant Deck	80	90					-47.1	33
	Forklift reverse	106	85	3.6	-9		-8	-46.6	42
	Forklift unloading	95	85	3.6	-9		-8	-46.6	31
	Forklift passby	104	85	3.6	-9		-8	-46.6	40
	Car door closure	88	100	3.6	-11			-48	29
	Car passby	80	100	3.6	-11			-48	21
	Car start	88	100	3.6	-11			-48	29
	Voice conversation	81	90	3.6	-11			-47.1	23
	Total								
Criteria									53
3	Truck passby	95	784					-65.9	29
	Truck reverse alarm	103	784					-65.9	37
	Truck air brakes	114	784					-65.9	48
	Truck door closing	98	784					-65.9	32
	Truck starting	105	784					-65.9	39
	Truck idle	96	784					-65.9	30
	Truck idle w/ Refrigerator Unit	101	784					-65.9	35
	Mechanical Plant Deck	80	784					-65.9	14
	Forklift reverse	106	811			-8		-66.2	32
	Forklift unloading	95	811			-8		-66.2	21
	Forklift passby	104	811			-8		-66.2	30
	Car door closure	88	837					-66.5	22
	Car passby	80	837					-66.5	14
	Car start	88	837					-66.5	22
	Voice conversation	81	784					-65.9	15
	Total								
Criteria									56
4	Truck passby	95	876			-17		-66.9	11
	Truck reverse alarm	103	876			-17		-66.9	19
	Truck air brakes	114	876			-17		-66.9	30
	Truck door closing	98	876			-17		-66.9	14
	Truck starting	105	876			-17		-66.9	21
	Truck idle	96	876			-17		-66.9	12
	Truck idle w/ Refrigerator Unit	101	876			-17		-66.9	17
	Mechanical Plant Deck	80	856					-66.6	13
	Forklift reverse	106	856			-8		-66.6	31
	Forklift unloading	95	856			-8		-66.6	20
	Forklift passby	104	856			-8		-66.6	29
	Car door closure	88	901					-67.1	21
	Car passby	80	901					-67.1	13
	Car start	88	901					-67.1	21
	Voice conversation	81	856					-66.6	14
	Total								
Criteria									56
5	Truck passby	95	335			-17		-58.5	19
	Truck reverse alarm	103	335			-17		-58.5	27
	Truck air brakes	114	335			-17		-58.5	38
	Truck door closing	98	335			-17		-58.5	22
	Truck starting	105	335			-17		-58.5	29
	Truck idle	96	335			-17		-58.5	20
	Truck idle w/ Refrigerator Unit	101	335			-17		-58.5	25
	Mechanical Plant Deck	80	215					-54.6	25
	Forklift reverse	106	202			-8		-54.1	44
	Forklift unloading	95	202			-8		-54.1	33
	Forklift passby	104	202			-8		-54.1	42
	Car door closure	88	215					-54.6	33
	Car passby	80	215					-54.6	25
	Car start	88	215					-54.6	33
	Voice conversation	81	215					-54.6	26
	Total								

Table 26: Sleep Disturbance noise levels (Receivers B, J & K)

	Receivers B - Emmaeus Retirement Village J - Mount Vernon K - Horsley Park L - Kemps Creek M - Badgenys Creek N - Luddenham	LwMax dB(A)	Distance (m)	Dist atten. @-6dB/dd	LAmax dB(A) Night	Sleep Disturbance LAmax
	Description					
	Criteria					52
	Truck passby	95	1512	-71.6	23	Yes
B	Truck reverse alarm	103	1512	-71.6	31	Yes
	Truck air brakes	114	1512	-71.6	42	Yes
	Truck door closing	98	1512	-71.6	26	Yes
	Truck starting	105	1512	-71.6	33	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	1512	-71.6	8	Yes
	Forklift reverse	106	1512	-71.6	34	Yes
	Forklift unloading	95	1512	-71.6	23	Yes
	Forklift passby	104	1512	-71.6	32	Yes
	Car door closure	88	1512	-71.6	16	Yes
	Car passby	80	1512	-71.6	8	Yes
	Car start	88	1512	-71.6	16	Yes
	Voice conversation	81	1512	-71.6	9	Yes
	Total					
	Criteria					52
	Truck passby	95	1741	-72.8	22	Yes
J	Truck reverse alarm	103	1741	-72.8	30	Yes
	Truck air brakes	114	1741	-72.8	41	Yes
	Truck door closing	98	1741	-72.8	25	Yes
	Truck starting	105	1741	-72.8	32	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	1741	-72.8	7	Yes
	Forklift reverse	106	1741	-72.8	33	Yes
	Forklift unloading	95	1741	-72.8	22	Yes
	Forklift passby	104	1741	-72.8	31	Yes
	Car door closure	88	1741	-72.8	15	Yes
	Car passby	80	1741	-72.8	7	Yes
	Car start	88	1741	-72.8	15	Yes
	Voice conversation	81	1741	-72.8	8	Yes
	Total					
	Criteria					52
	Truck passby	95	2605	-76.3	19	Yes
K	Truck reverse alarm	103	2605	-76.3	27	Yes
	Truck air brakes	114	2605	-76.3	38	Yes
	Truck door closing	98	2605	-76.3	22	Yes
	Truck starting	105	2605	-76.3	29	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	2605	-76.3	4	Yes
	Forklift reverse	106	2605	-76.3	30	Yes
	Forklift unloading	95	2605	-76.3	19	Yes
	Forklift passby	104	2605	-76.3	28	Yes
	Car door closure	88	2605	-76.3	12	Yes
	Car passby	80	2605	-76.3	4	Yes
	Car start	88	2605	-76.3	12	Yes
	Voice conversation	81	2605	-76.3	5	Yes
	Total					

Table 27: Sleep Disturbance noise levels (Receivers L-N)

	Receivers					Sleep Disturbance
		LwMax dB(A)	Distance (m)	Dist atten. @ -6dB/dd	Lmax dB(A) Night	
	B - Emmaeus Retirement Village J - Mount Vernon K - Horsley Park L - Kemps Creek M - Badgerys Creek N - Luddenham					
	Description	LwMax dB(A)	Distance (m)	Dist atten. @ -6dB/dd	Lmax dB(A) Night	LAmaz
	Criteria					52
L	Truck passby	95	3154	-78	17	Yes
	Truck reverse alarm	103	3154	-78	25	Yes
	Truck air brakes	114	3154	-78	36	Yes
	Truck door closing	98	3154	-78	20	Yes
	Truck starting	105	3154	-78	27	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	3154	-78	2	Yes
	Forklift reverse	106	3154	-78	28	Yes
	Forklift unloading	95	3154	-78	17	Yes
	Forklift passby	104	3154	-78	26	Yes
	Car door closure	88	3154	-78	10	Yes
	Car passby	80	3154	-78	2	Yes
	Car start	88	3154	-78	10	Yes
	Voice conversation	81	3154	-78	3	Yes
	Total					
	Criteria					52
M	Truck passby	95	3119	-77.9	17	Yes
	Truck reverse alarm	103	3119	-77.9	25	Yes
	Truck air brakes	114	3119	-77.9	36	Yes
	Truck door closing	98	3119	-77.9	20	Yes
	Truck starting	105	3119	-77.9	27	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	3119	-77.9	2	Yes
	Forklift reverse	106	3119	-77.9	28	Yes
	Forklift unloading	95	3119	-77.9	17	Yes
	Forklift passby	104	3119	-77.9	26	Yes
	Car door closure	88	3119	-77.9	10	Yes
	Car passby	80	3119	-77.9	2	Yes
	Car start	88	3119	-77.9	10	Yes
	Voice conversation	81	3119	-77.9	5	Yes
	Total					
	Criteria					52
N	Truck passby	95	2380	-75.5	19	Yes
	Truck reverse alarm	103	2380	-75.5	27	Yes
	Truck air brakes	114	2380	-75.5	38	Yes
	Truck door closing	98	2380	-75.5	22	Yes
	Truck starting	105	2380	-75.5	29	Yes
	Truck idle	96	1512	-71.6	24	Yes
	Truck idle w/ Refrigerator Unit	101	1512	-71.6	29	Yes
	Mechanical Plant Deck	80	2380	-75.5	4	Yes
	Forklift reverse	106	2380	-75.5	30	Yes
	Forklift unloading	95	2380	-75.5	19	Yes
	Forklift passby	104	2380	-75.5	28	Yes
	Car door closure	88	2380	-75.5	12	Yes
	Car passby	80	2380	-75.5	4	Yes
	Car start	88	2380	-75.5	12	Yes
	Voice conversation	81	2380	-75.5	5	Yes
	Total					

Compliance is predicted for all onsite activities at the receiver locations during the proposed operating hours on the condition the recommendations detailed in Section 12 are implemented. All other receivers (receivers O to AQ detailed in table 2) not identified in Tables 25 to 27 are predicted

to comply with the sleep disturbance based on increased separation distances and screening from the noise sources.

9 Vibration Predictions

Potential vibration and acceleration impacts were assessed to determine typical levels within a set distance of the activity to the receiver with a maximum combined Peak Particle Velocity of level less than 1mm/s predicted based on the equipment in operation. The level of impact may change depending on the ground composition, example stone/rock or concrete will allow higher levels of ground vibration than soft soil. It is recommended a strict management plan is implemented to allow a proactive approach to addressing complaints including vibration monitoring of activities if complaints are received.

After review of the proposal in relation to vibration impacts, we provide the following recommendations:

- The surrounding residential receivers located in proximity to the site are separated from the roads and site by soil, with reasonable separation distances from onsite activities and local roads. The human exposures and Peak Particle levels are predicted to be below the criteria nominated in section 7.6 with no further treatments required.
- The surrounding lots within the development are predicted to comply with the criteria based on the proposed warehousing activities. Note if vibrating plant is proposed within the development then individual assessment is recommended of the equipment to determine minimum treatment requirements.
- If complaints are received for onsite activities from any of the sensitive receiver we recommend that compliance monitoring is undertaken as detailed in Section 12.3.

10 Road Traffic Noise

The existing annual average daily traffic volume for Mamre Road is approximately 20,000 vehicles per day. The traffic impact report prepared by Ason Group (ref: 1509r09 dated 29/09/2022) predicts the development to generate an additional 2,555 daily vehicle trips.

The existing road traffic noise from Mamre Road already exceeds the set criteria of the NSW Road Noise Policy as detailed in Table 14 of this report. Therefore, for existing roads further reference was made to the other assessment requirements of the policy to determine if the traffic generation was predicted to comply. For internal roads, noise impacts with any internal roads assessed to the set criteria detailed in Table 14.

For a visual representation of the existing and predicted road traffic noise levels, refer to Figures 12 to 15.

Figure 13: Existing $L_{Aeq,15h}$ noise levels

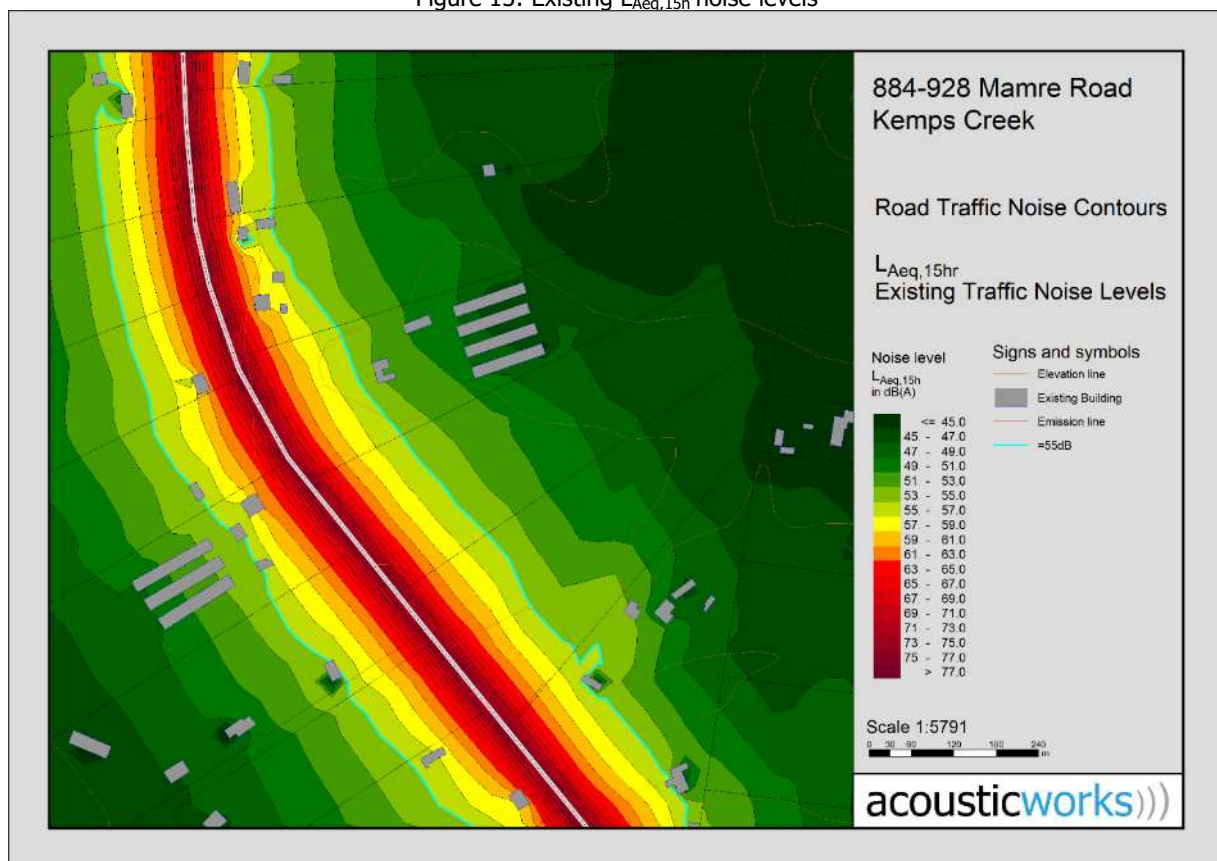


Figure 14: Existing $L_{Aeq,9h}$ noise levels

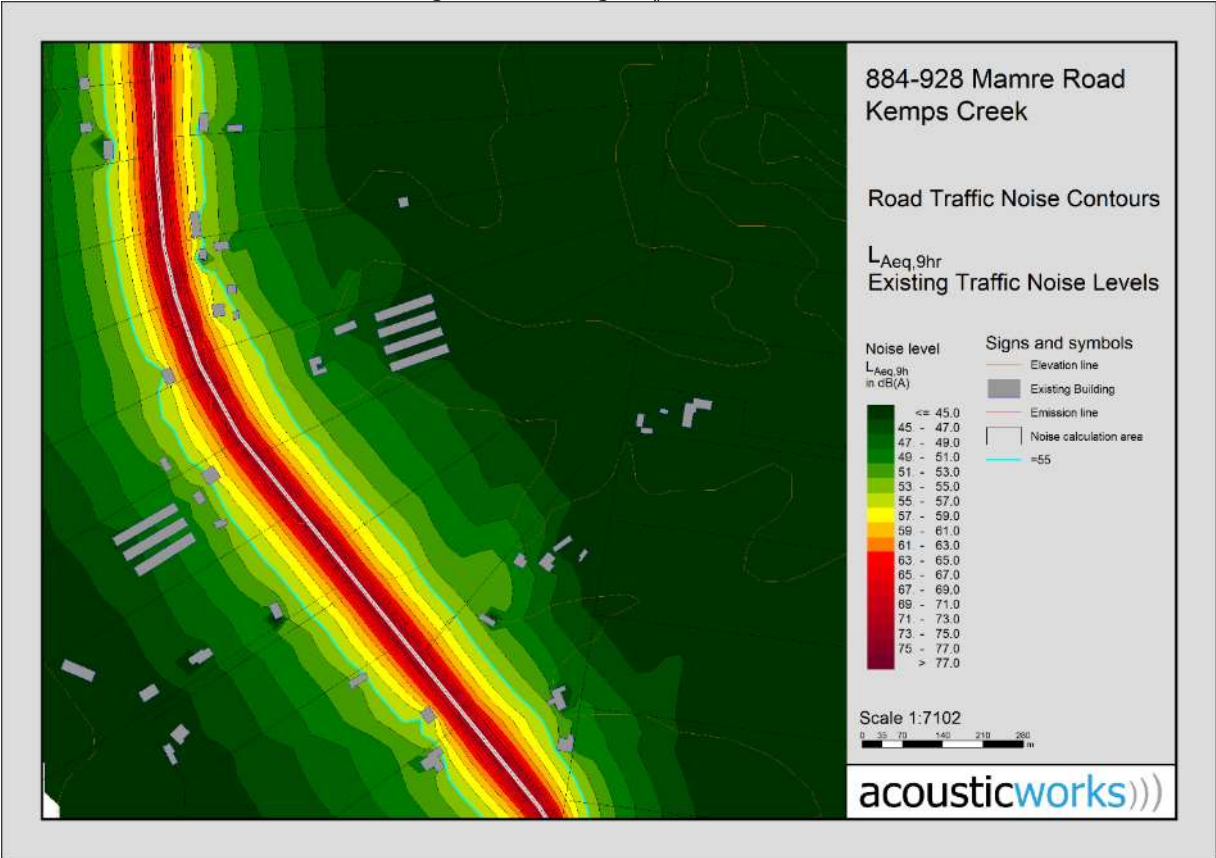


Figure 15: Predicted $L_{Aeq,15h}$ noise levels

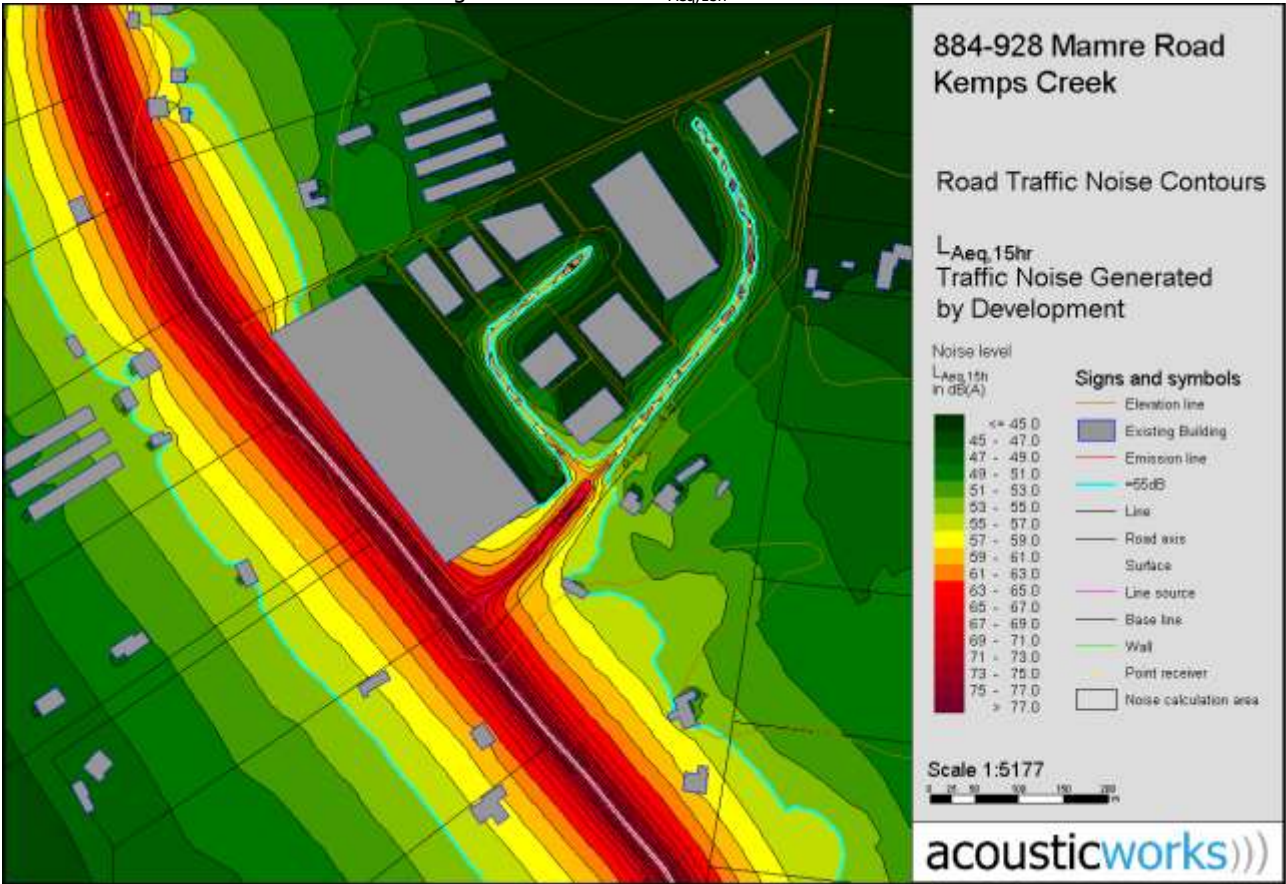
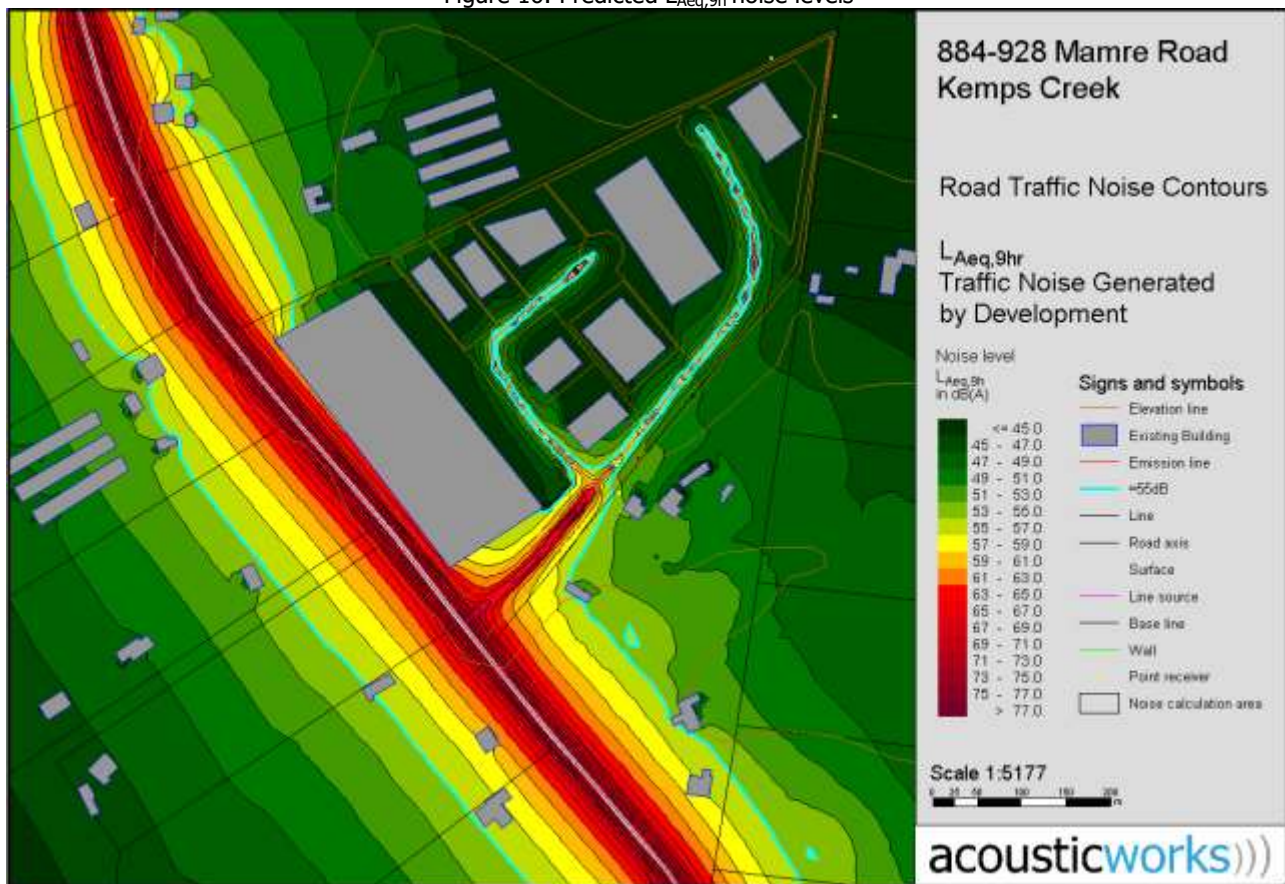


Figure 16: Predicted $L_{Aeq,9h}$ noise levels

Based on modelling of the existing Mamre Road and potential road traffic generation of the site, the following was determined:

- Mamre Road – the increased traffic to Mamre Road from the proposed development is predicted to comply with the NSW Road Noise Policy criteria as detailed in Table 15 (Section 7.6) of this report and will only result in less than a 1 dB increase. Mamre Road already exceeds the L_{Aeq} 15hour and L_{Aeq} 9hr noise limits (refer to Table 14), the 1 dB increase is less than the 2dB(A) allowed maximum increase as stated in Section 3.4 of the NSW Road Noise Policy 2011 and therefore complies with all assessment requirements.
- New Internal Access Roads – the new internal access roads are predicted to comply with the NSW Road Noise Policy 2011 criteria as stated in Section 7.6, Table 14 of this report on the condition the recommendations detailed in Section 12 are implemented.

Refer to Section 12 for further recommendations.

11 Aircraft Noise Assessment

11.1 Site location

The site is located within the indicative 20-25 and 25-30 ANEF contours for Western Sydney Airport. The following dimensions have been determined in accordance with AS2021:2015;

Table 28: Site coordinates runway

Description	Dimension (m)
DS, sideline distance	20
DL, landing distance	5843
DT, takeoff distance	9543
HS, elevation of site	62
HA, elevation of airport	80

11.2 Aircraft noise levels – AS2021:2015

Using the site coordinates, the noise levels for the various types of aircraft are calculated in

Table 29: Aircraft noise levels – AS2021:2015 Runway 16R/34L

Model	Representative aircraft	Noise level dBA L _{max} (slow)	
		Departure	Arrival
A319-115	Airbus A319-131	69	73
A320-231	Airbus A320-232	68	73
A321-231	Airbus A321-232	71	75
A330-202	Airbus A330-301	78	77
A330-303	Airbus A330-301	78	77
A340-642	Airbus A340-642	75	79
A380-842 (Short haul)	Airbus A380-841 (Short haul)	73	77
A380-842 (Long haul)	Airbus A380-841 (Long haul)	80	77
737-3YO	Boeing 737-300	74	76
737-476	Boeing 737-400	74	76
737-8FE	Boeing 737-800	75	77
DHC-6 SERIES 300	Bombardier Dash 6	64	75
EMB-110P1	Bombardier Dash 6	64	75
SA226-TC	Bombardier Dash 6	64	75
SA227-DC	Bombardier Dash 6	64	75
DHC-8-102	Bombardier Dash 8-100	52	64
DHC-8-202	Bombardier Dash 8-300	55	64
DHC-8-315	Bombardier Dash 8-300	55	64
DHC-8-402	Bombardier Dash 8-300	55	64
340B	Saab 340	62	71
Maximum noise level		80	79
		80	

Based on the highest predicted impact of L_{max} 80dBA further treatment to the building façade would be required to comply with AS 2021:2015: *Acoustics – Aircraft noise intrusion – Building siting and construction* internal assessment requirements. Refer to Section 12 for recommendations.

12 Recommendations

12.1 Operational Noise & Vibration

The review indicates that 24 hour operation of the site is predicted to comply with the assessment criteria on the condition that the following recommendations are implemented.

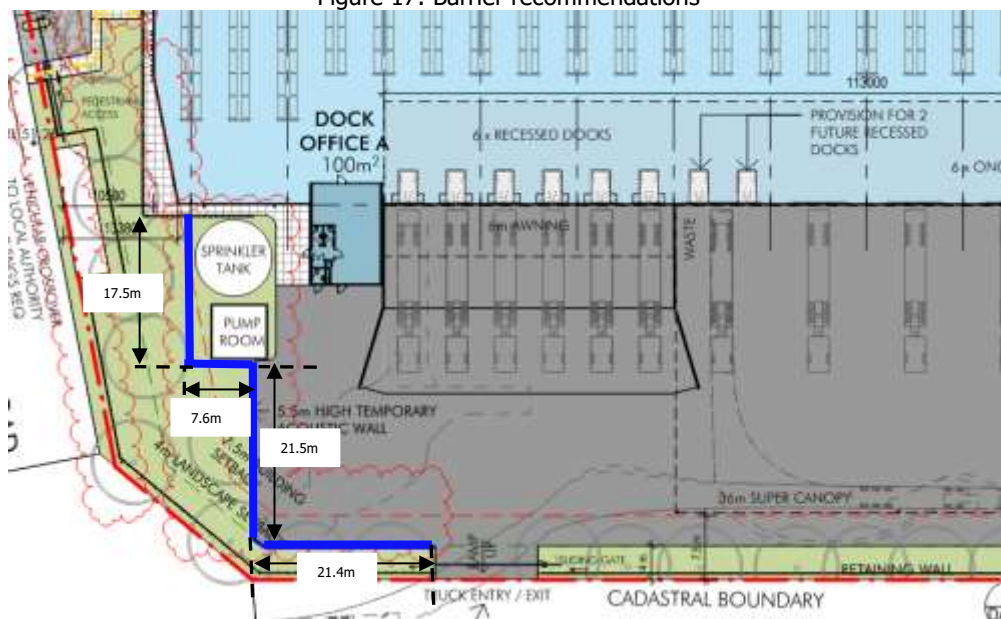
Refer to the appendices for a representation of the decision-making process used to determine the recommendations.

12.1.1 Onsite activities

We recommend constructing acoustic barriers comprised of the following:

- Acoustic barriers shall be constructed to the height and extent shown in Figure 17. The acoustic barriers should be constructed using masonry, 9mm fibre cement sheet, Hebel, 10mm thick Perspex, 21mm marine ply or other material achieving a minimum surface density of 12kg/m².
- All acoustic barriers are only required while the residential dwelling at Receiver 2 is occupied. If the receiver is demolished to make way for potential industrial developments, the barriers will no longer be required. Therefore, semi-permanent acoustic barriers may be used provided they achieve a minimum surface density of 12kg/m² and are free of gaps and holes. For semi-permanent construction, suitable materials may include construction that consists of minimum 21mm marine ply, 9mm FC, masonry or other materials that achieve the minimum surface density. Alternatively, ISO shipping containers may be stacked to the required height in locations requiring acoustic barriers.
- The 5.5 metre acoustic barrier for Lot 2's hard stand area may be replaced with a solid gap-free wall to the full height of the loading dock awning, on the condition that the materials used achieve a minimum surface density of 12kg/m². Like the acoustic barrier, the solid wall may be removed when the dwelling at Receiver 2 is no longer occupied.

Figure 17: Barrier recommendations



Acoustic Barrier 5.5m above Lot 2 pad level RL

Note that this updated acoustic barrier location (which was previously positioned on the southern boundary of the site) is based on the revised architectural drawings and the assumed warehouse loading dock orientation as shown in Figure 6.

12.1.2 Minimum Building Construction

Warehouses shall be constructed using building envelope construction which at least matches the sound insulation performance of standard sheet metal construction. Note if future detailed assessment of industrial uses identify additional requirements, then internal lining may be installed to provide additional attenuation.

12.1.3 NSW Road Noise Policy – Traffic Generation

On the condition the acoustic barriers nominated in Section 12.1 are constructed, the traffic generation from the proposed development is not predicted to cause exceedances of the criteria nominated in Section 7.6 at residences along Mamre Road, except for those where the criteria are already exceeded by existing road traffic noise. Noise from road traffic generated by the site is predicted to be less than 0.53dB which is below the relative increase criteria of 2dB.

12.1.4 Onsite Mechanical Plant

An assessment of mechanical plant associated with the air conditioning systems for the individual lots was conducted based on the noise levels presented in Table 22. Based on the calculated noise levels, compliance is predicted without the need for any additional acoustic treatments.

We recommend that a further detailed assessment of mechanical plant for individual lots is conducted prior to the final Construction Certification stage in accordance with the criteria nominated in Section 7 of this report by a suitably qualified acoustic consultant. The assessment will determine compliance of the proposed mechanical plant, account for any additional units and confirm the units are designed to comply with the assessment criteria. On completion of the development, a compliance assessment will be undertaken of the installed mechanical plant to determine compliance with the assessment criteria, if compliant, certification will be provided by a suitably qualified acoustic consultant.

In addition to the above recommendations, we recommend the following condition are included in any approval for the development:

- *Construction Certification - the developer or builder will engage an acoustic consultant to undertake a detailed assessment of the proposed mechanical plant for the development and submit a detailed report prior to the final construction certification certifying that plant has been designed to comply with the criteria. If individual lot assessment are undertaken, then the consultant will account for the cumulative effect of multiple lots when determining the criteria (refer to Section 12.2).*
- *On completion of the development, an acoustic consultant will undertake a compliance assessment of the installed mechanical plant based on the proposed operating hours of the development. If 24/7 operation is proposed, the assessment will be conducted during the night time period to represent the worst case scenario. On completion of the assessment, certification will be provided prior to occupancy of the development.*

12.2 Noise Allocation for Lots

As the specific configuration for the site has not been finalised, and lots vary in size, assessing individual proposed uses at a later stage with a 'one-size-fits-all' cumulative criteria would not be appropriate.

Per the Department's request, a maximum sound power level allocation for each lot was derived, with the maximum levels presented in Table 30.

Table 30: Maximum Allowable Sound Power Levels for each lot

Lot	Maximum L _w dBA		
	Day	Evening	Night
2	115	114	111
5	110	109	106
6	111	109	106
7	110	109	106
8	110	109	106
9	110	109	106
10	110	109	106
11	110	109	106
12	110	109	106
13	113	111	107
14	113	112	109
15	115	114	111
16	113	112	109

Alternatively, an approach similar to the methodology outlined in Section 2.4.2 of the Noise Policy for Industry may be applied by future consent authorities. In this approach, noise trigger levels for each proposed use are set using a modified version of the formula from Section 2.4.2 of the Policy. The intent that the combined noise from all lots would not exceed the cumulative criteria for the entire site (as defined in Section 7.5.5 of this report).

If this approach is chosen by future consent authorities, we recommend applying the below formula at each receiver and for each time period.

$$\text{Criteria} = \text{PNTL}_{\text{period}} + 10 \log (A_{\text{lot}}/A_{\text{total}})$$

Where:

PNTL_{period} is the project noise trigger level as nominated in Section 7.5.5 of this report

A_{lot} is the lot area of the individual use being assessed

A_{total} is the total site area of the overall development

As area is linked to the traffic generation capacity of a lot, assessing on this basis would give more lenient criteria to larger lots that are likely to generate more noise, while ensuring that the overall criteria for the entire site is not exceeded.

12.3 Vibration

Vibration associated with truck activity and onsite activities is predicted to comply with the relevant NSW guidelines at the nearest sensitive receivers. We recommend that any vibrating equipment used onsite is adequately isolated to prevent vibration issues to nearby residential receivers and is reviewed by a qualified acoustic consultant. If complaints are received for vibration, we recommend the management controls nominated in Section 12.4 are implemented.

12.4 Compliance Vibration Monitoring Procedure

To ensure the vibration monitoring is effective, we recommend the following:

- All vibration monitors will be set to a maximum measurement interval of 5 minutes and record over the period commencing over the entire day and be located onsite and at the sensitive receiver location.
- The client shall provide a list of relevant management staff (including mobile phone numbers) working on the project to be notified of exceedance of the nominated vibration levels.
- All vibration monitors will be fitted with an internal SMS warning system (allow the unit to send SMS notification of vibration levels when the nominated level is exceeded). The SMS warning from the vibration monitors will go out to all staff who have provided their mobile numbers for use for notifications from the vibration monitor.
- The vibration monitor will be set to provide vibration impact warnings at 2/3 of the criteria for human exposure and peak particle velocity, this will allow staff to be notified of vibration levels and take a proactive approach before the criteria is exceeded. The Acoustic consultant will also have a minimum of 2 staff nominated on the warning system.
- The vibration monitors will be installed with additional battery packs to extend the operation of the monitor to a minimum of 6 weeks without recharge.
- Attended vibrations measurement will be undertake for the affected site to determine existing levels of specific equipment to help identify. Regardless of warning or notification, the vibration monitor will be downloaded on a monthly basis with a monthly report provided to the client, the report will be suitable for submission to council.

12.4.1 Procedure for measuring Vibration

12.4.1.1 Where to measure vibration for complaints

Vibration is required to be measured at complainants location and onsite simultaneously with the geophone located at the nearest point to the dwelling for the sensitive receiver and onsite where the source of the complaint originated. The geophone can be fixed to the ground using mounting spikes in line with the nearest point of the site or fixed directly to building elements, note that relocation of the geophone may be required to be representative of the nearest location of works being conducted onsite. Note multiple vibration monitors (two) are recommended to avoid the need for relocating the geophone multiple times.

12.4.1.2 Information to be reported

Any reporting should be concise. The minimum requirements to be included in a report are;

- Date and duration of measurements.
- Time of measurements or measurement period.
- Person(s) performing measurements or placing equipment used for long term monitoring.
- Equipment used for measurements.

- Location of measurements including photos.
- Measured values including graphed PPV for the period of monitoring.
- Corrected values (where applicable).
- Notes regarding vibrating sources.
- Notes regarding any extraneous sources that may have influenced measurements.
- Detail of instrumentation and calibration.
- Meteorological conditions.
- Explanation of any high levels below the criteria including exceedances
- Action taken for any exceedance including changes to site operations

12.5 Aircraft noise

Aircraft noise building treatments have been determined in accordance with Australian Standard 2021:2015 "*Indoor Design Sound Levels for Determination of Aircraft Noise Reduction*".

12.5.1 Glazing

Based on the assessed noise levels, the required acoustic ratings of the various building components of the proposed development have been calculated and are presented in Table 31.

Table 31: Glazing treatments for aircraft noise

Floor	Room	Rw Ratings				Glazing		Acoustic seals
		Wall	Roof	Windows	Sliding Doors	Windows	Sliding Doors	
G	Lot 2 Open Plan Office	35	35	22	23	4mm float	4mm tough	No
1	Lot 2 Open Plan Office	35	35	22	23	4mm float	4mm tough	No
1	Lot 2 Dock Office	35	35	22	23	4mm float	4mm tough	No

The minimum glazing treatments presented in Table 31 are required to comply with the following:

- The minimum glass thickness specified shall not be reduced regardless of the R_w performance of the glazing system.
- If compliance cannot be achieved with the minimum R_w ratings, the glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a Q-lon seal or an equivalent product, mohair seals are not acceptable.
- The glazier shall be able to provide NATA test reports upon request for the specified glazing, in order to verify compliance with the minimum R_w ratings. Generic reports are not acceptable.

Note that if substantial changes are made to the internal layout of the building a revised assessment may be required.

12.5.2 Wall construction

For the wall R_w ratings nominated in Table 31, the following nominal wall constructions would be recommended.

Table 32: Nominal wall constructions

Description	Cavity insulation	R_w rating
Dado precast panel, 92mm studs, cavity with infill 10mm plasterboard internal	Minimum 75mm glasswool batts (11kg/m ³) or equivalent	35

The system listed above is not the only system that could be used. Other wall systems may be used providing they satisfy the required acoustic ratings.

12.5.3 Roof/ceiling construction

For the roof/ceiling R_w ratings nominated in Table 31, the following nominal roof/ceiling constructions would be recommended;

Table 33: Nominal roof/ceiling constructions

Description	Cavity insulation	Minimum R_w rating
Pitched steel roof, 60mm Anticon over 40mm timber battens, ceiling joists at 600mm maximum centres, cavity with infill, 13mm plasterboard internal.	Minimum 165mm glasswool batts (11kg/m ³) or equivalent	35

The system listed above is not the only system that could be used. Other roof systems may be used providing they achieve the acoustic rating or greater. Penetrations through the ceiling shall not reduce the overall acoustic performance of the installed ceiling system.

12.6 Noise Management Plan

If noise complaints are received from nearby receivers, noise monitoring with audio shall be conducted for a period of 7 days, with a monitor placed onsite and at the receiver from which the complaint was received. The monitors shall record simultaneously, with attended measurements also conducted onsite and at the complaining receiver. The monitoring data and audio shall be examined by a suitably qualified person to verify that the offending noise originated at the site.

If noise generated by the site has resulted in complaints, we recommend an acoustic assessment is conducted to determine suitable mitigation strategies and/or acoustic treatments.

12.7 Contingency

The operational noise assessment fully accounts for the range of noise emissions from tenants expected to occupy the site. Should a prospective tenant plan to undertake activities to the extent that building occupants will require hearing protection, as determined under OHS regulations, Acoustic Works recommends a detailed acoustic assessment of their operational noise prior to commencement. The assessment must be conducted in accordance with the criteria nominated in Section 7 of this report by a suitably qualified acoustic consultant to determine site specific noise mitigation requirements.

13 Conclusion

A noise assessment was conducted for the proposed industrial warehousing estate to be located 884-928 Mamre Road, Kemps Creek. On the condition the recommendations detailed in Section 12 are implemented, general compliance is predicted the Mamre Road Precinct DCP 2021 and the NSW Noise Policy for Industry requirements.

If you should have any queries please do not hesitate to contact us.

Regards,



Greg Pearce B.Eng (Mech)
Director

acousticworks)))

14 Appendices

14.1 Development Plans



884-928 Mamre Road

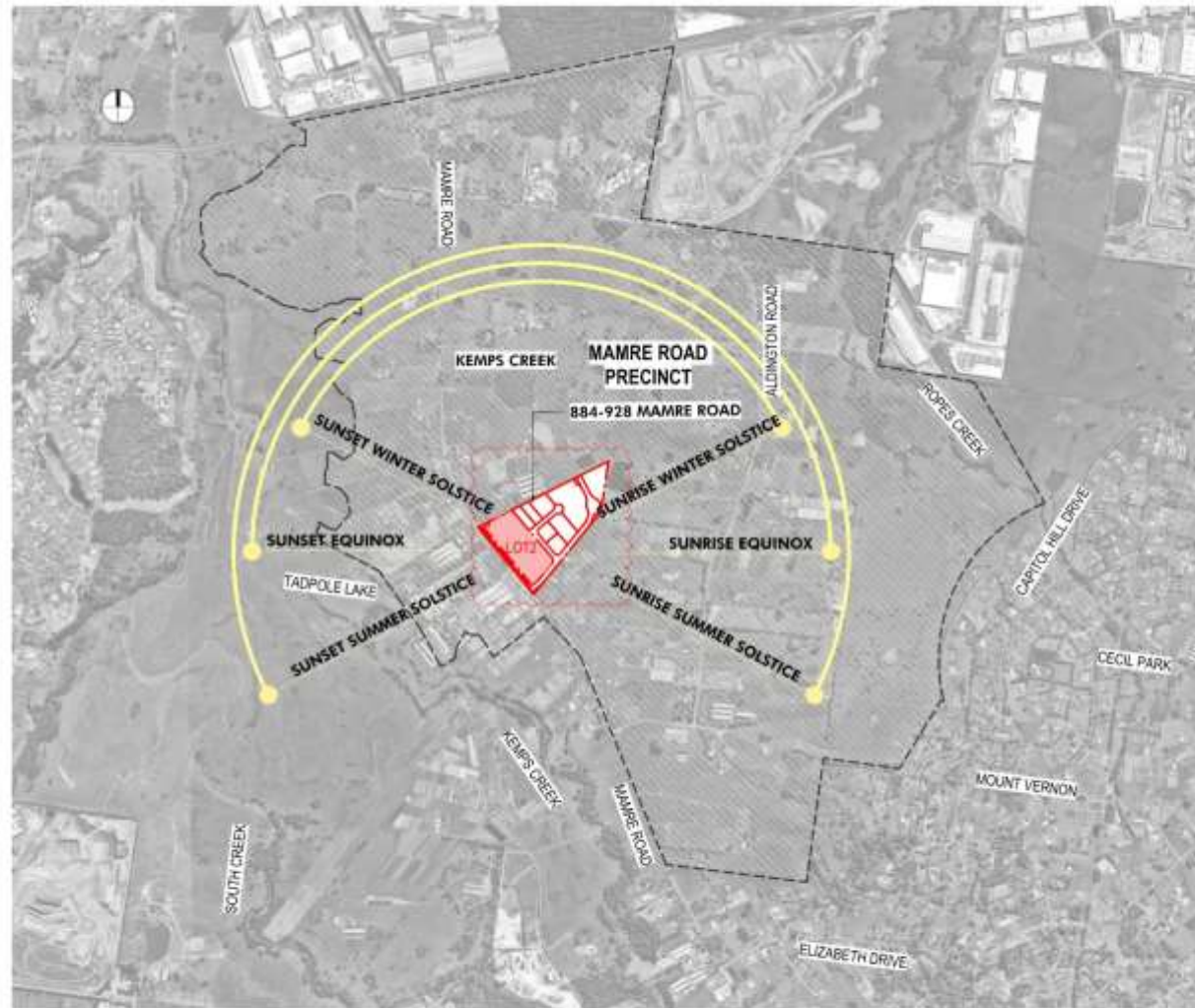
884-928 Mamre Road, Kemps Creek, NSW

UPDATED SSDA

25/05/2023

DRAWING LIST			
No.	SHEET NAME	REV	DATE
DA000	Cover Page	P321	25.05.2023
DA001	Locality & Context Plan	P14	09.05.2023
DA002	Site Analysis	P13	25.05.2023
DA003	Estate Masterplan - Stage 1	P23	12.05.2023
DA004	Estate Masterplan / Benchmark Plan - Stage 2	P33	25.05.2023
DA005	Stage 1 Residual Lot Subdivision	P14	12.05.2023
DA006	Subdivision Masterplan - Stage 2	P19	25.05.2023
DA010	LOT 2 - Mamre Road Boundary and Setback Plan	P12	09.05.2023
DA011	LOT 2 - Site Plan / Ground Floor Plan	P34	16.05.2023
DA012	LOT 2 - Site Plan / Roof Plan	P23	12.05.2023
DA015	LOT 2 - Office Floor Plans - Sheet 1	P17	12.05.2023
DA016	LOT 2 - Office Floor Plans - Sheet 2	P15	12.05.2023
DA021	Site Elevations	P17	09.05.2023
DA022	LOT 2 - Building Elevations	P23	12.05.2023
DA025	LOT 2 - Office Elevations	P15	09.05.2023
DA031	Site Sections	P16	09.05.2023
DA032	LOT 2 - Building Sections	P16	09.05.2023
DA035	LOT 2 - Office Sections	P14	09.05.2023
DA041	LOT 2 - Area Plans	P22	12.05.2023
DA042	LOT 2 - Indicative Lighting Layout	P18	12.05.2023
DA043	LOT 2 - Signage Strategy Plan	P21	12.05.2023
DA044	Signage Details, Typical Colours & Material Schedule	P13	09.05.2023
DA045	LOT 2 - Fencing Plan	P16	12.05.2023
DA051	Perspectives	P15	12.05.2023
DA060	20m Height Limit Diagram	P8	16.05.2023





1 Locality & Context Plan
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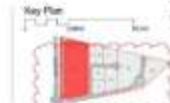
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NO.	REVISION	DATE	BY	CHKD
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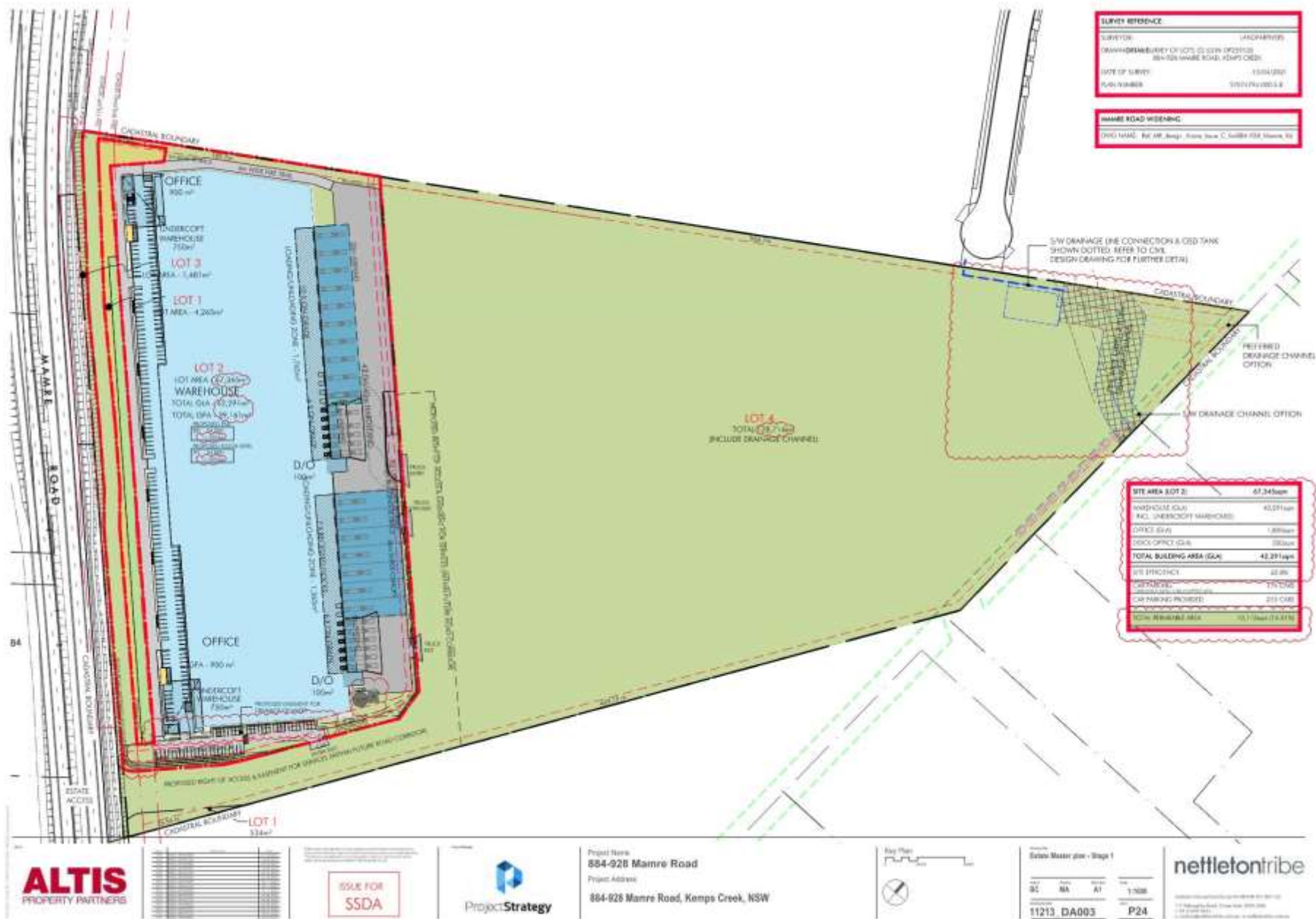
ProjectStrategy

Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemp's Creek, NSW



Locality & Context Plan
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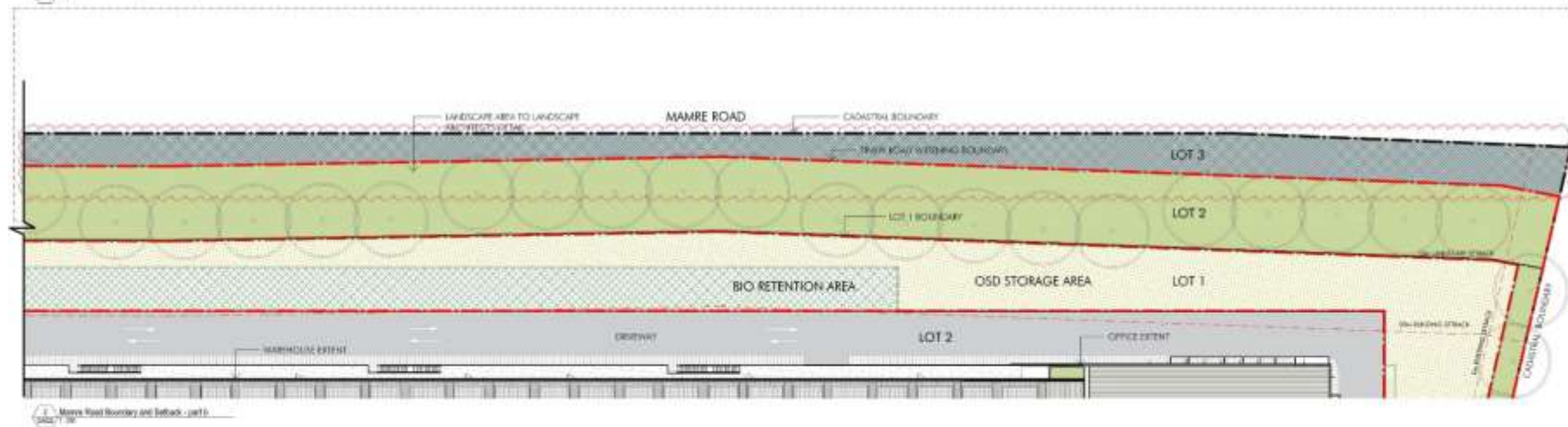
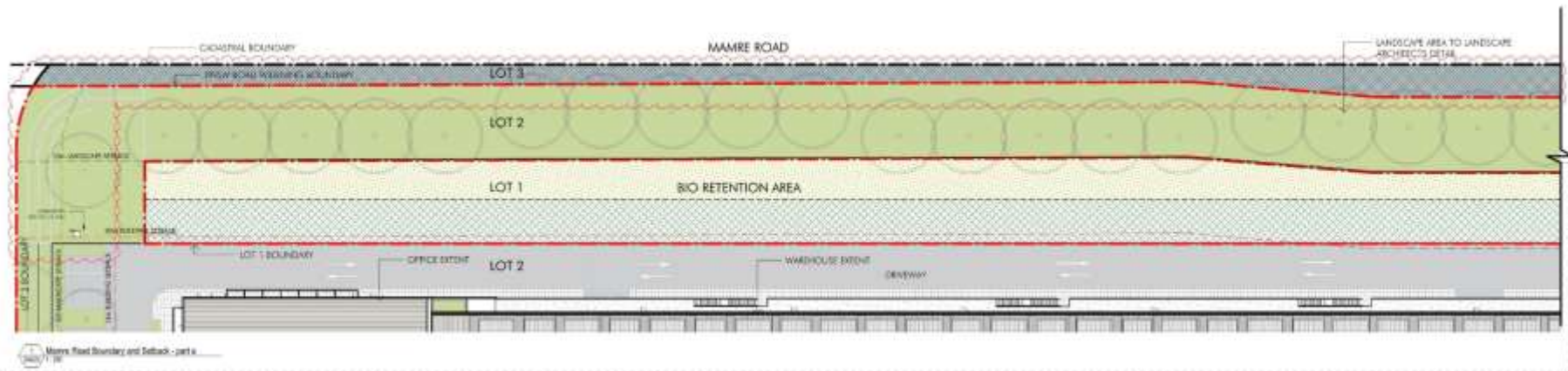
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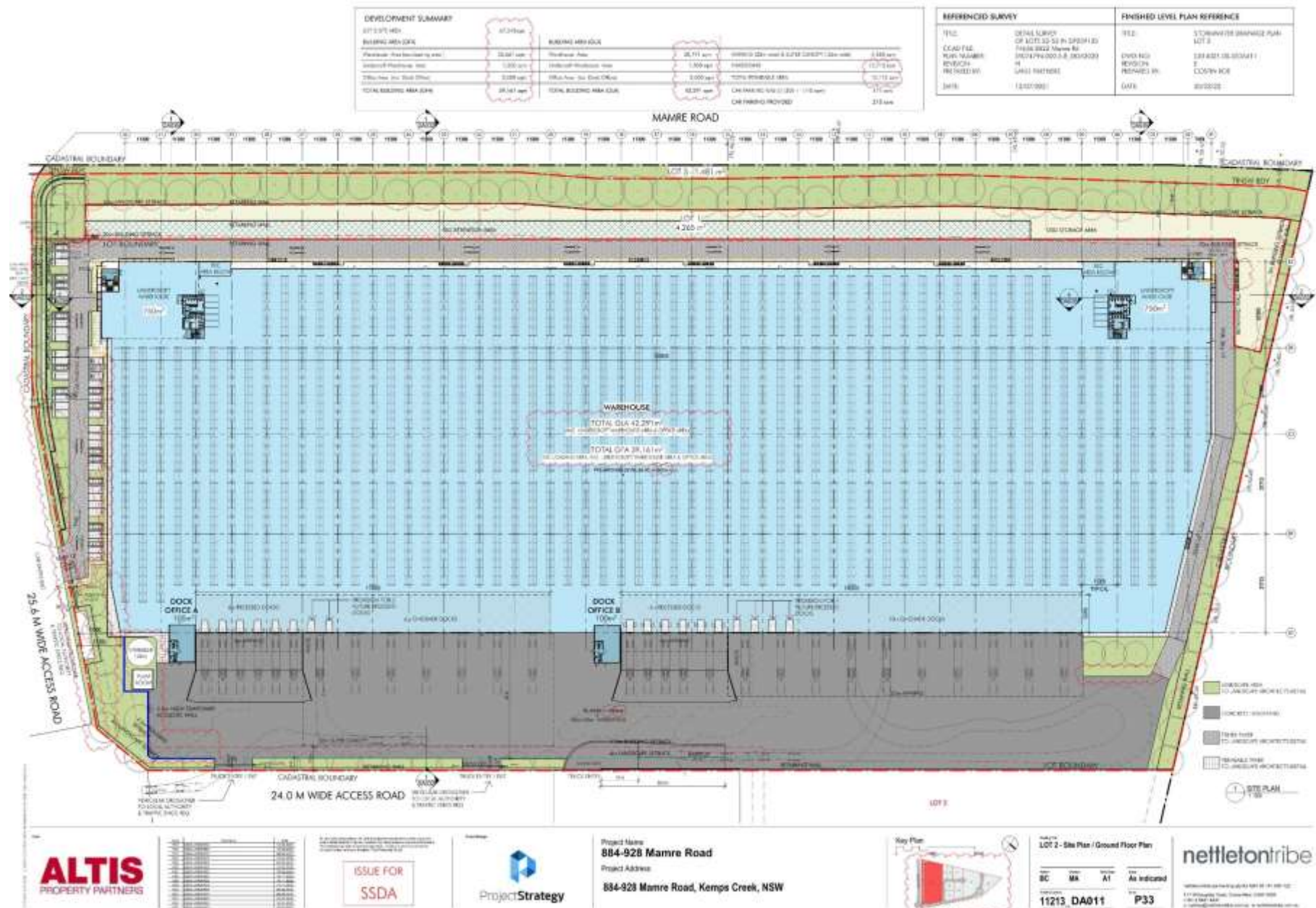


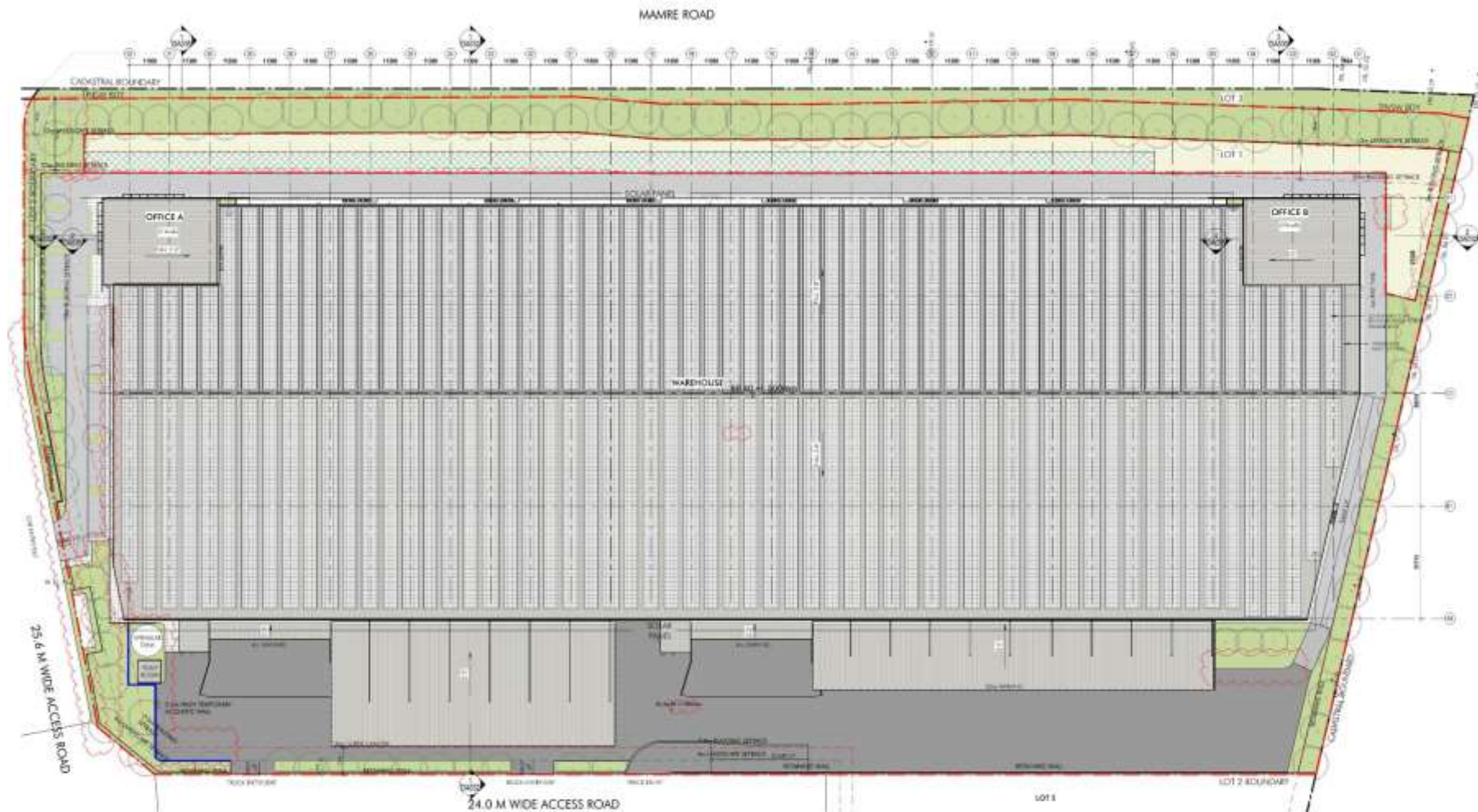












1 SITE PLAN / ROOF PLAN

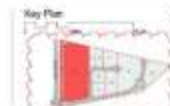
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ISSUE FOR
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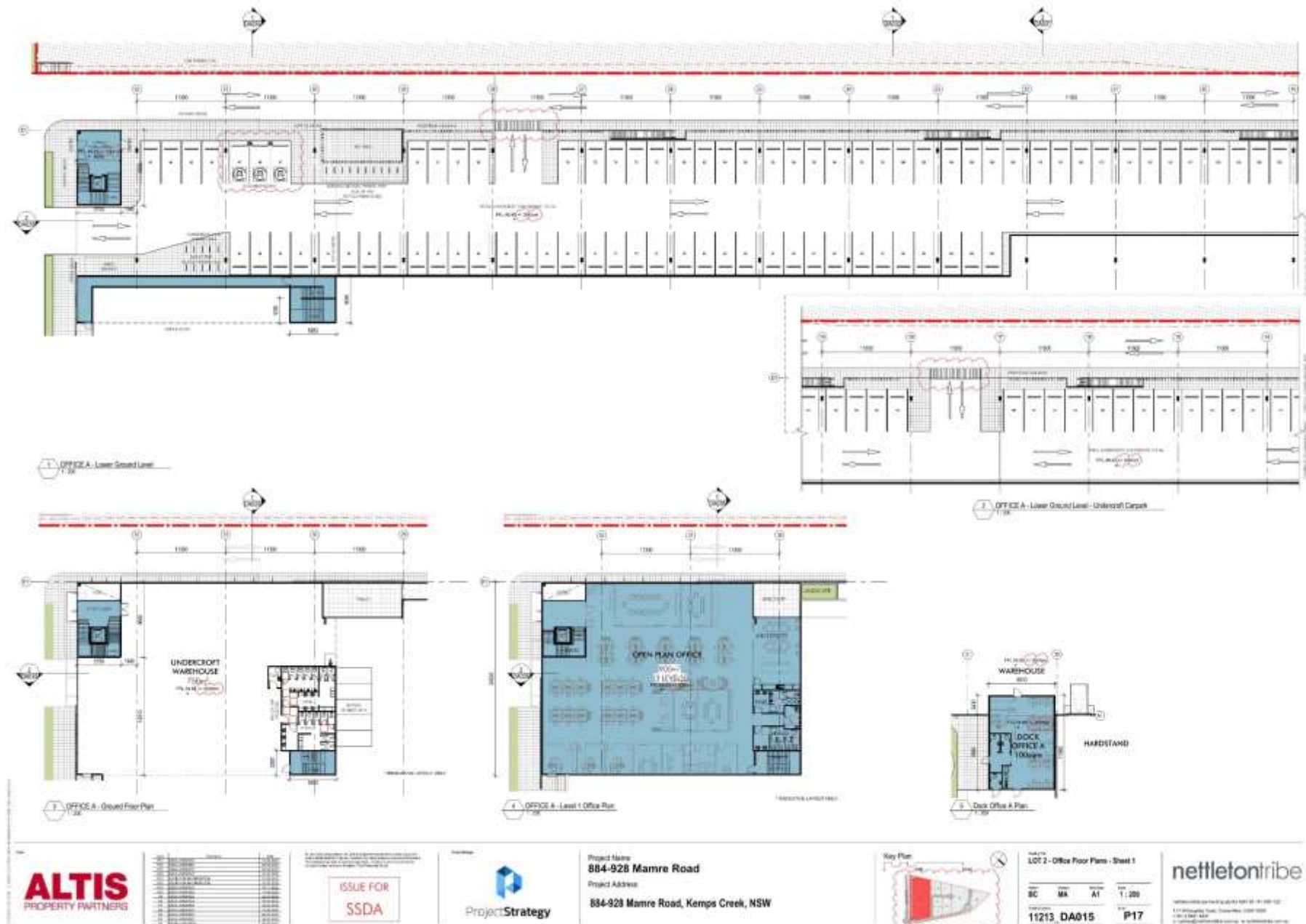
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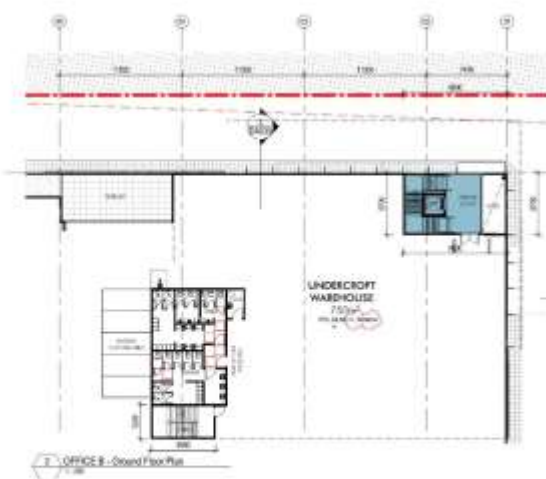
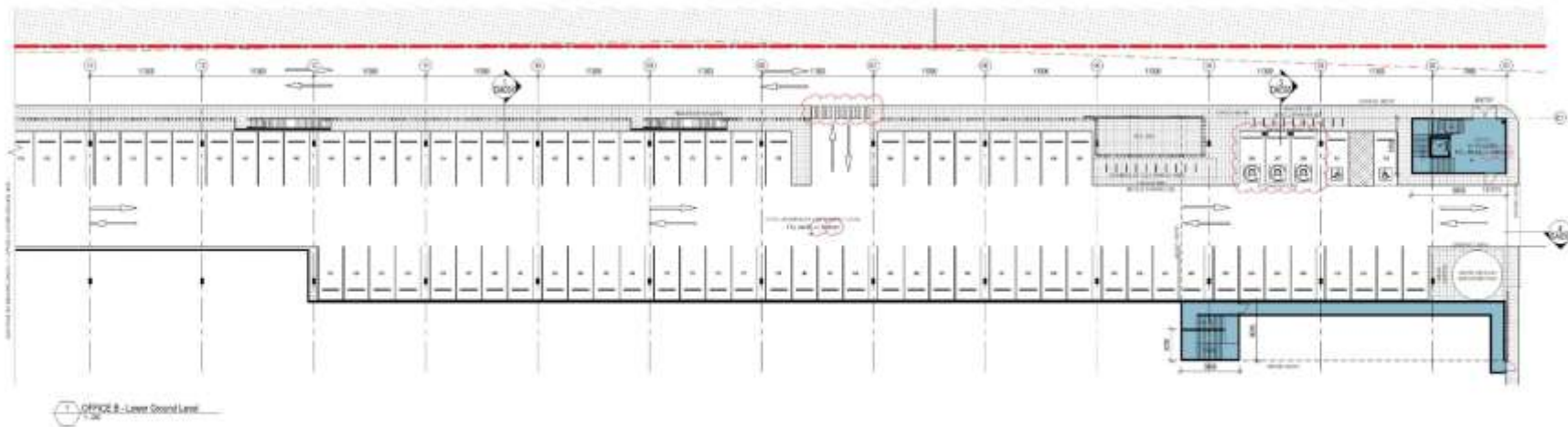
Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemps Creek, NSW



Key Plan
LOT 2 - Site Plan / Roof Plan
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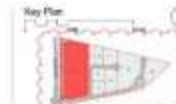
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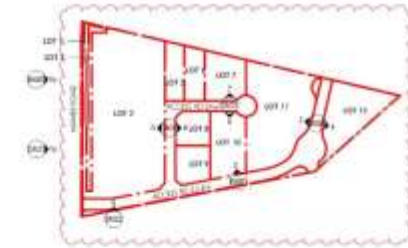
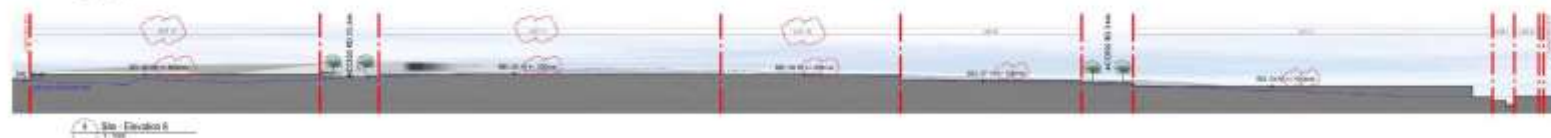
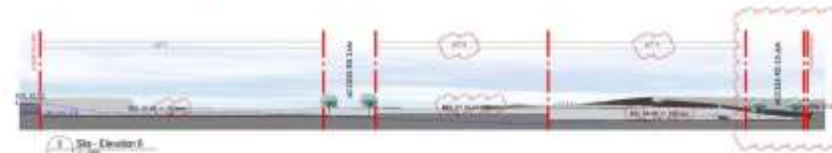
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Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemps Creek, NSW



LOT 2 - Office Floor Plans - Sheet 2
BC MA A1
1:200
11213, DA016 P15

nettletontribe
1/11/2023
1/11/2023
1/11/2023



FINISHED LEVEL PLAN REFERENCE	
TITLE	SPRINGWATER CROSSINGS
PROJECT NO.	1214-001-00-000-000
REVISION	001
DATE	2021/1/22

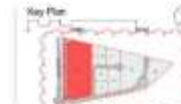
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PROPERTY PARTNERS

NO.	REV.	DESCRIPTION	DATE
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ISSUE FOR
SSDA

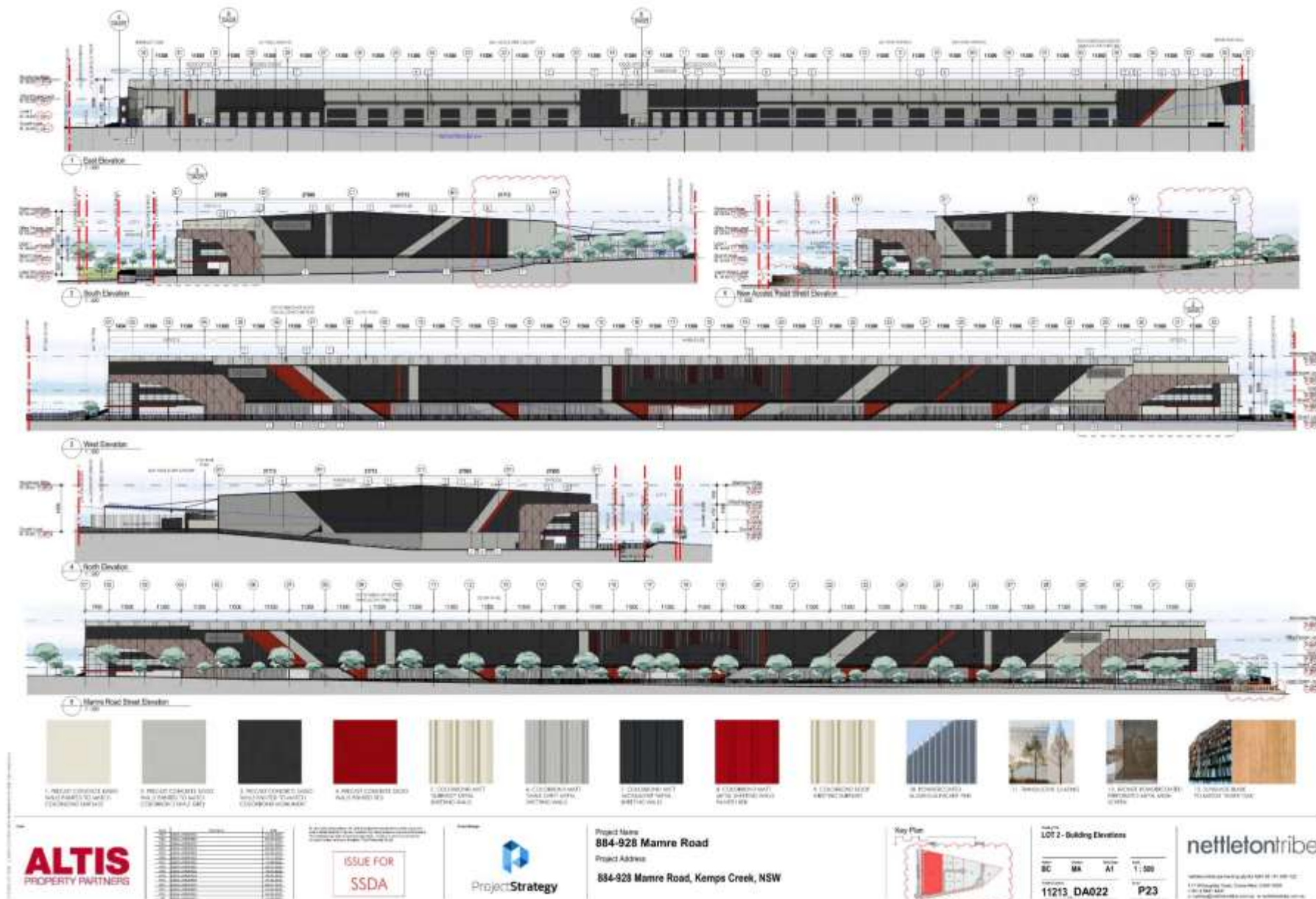
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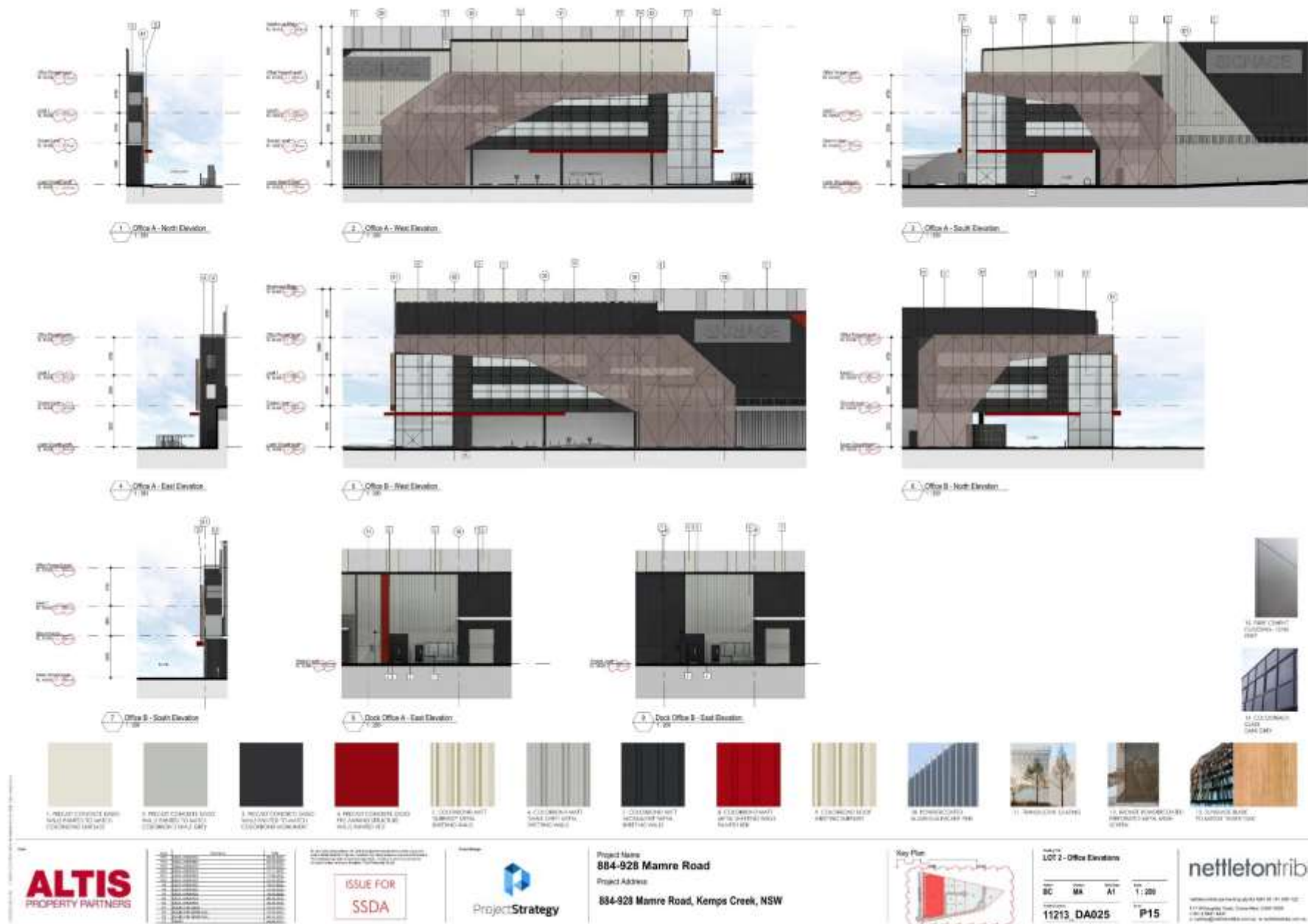
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Project Address:
884-928 Mamre Road, Kemps Creek, NSW

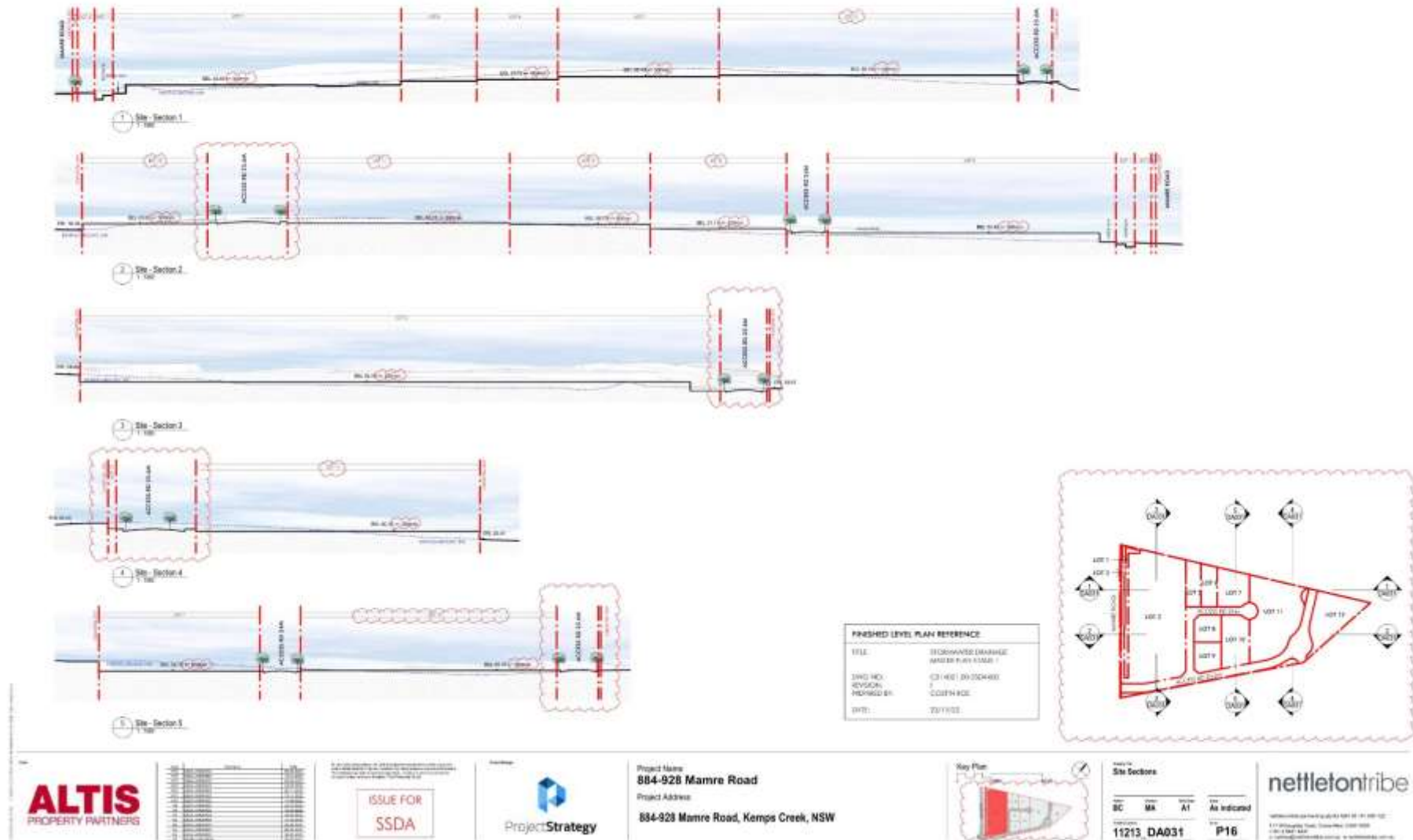


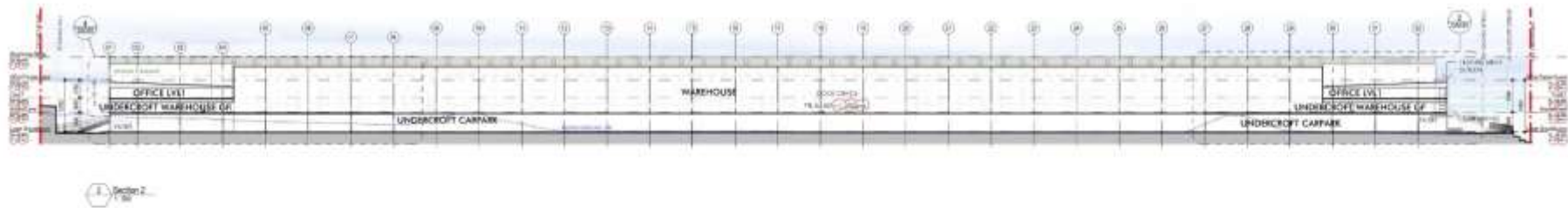
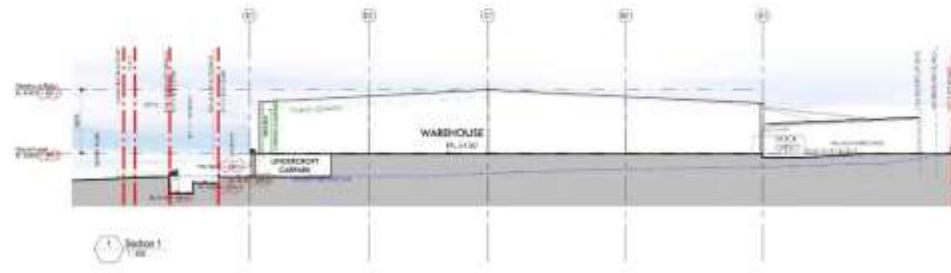
Site Elevations	
BC	MA
11213, DA021	P17

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1111 Springwater Road, Springwater, NSW 2122
02 9311 1111
info@nettletontribe.com.au

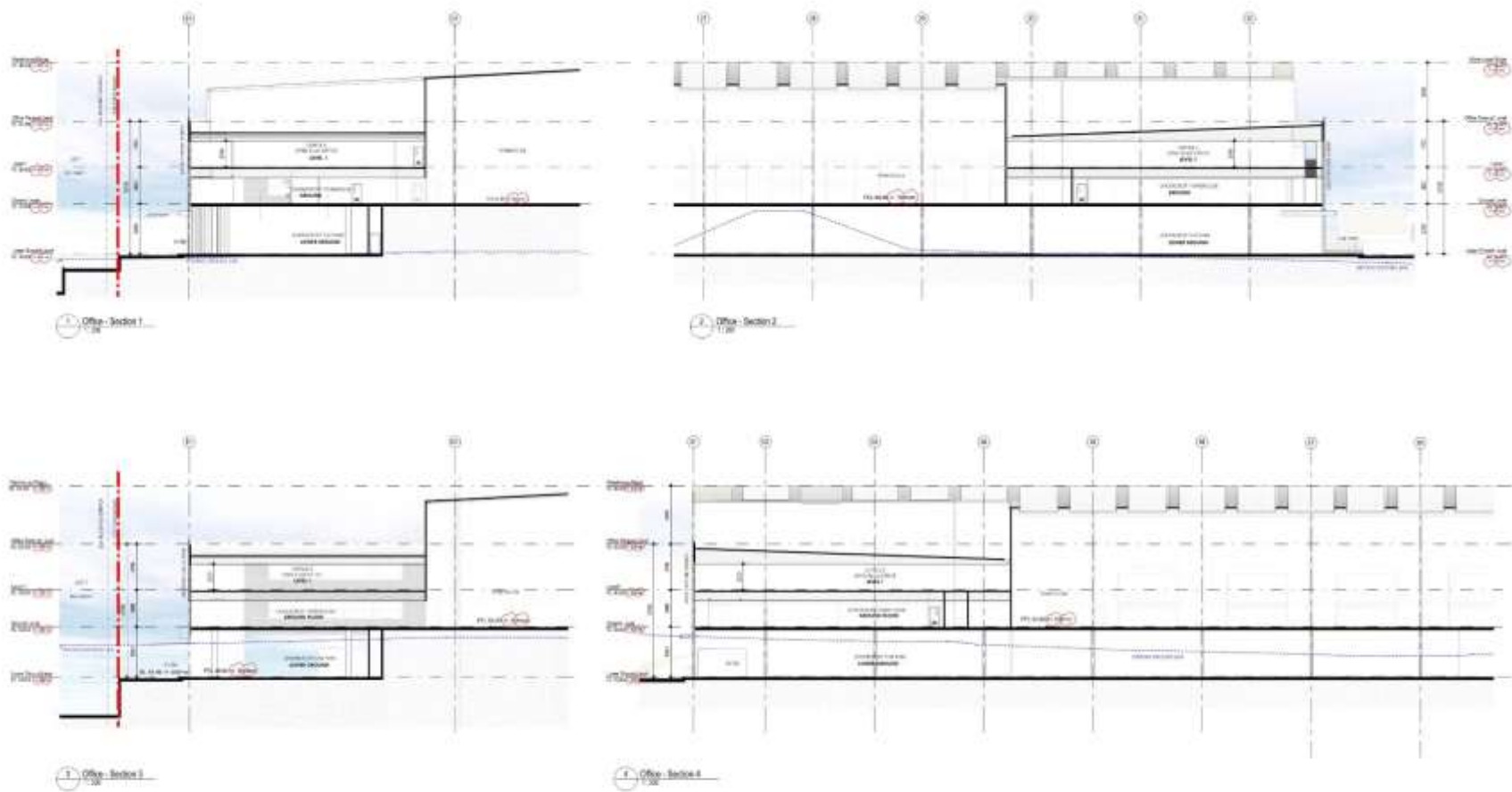




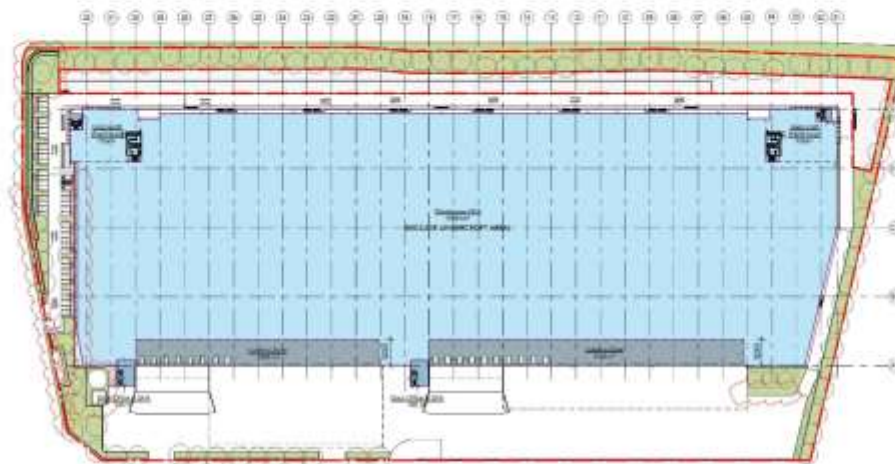




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Rev	Description	Date											
1	Issue for SSDA	11/11/2023											



Ministry of Education and Science of the Republic of Serbia

[illegible]

Keywords: *gender equity, gender inequality, gender discrimination, gender bias, gender stereotypes, gender roles, gender identity, gender expression, gender equality, gender justice, gender empowerment, gender mainstreaming, gender responsiveness, gender sensitivity, gender awareness, gender inclusion, gender participation, gender representation, gender visibility, gender recognition, gender validation, gender acknowledgment, gender appreciation, gender respect, gender dignity, gender honor, gender esteem, gender status, gender power, gender influence, gender voice, gender leadership, gender authority, gender control, gender decision-making, gender participation, gender representation, gender visibility, gender recognition, gender validation, gender acknowledgment, gender appreciation, gender respect, gender dignity, gender honor, gender esteem, gender status, gender power, gender influence, gender voice, gender leadership, gender authority, gender control, gender decision-making.*

1. you might see ΔH for a free energy problem or ΔG for a thermodynamic property.

2. ΔH is a measure of enthalpy change, depending on the reference point of the enthalpy scale (usually the standard enthalpy).

3. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

4. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

5. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

6. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

7. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

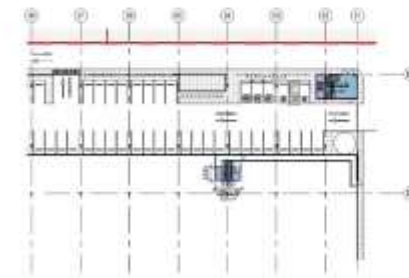
8. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

9. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.

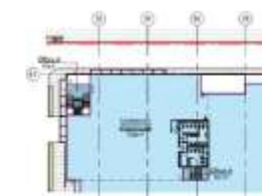
10. ΔG is a measure of free energy change, depending on the reference point of the free energy scale.



Office A Level: Ground Level - Area Plan



2 Office B Lower Ground Level - Area Plan



4 Office A Ground Floor - Area Plan



5. Office & Ground Floor - Area Plan



Office A Level 1 - Area Plan



Office B Level 1 - Area Plans

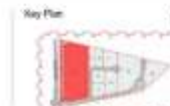
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ISSUE FOR
SSDA



Project Name:
884-928 Mamre Road

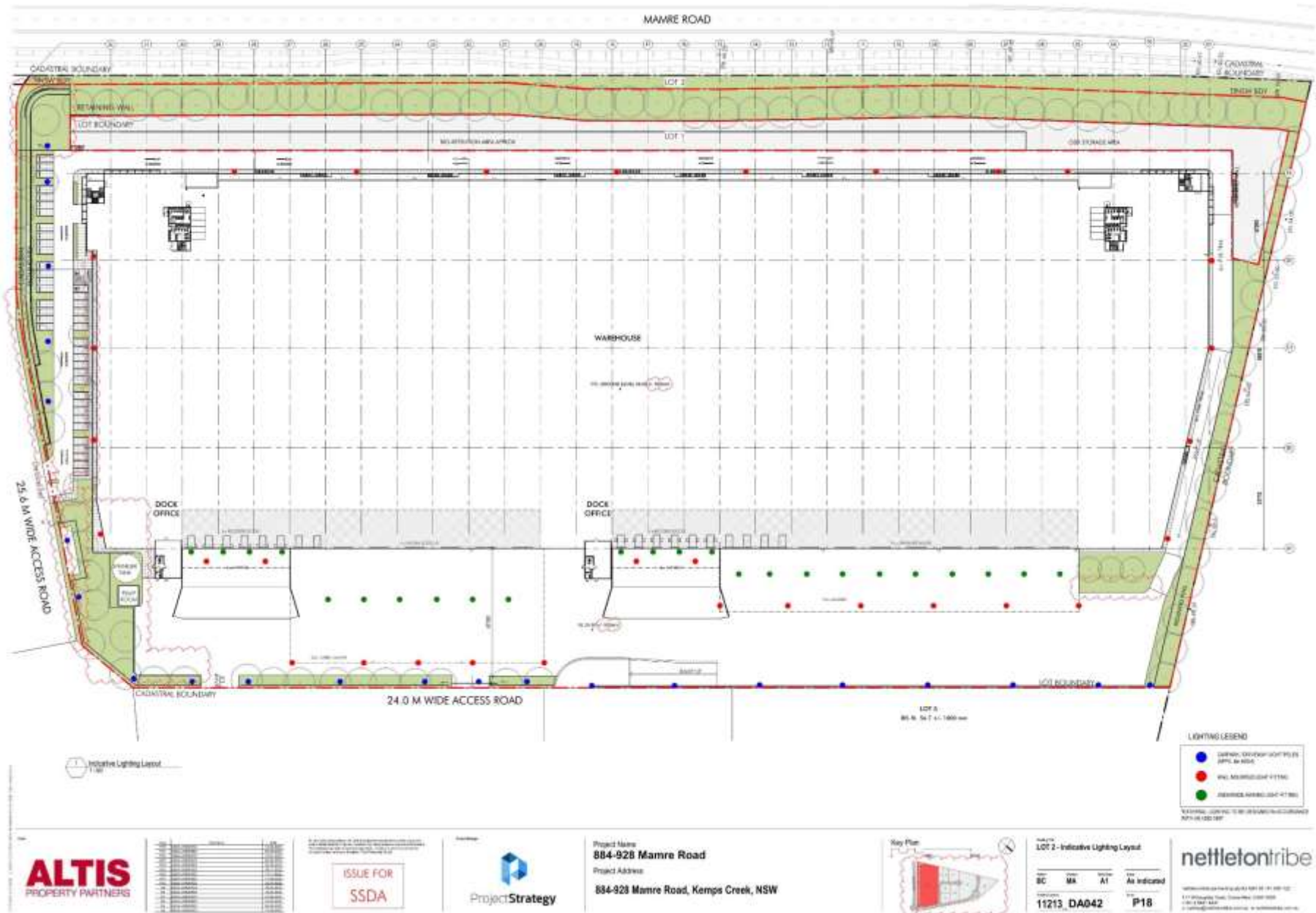
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884-928 Mamre Road, Kempers Creek, NSW



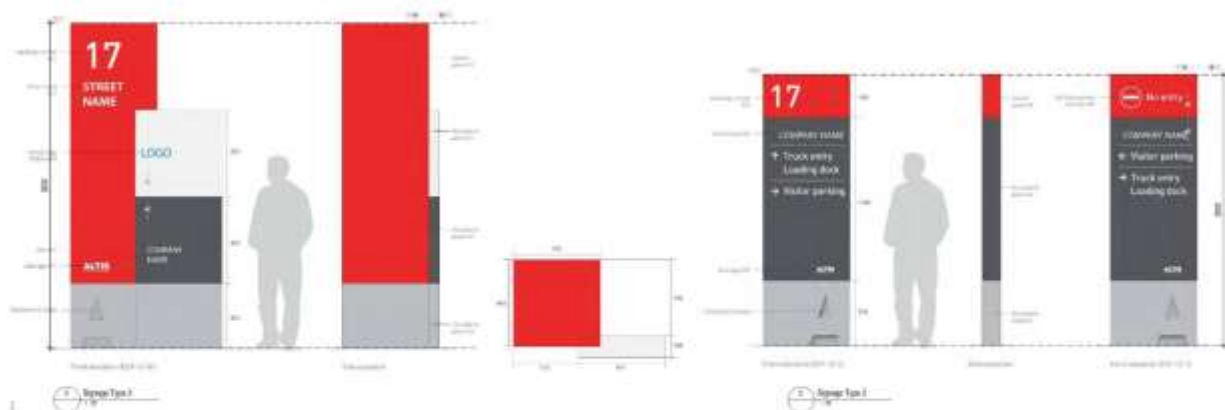
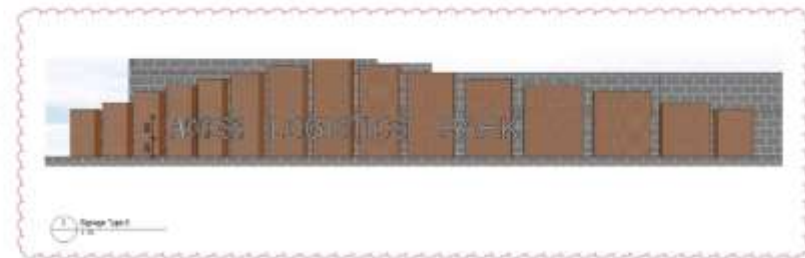
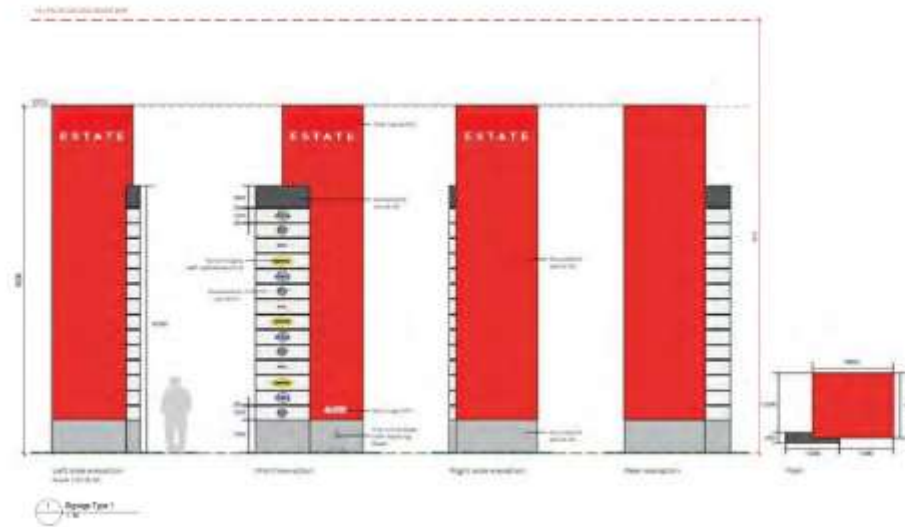
11213 DA04

P22

nettletontribe







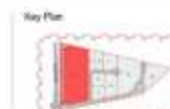
ALTIS
PROPERTY PARTNERS

Item	Description	Quantity	Unit
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2	Acoustic Wall Section 2	1	m
3	Acoustic Wall Section 3	1	m
4	Acoustic Wall Section 4	1	m

ISSUE FOR
SSDA

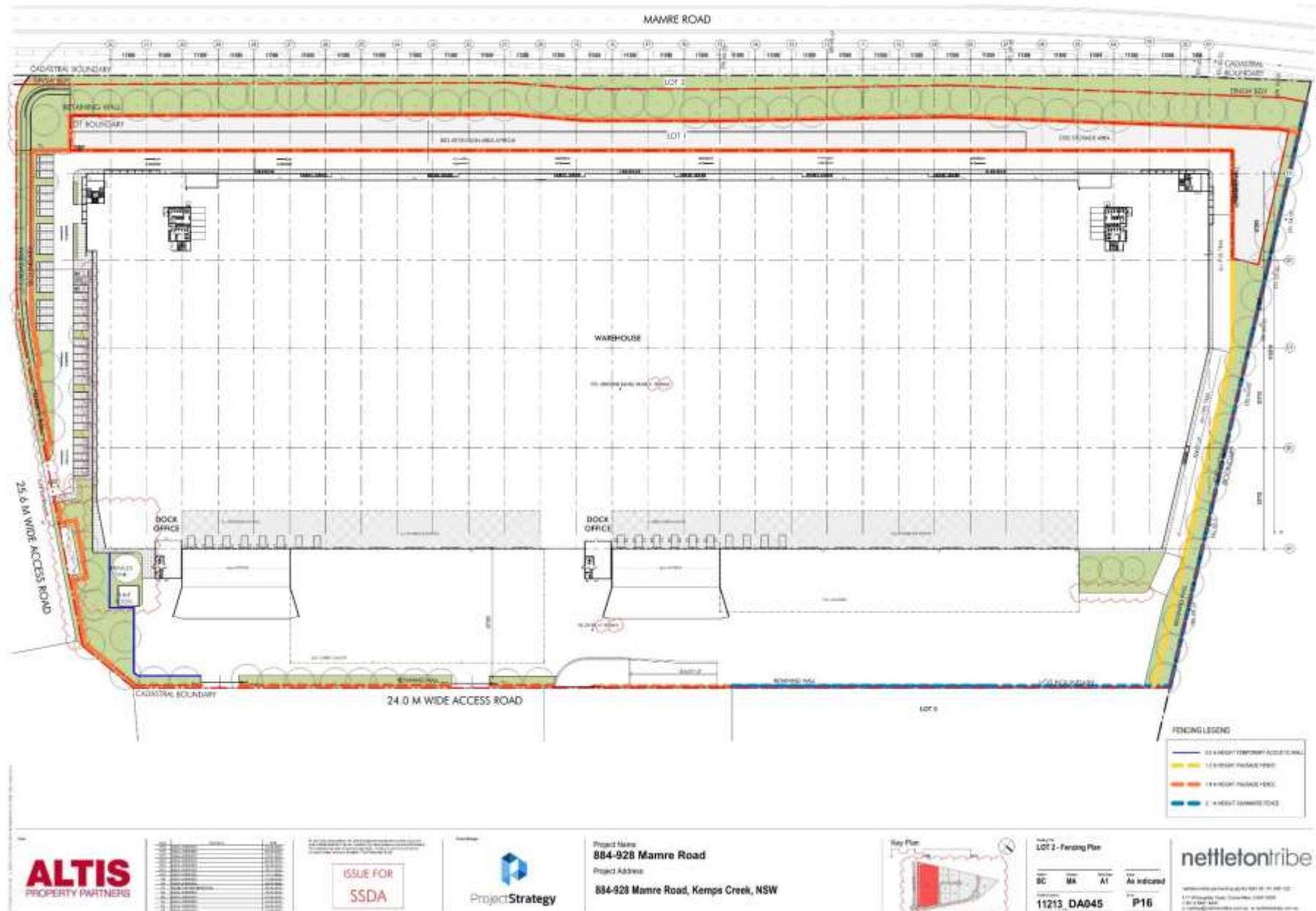
ProjectStrategy

Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemps Creek, NSW



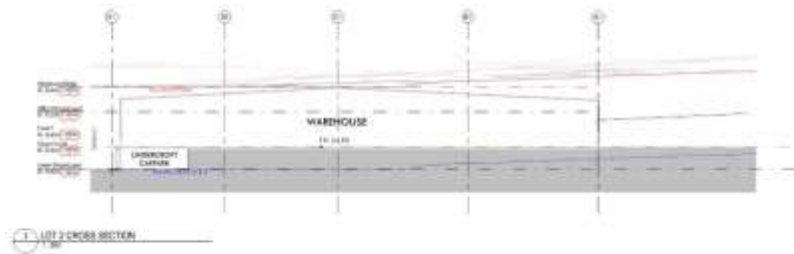
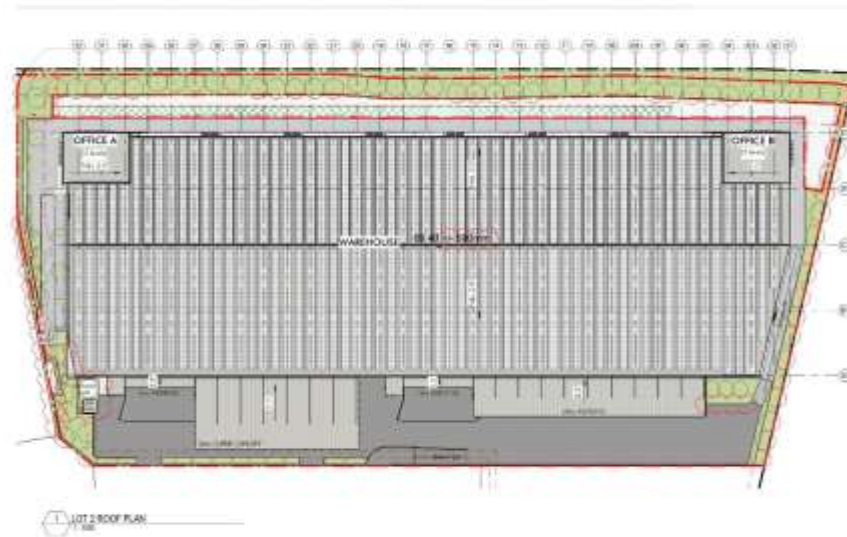
Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemps Creek, NSW

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ALTIS PROPERTY PARTNERS	Table with 2 columns: Item, Description	ISSUE FOR SSDA	ProjectStrategy	Project Name: 884-928 Mamre Road Project Address: 884-928 Mamre Road, Kemps Creek, NSW	Key Plan	nettletontribe nettletontribe.com.au
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NO.	REVISION	DATE	BY	CHKD
1	ISSUED FOR SSDA	15/05/2023	AW	MA

ISSUE FOR
SSDA

Project Name:
884-928 Mamre Road
Project Address:
884-928 Mamre Road, Kemps Creek, NSW

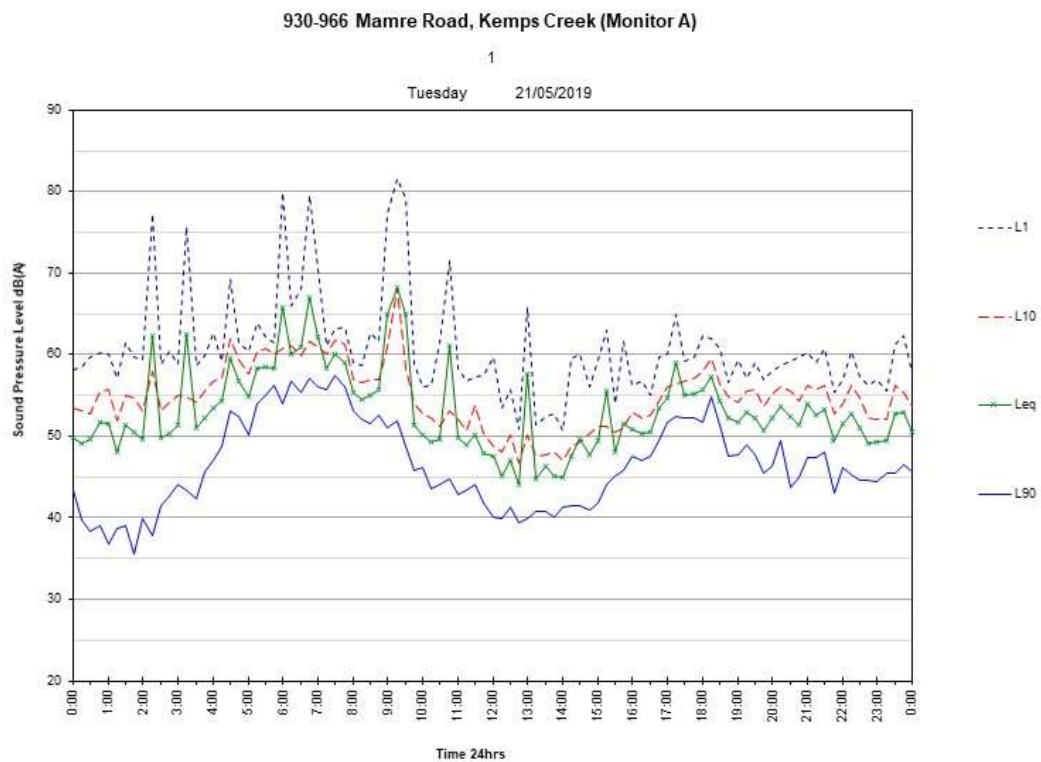
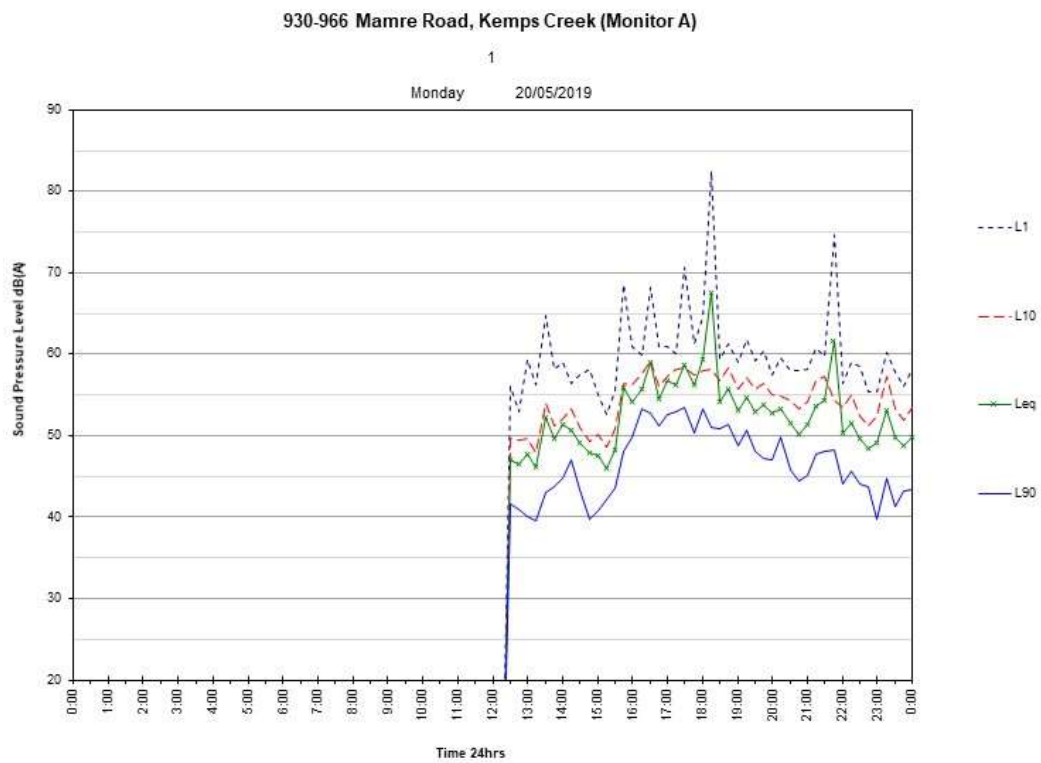
KEY PLAN

20m Height Limit Diagram

NO.	MA	AT	As Indicated
11213	DA060	P7	

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 15/05/2023 14:00:00
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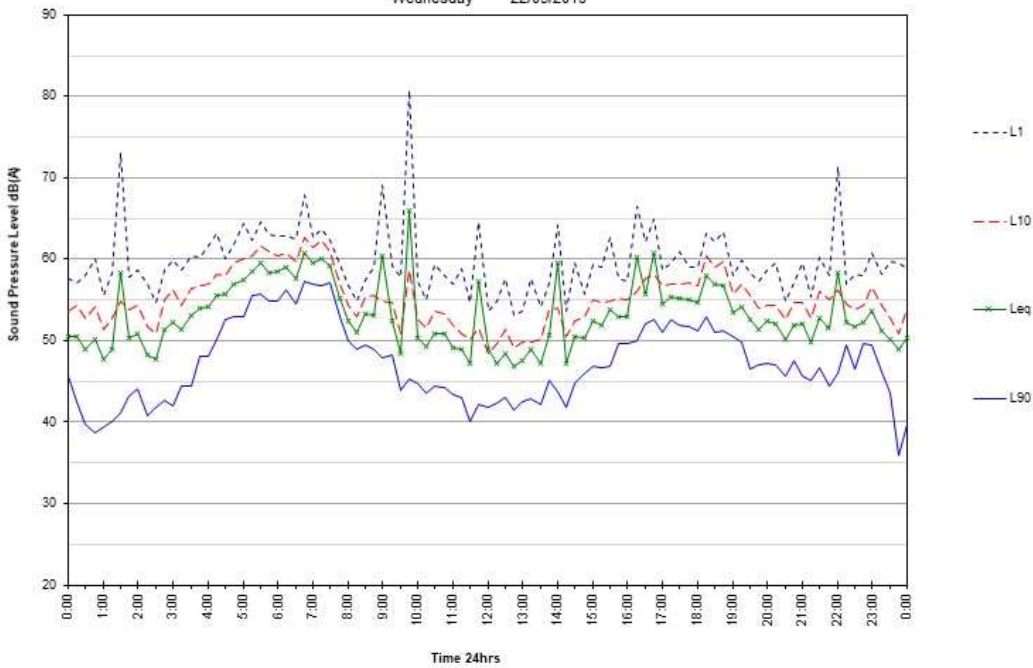
14.2 Noise Monitoring Charts
14.2.1 930-966 Mamre Road (Monitor A)



930-966 Mamre Road, Kemps Creek (Monitor A)

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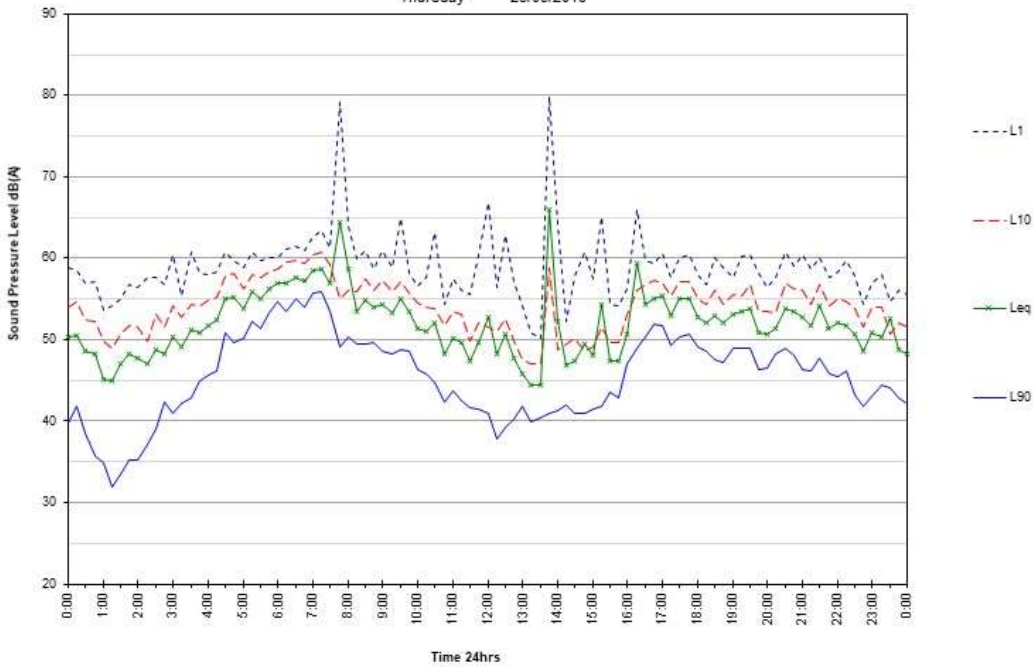
Wednesday 22/05/2019



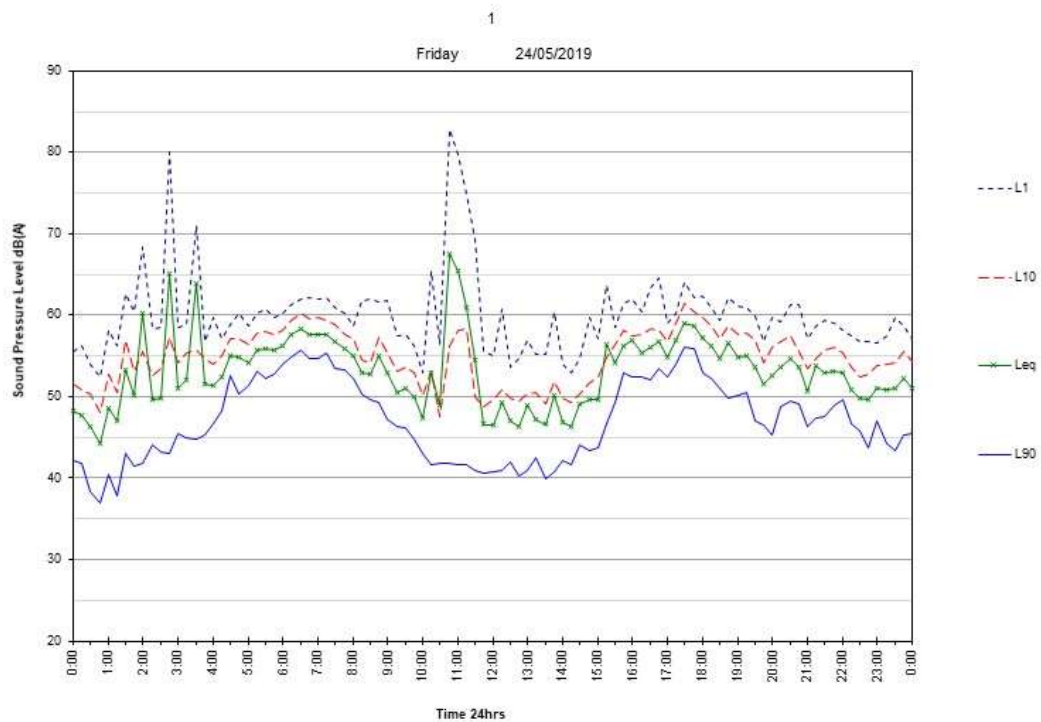
930-966 Mamre Road, Kemps Creek (Monitor A)

1

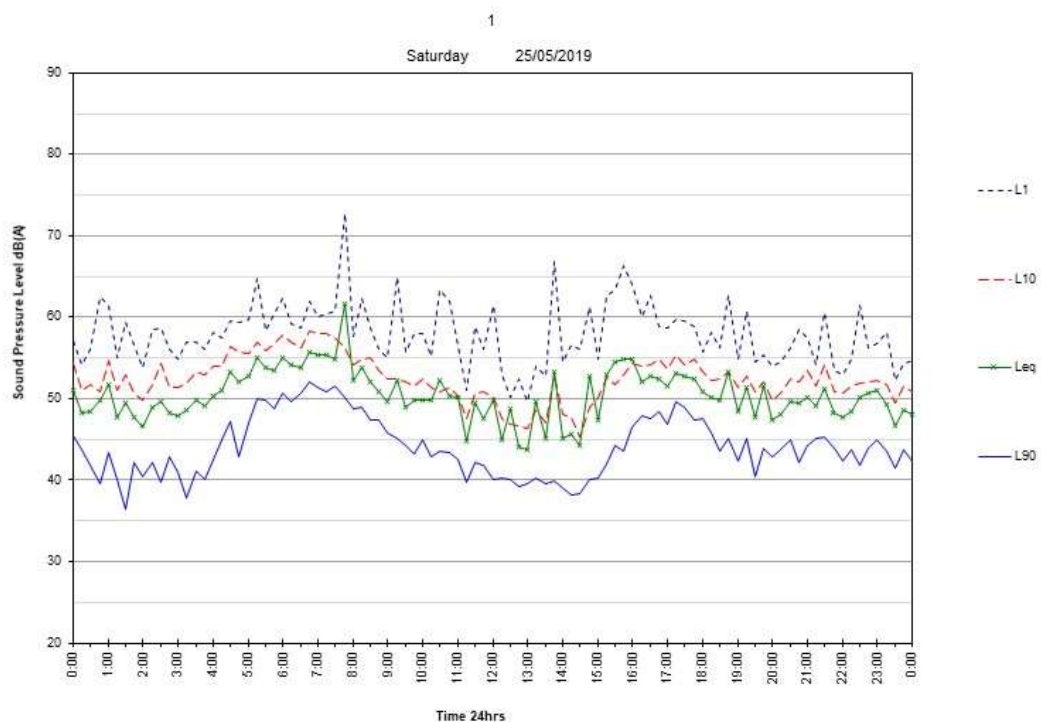
Thursday 23/05/2019



930-966 Mamre Road, Kemps Creek (Monitor A)

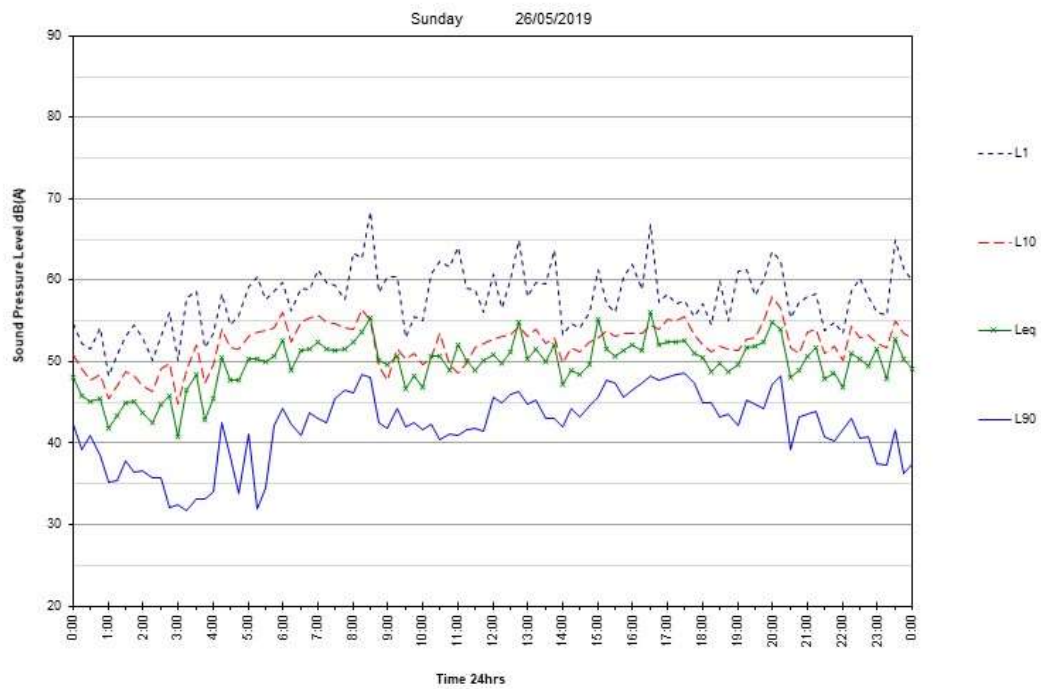


930-966 Mamre Road, Kemps Creek (Monitor A)



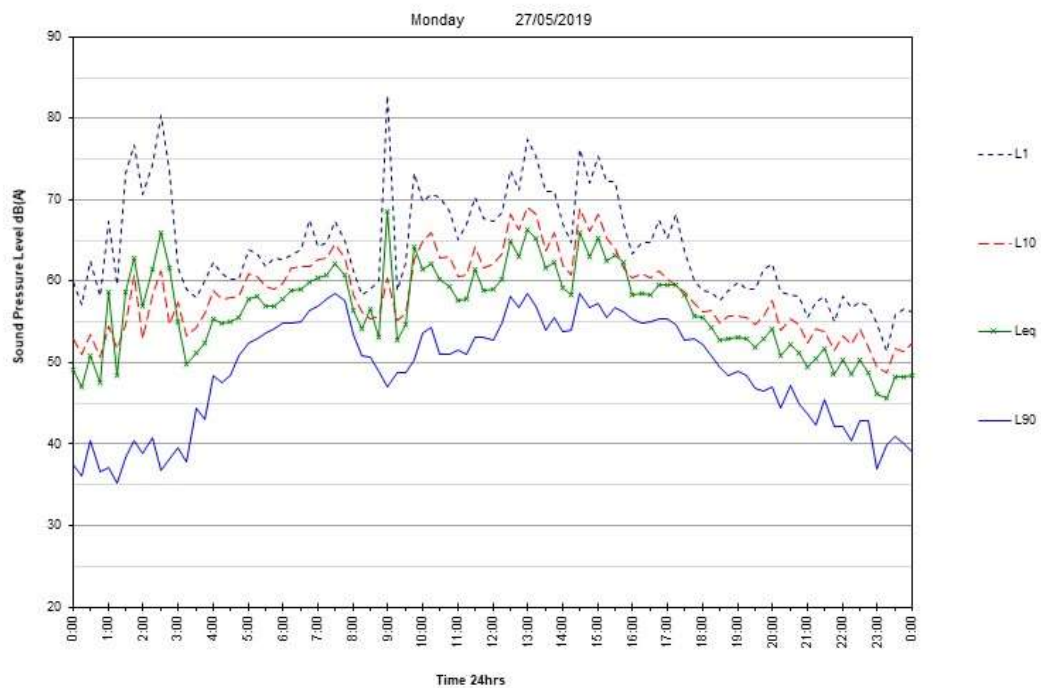
930-966 Mamre Road, Kemps Creek (Monitor A)

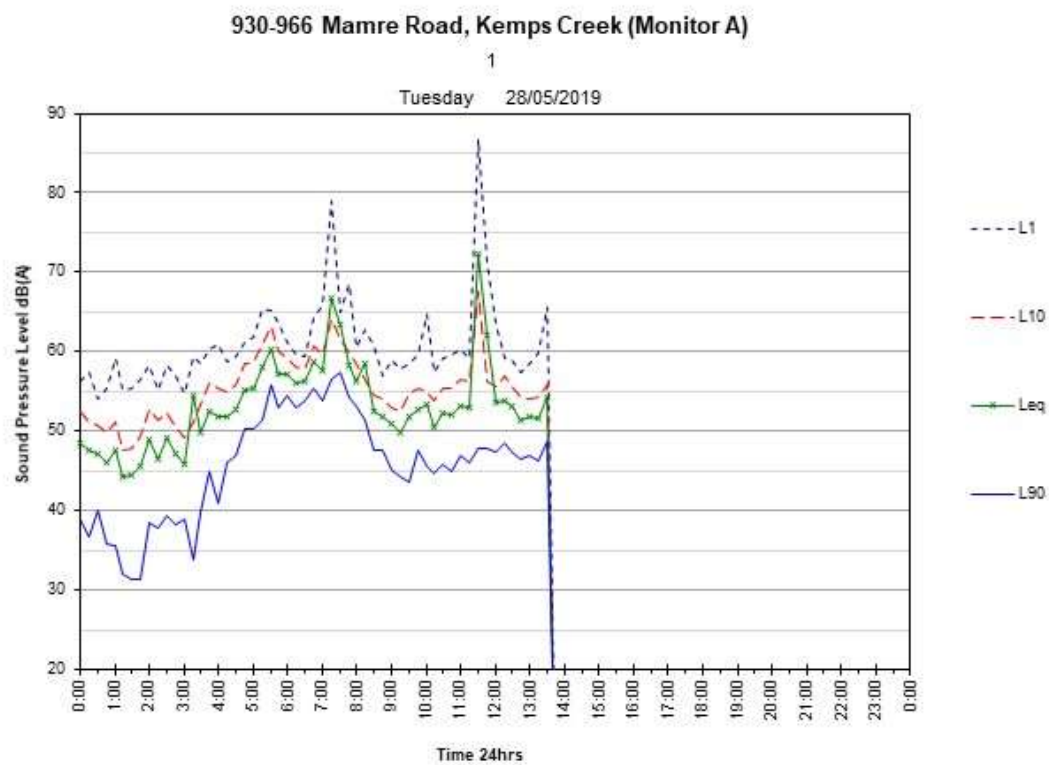
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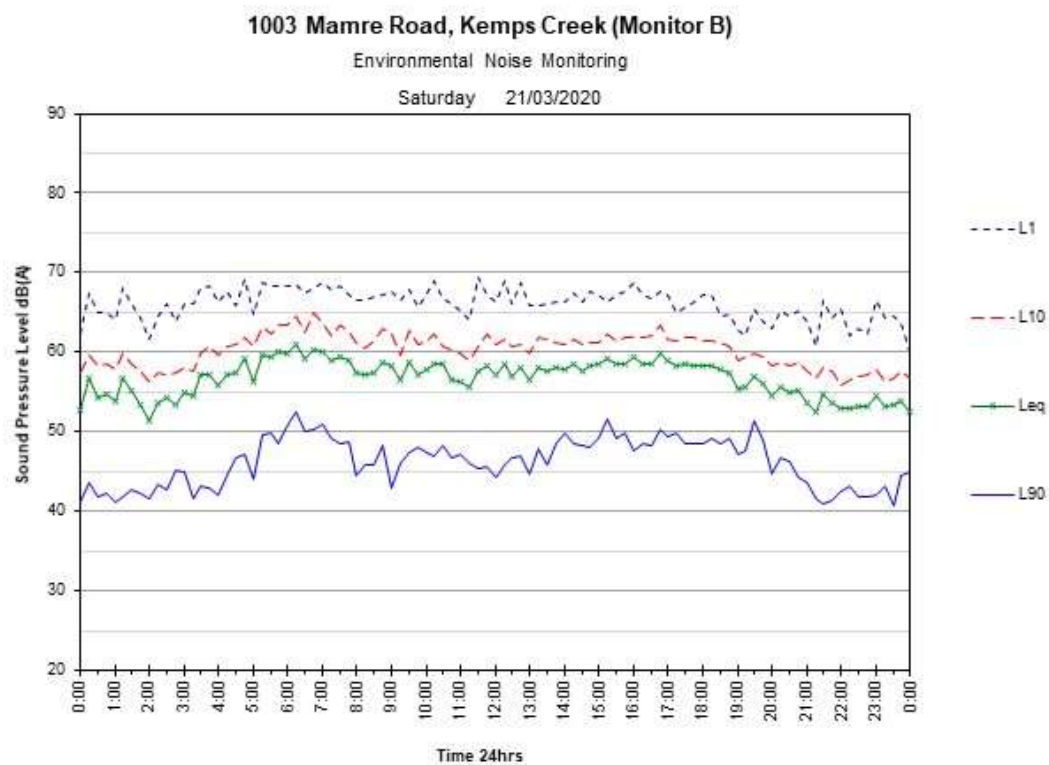
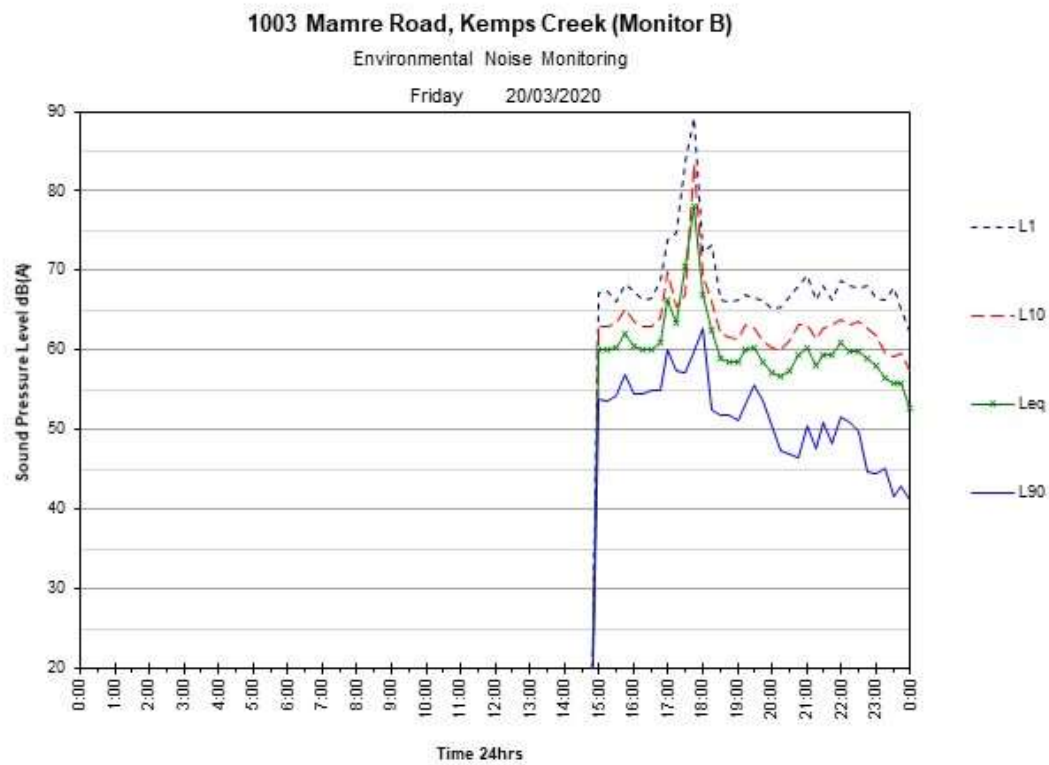
930-966 Mamre Road, Kemps Creek (Monitor A)

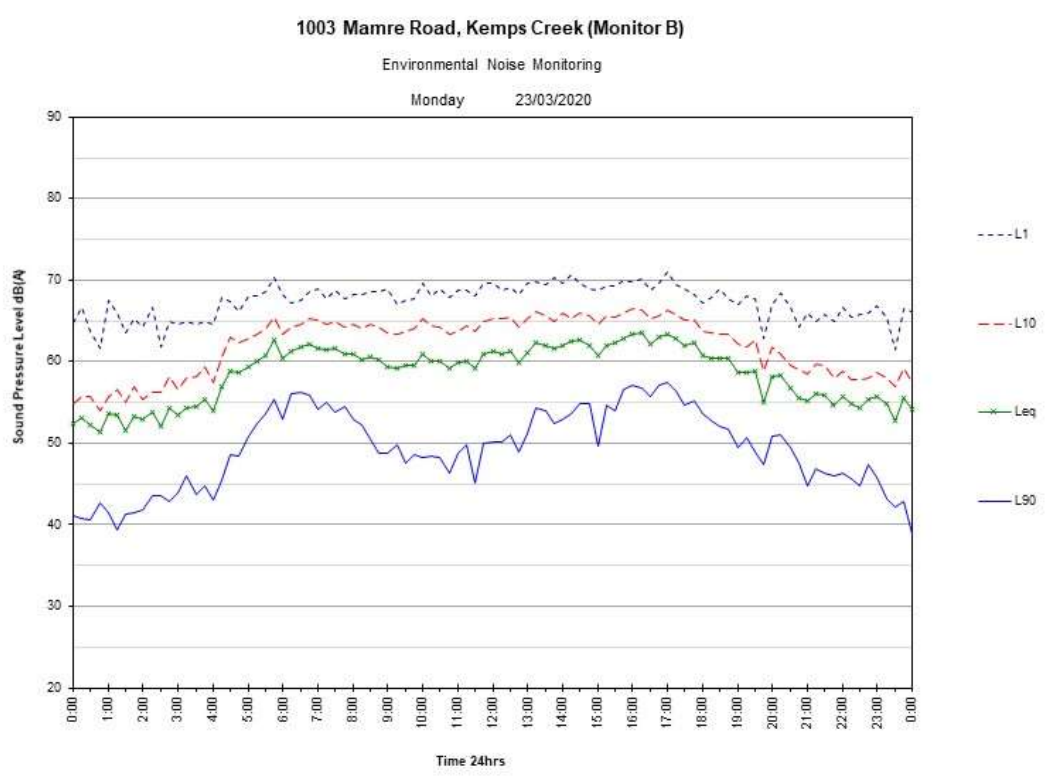
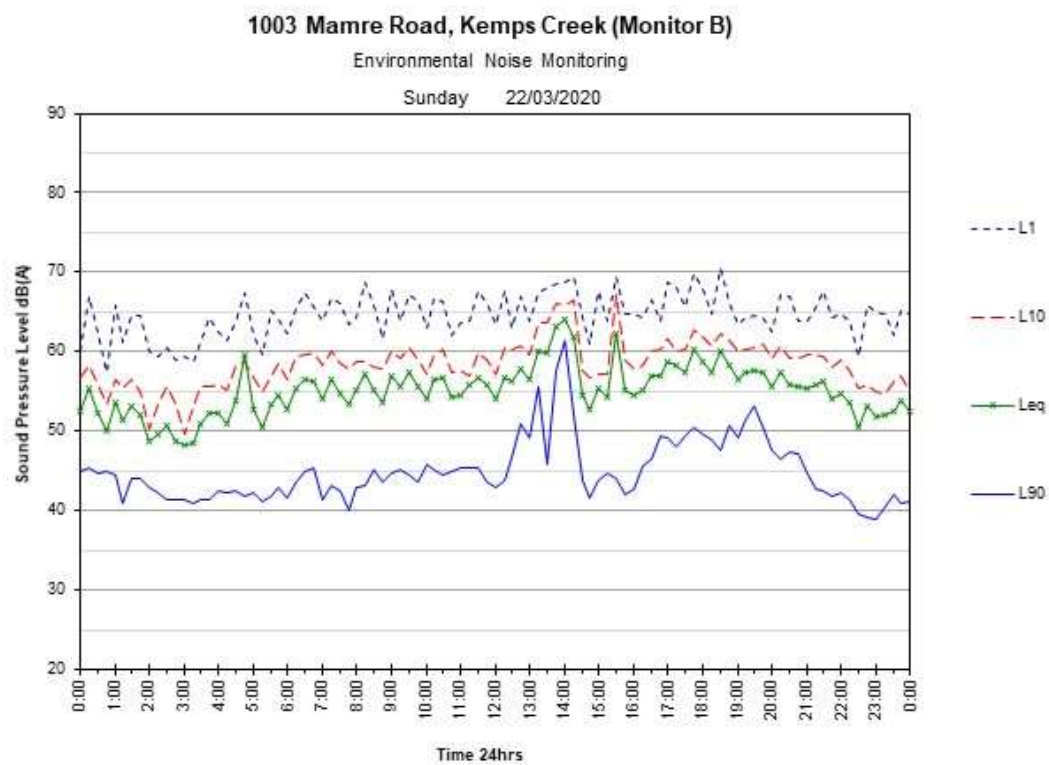
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14.2.2 1003 Mamre Road (Monitor B)

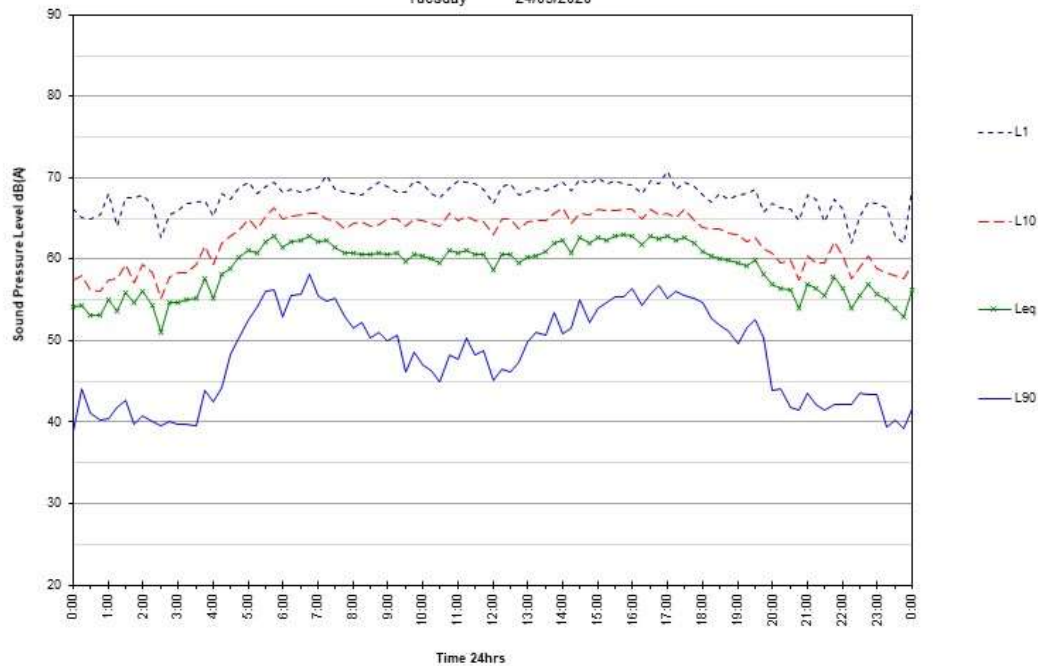




1003 Mamre Road, Kemps Creek (Monitor B)

Environmental Noise Monitoring

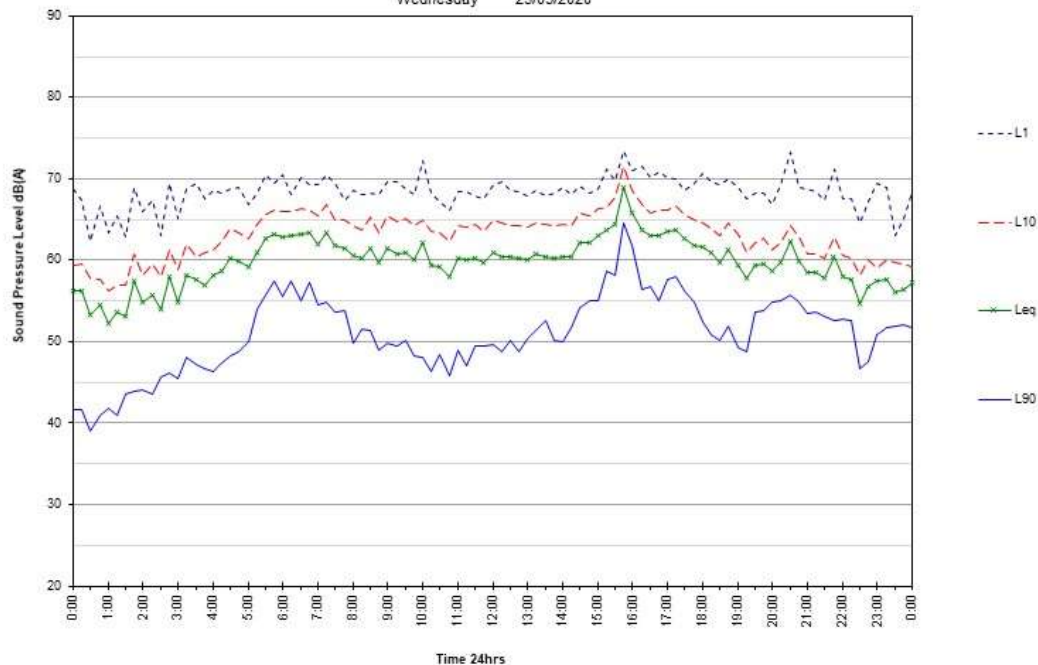
Tuesday 24/03/2020



1003 Mamre Road, Kemps Creek (Monitor B)

Environmental Noise Monitoring

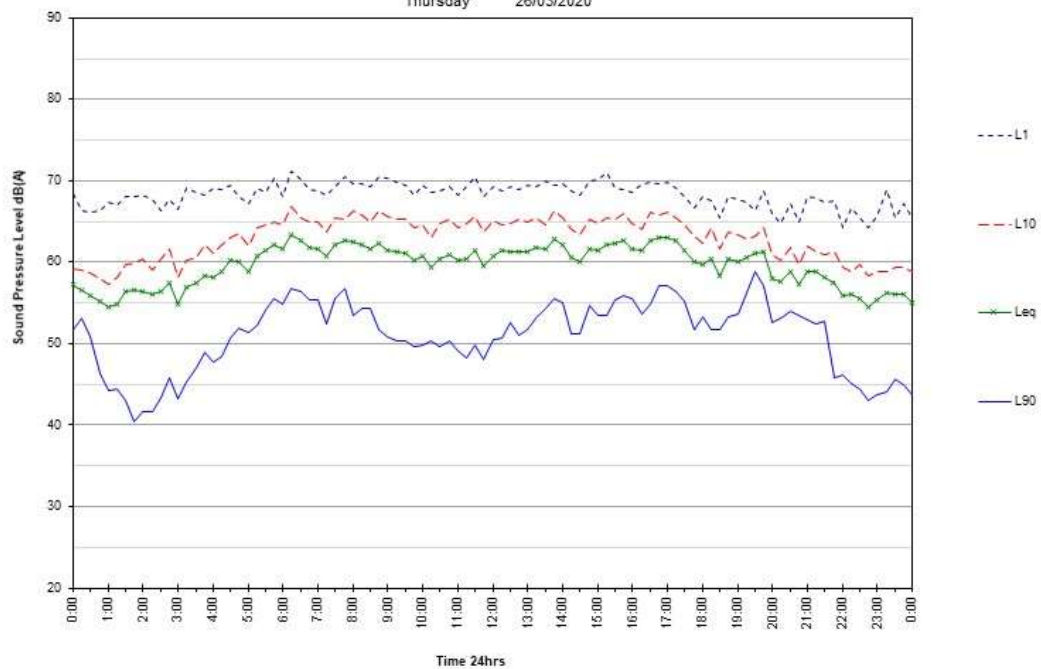
Wednesday 25/03/2020



1003 Mamre Road, Kemps Creek (Monitor B)

Environmental Noise Monitoring

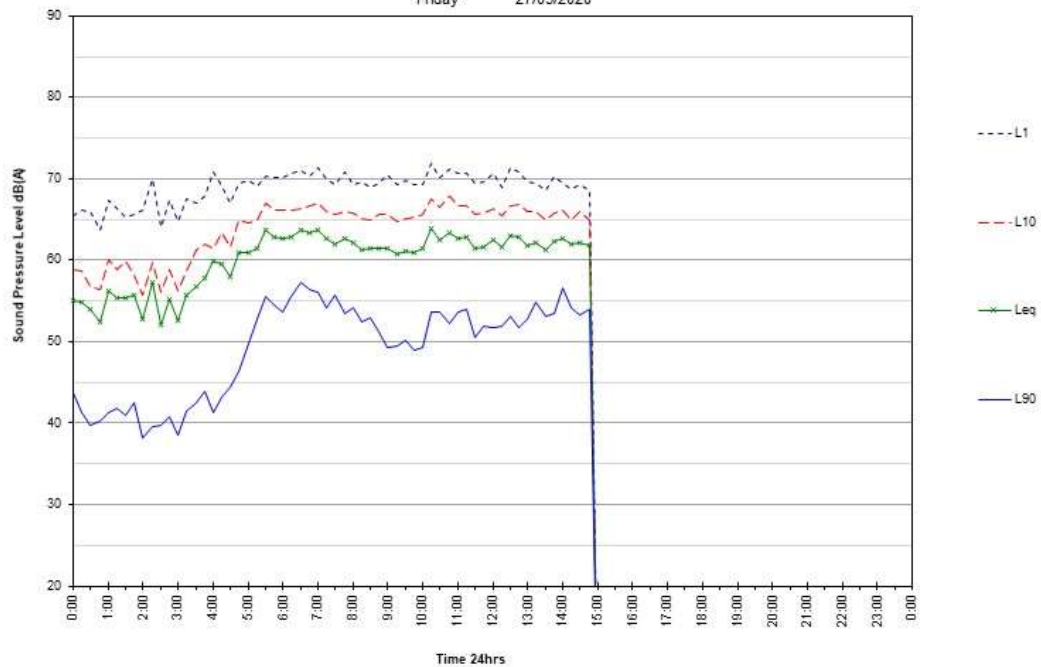
Thursday 26/03/2020



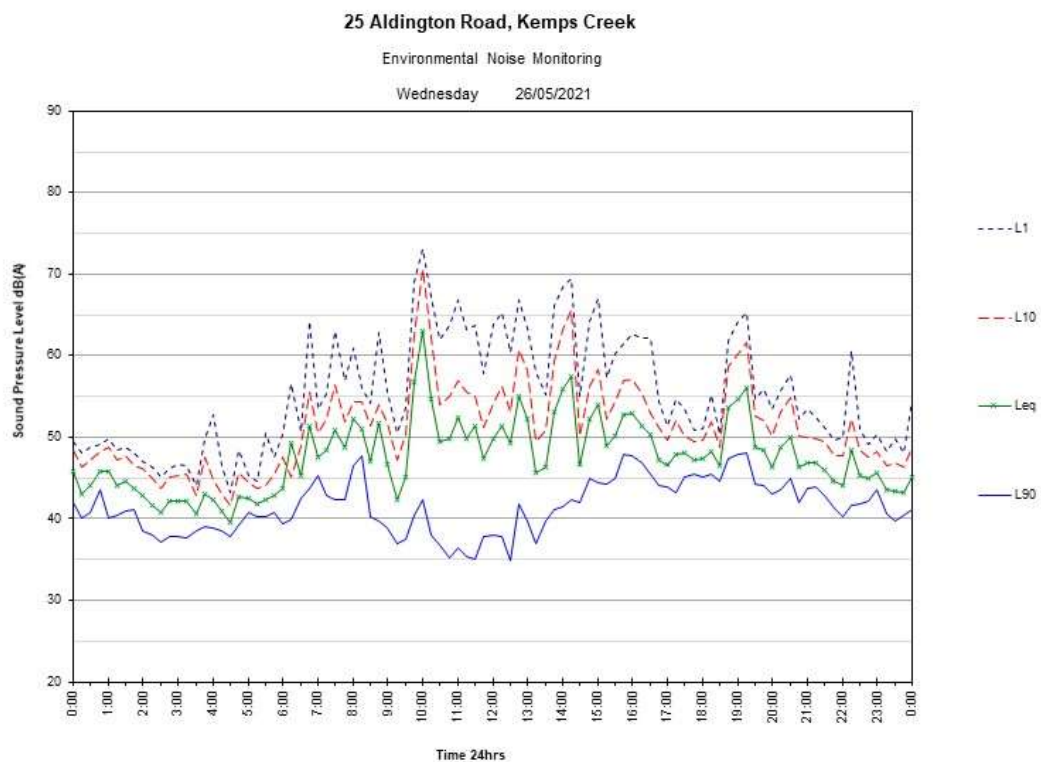
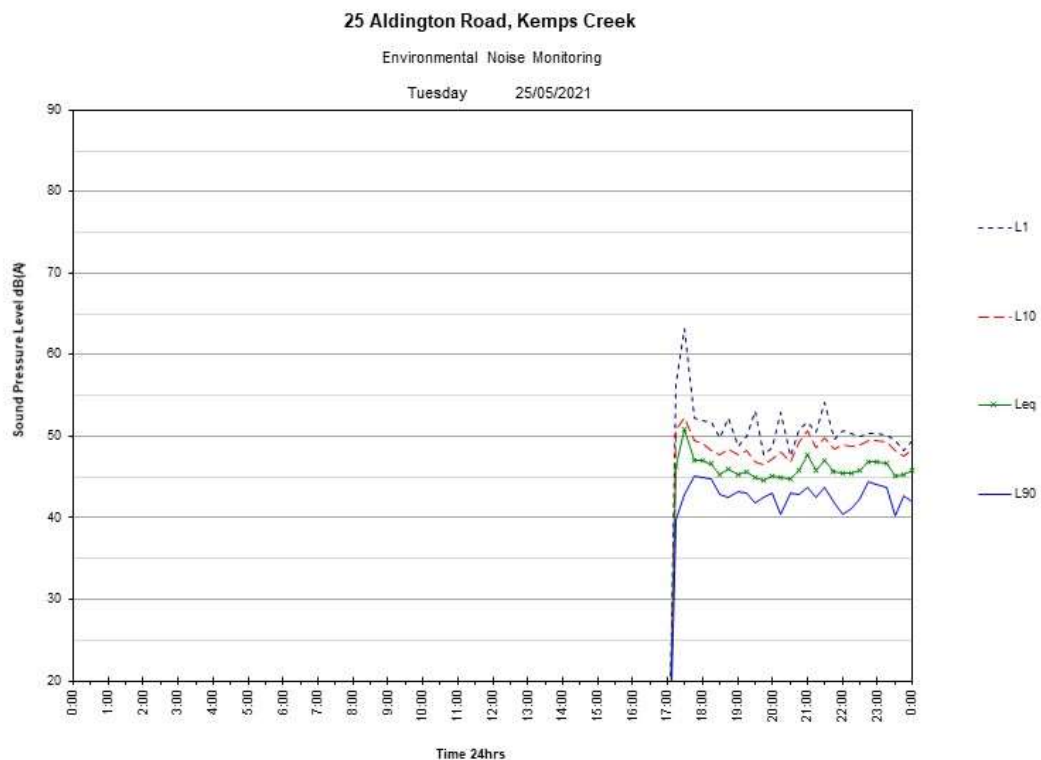
1003 Mamre Road, Kemps Creek (Monitor B)

Environmental Noise Monitoring

Friday 27/03/2020



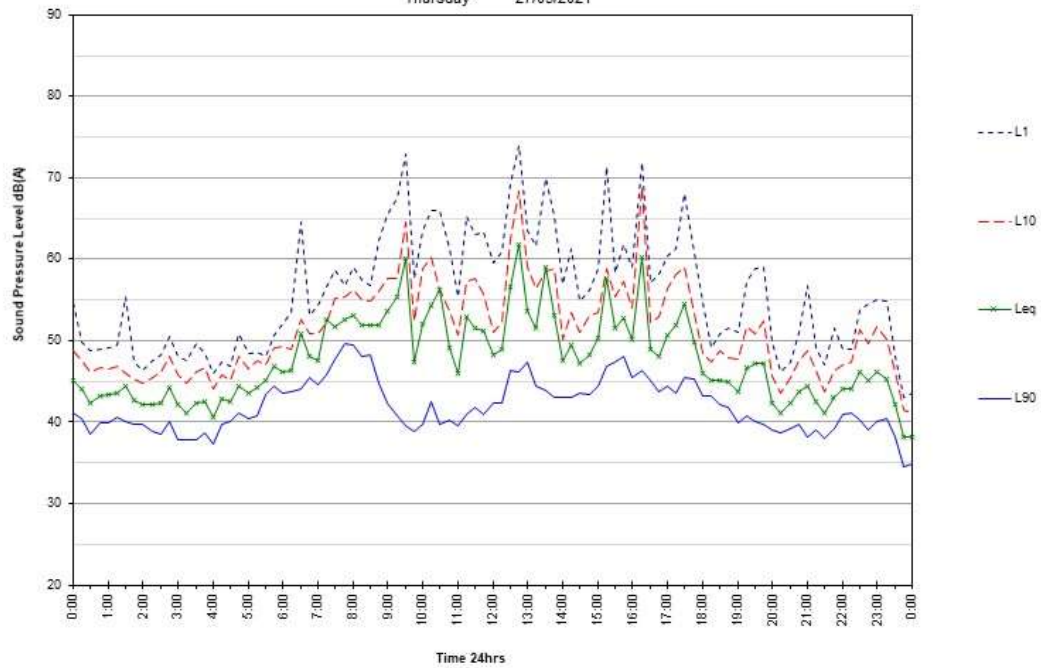
14.2.3 25 Aldington Road (Monitor C)



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

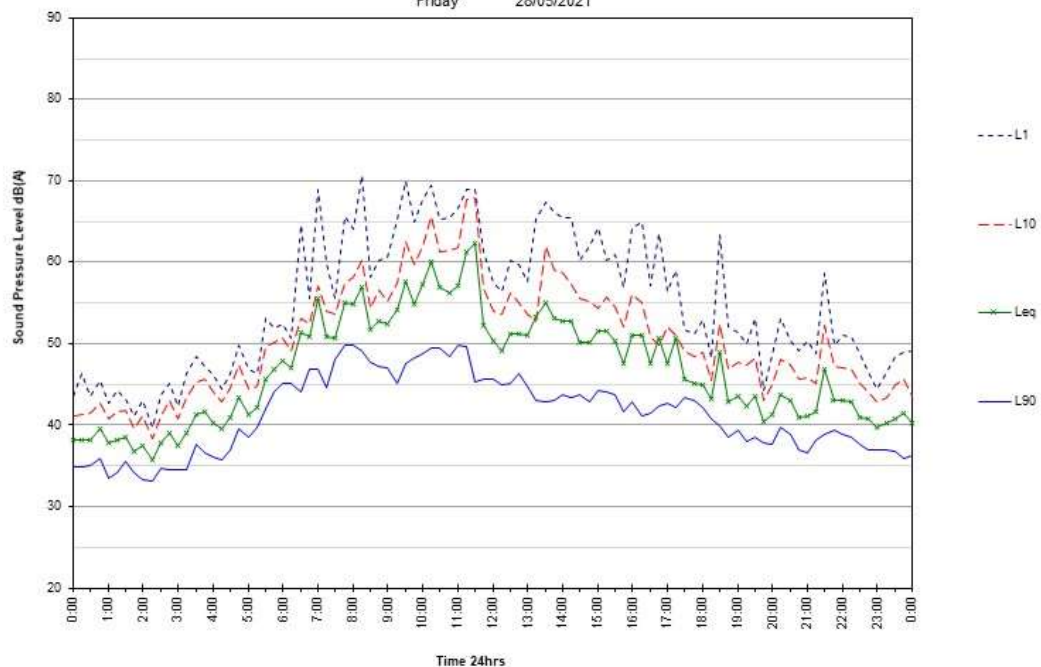
Thursday 27/05/2021



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

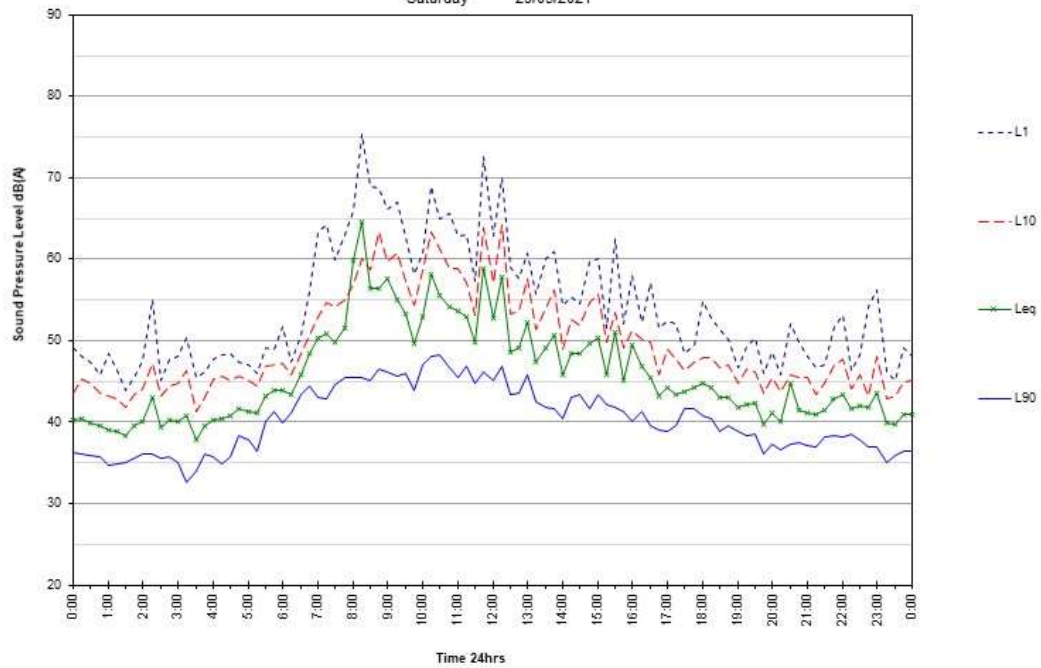
Friday 28/05/2021



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

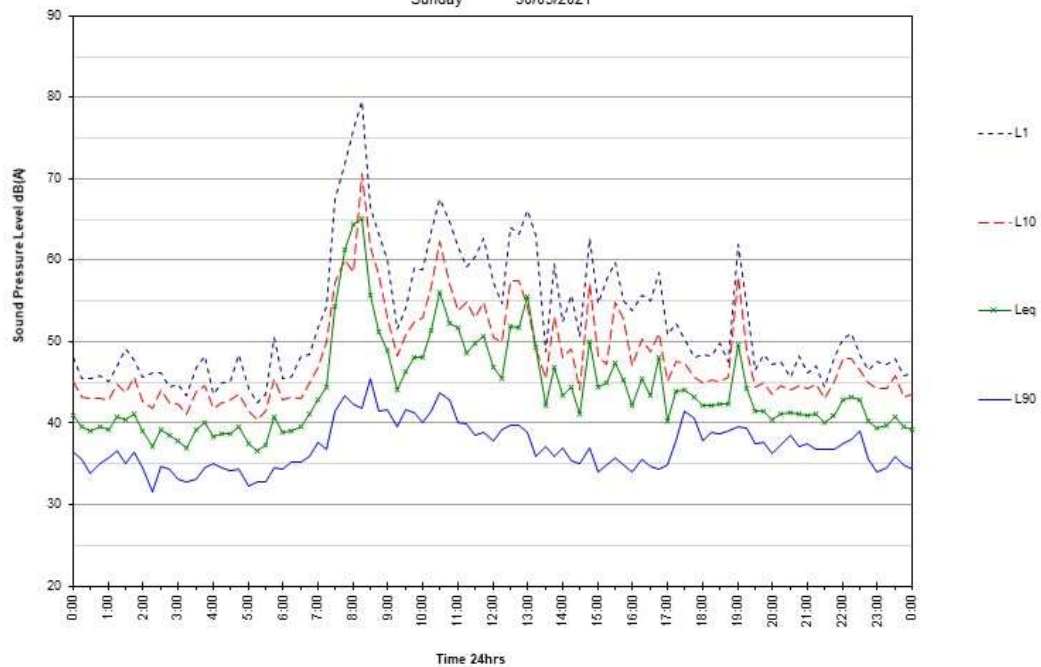
Saturday 29/05/2021



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

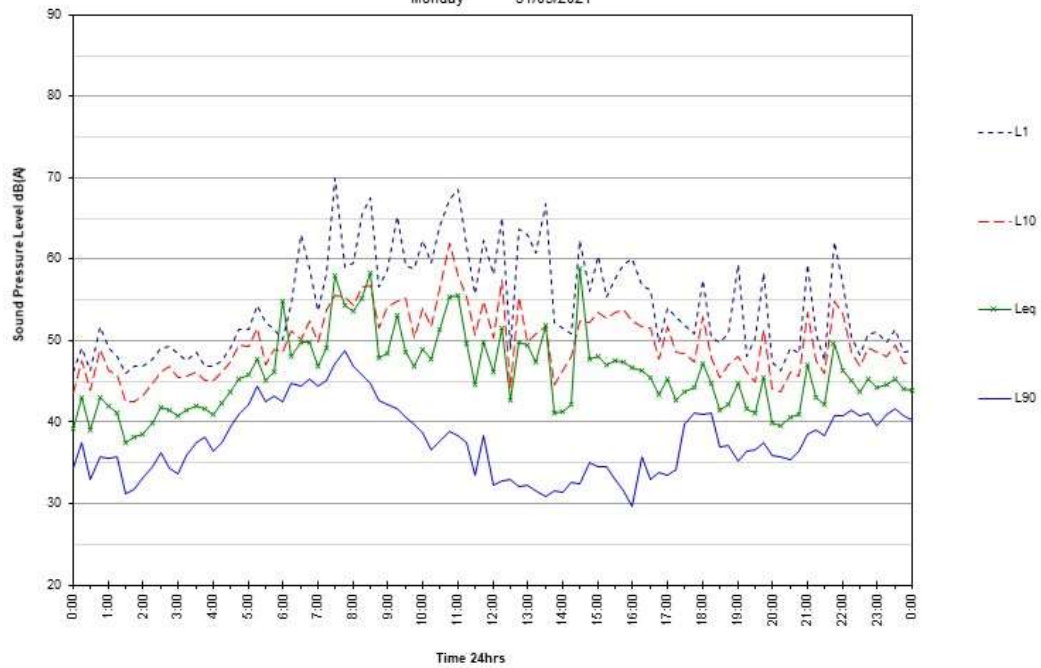
Sunday 30/05/2021



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

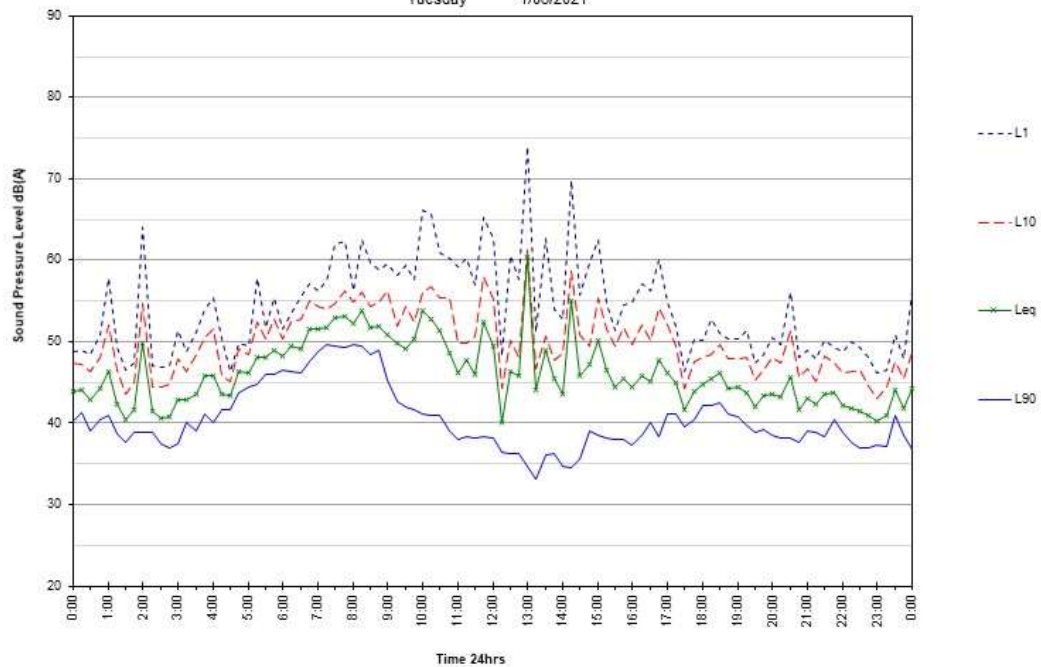
Monday 31/05/2021



25 Aldington Road, Kemps Creek

Environmental Noise Monitoring

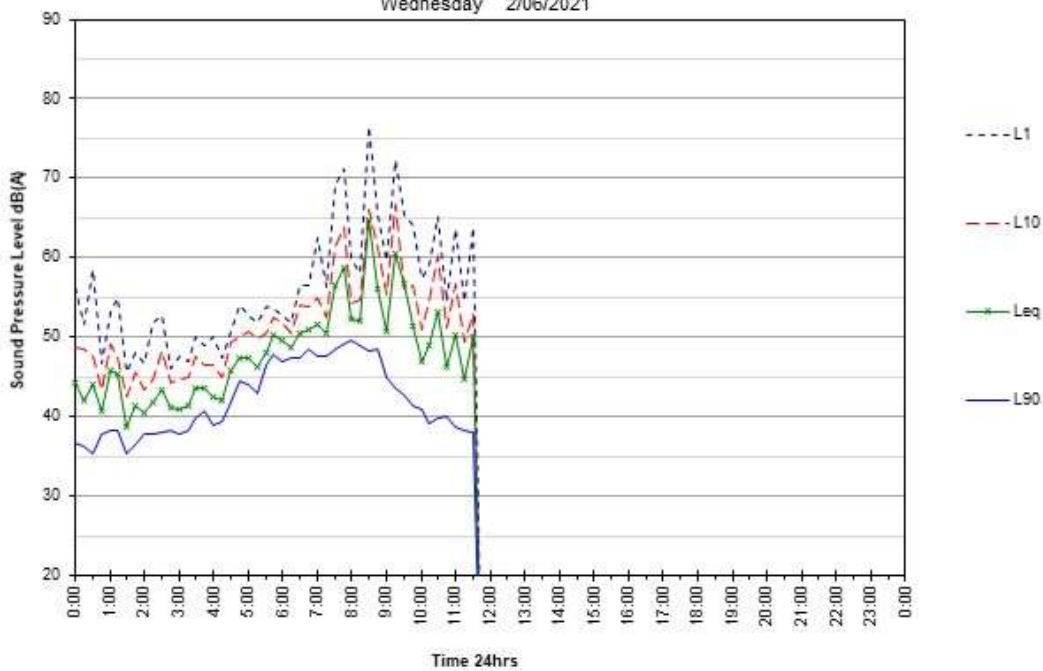
Tuesday 1/06/2021



25 Aldington Road, Kemps Creek

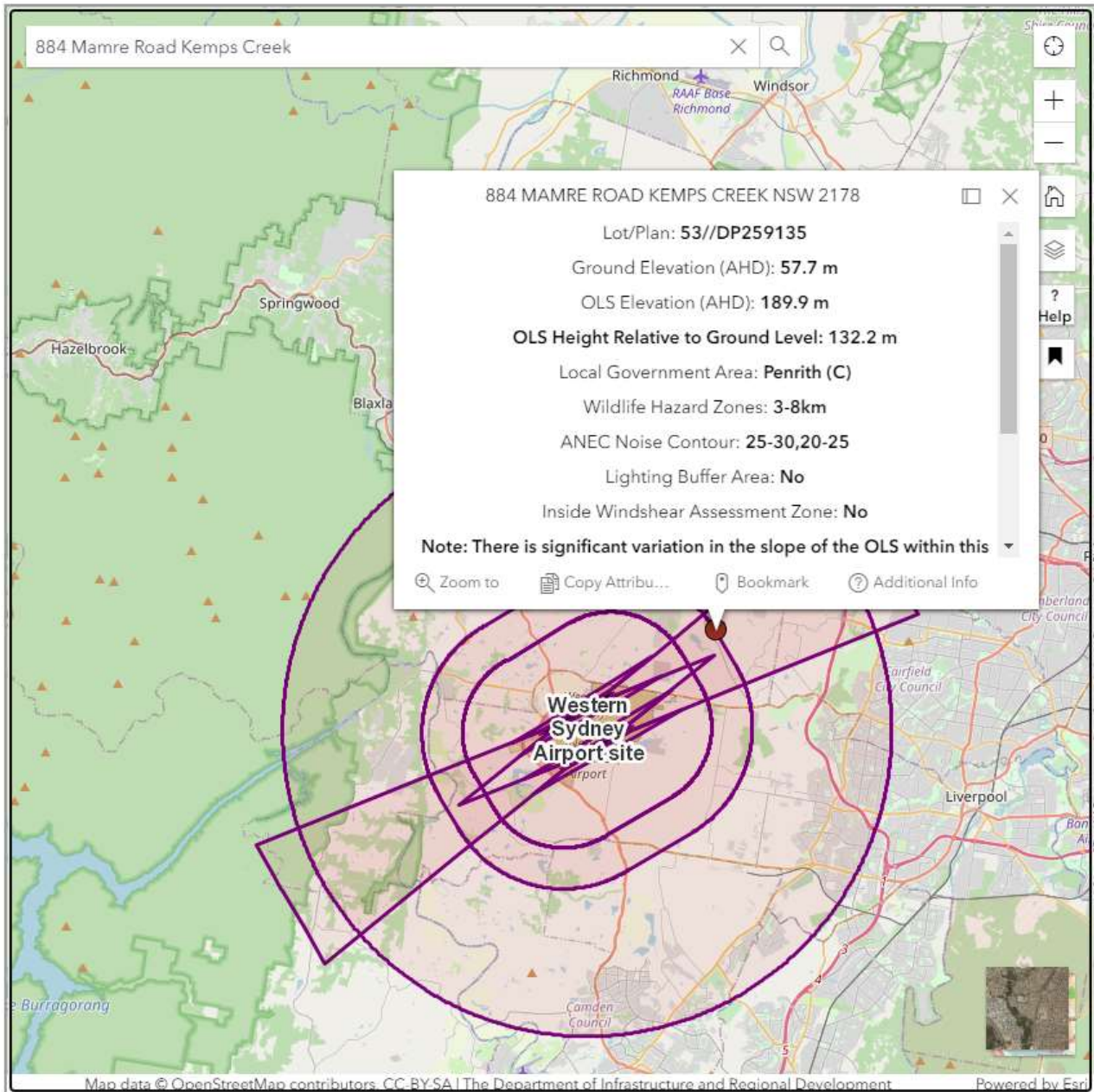
Environmental Noise Monitoring

Wednesday 2/06/2021



14.3 Western Sydney Airport Map

Airport Safeguarding tool



14.4 SSD-17552047 Correspondence (Fraser's Property Industrial)

From: Michaela Leerdam <Michaela.Leerdam@frasersproperty.com.au>

Sent: Thursday, 24 March 2022 9:54 AM

To: Stephen O'Connor <stephen.oconnor@altisproperty.com.au>

Cc: Paul Solomon <Paul.Solomon@frasersproperty.com.au>

Subject: FPI Aldington Road

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Stephen,

Further to your conversation with Paul, we have three lots that are still occupied, all will be vacant by **June 2022**.

- 169-181 Aldington Road (28/DP255560)
- 183-197 Aldington Road (27/DP255560)
- 199 Aldington Road (26/DP255560)

Let me know if you need anything else.



Michaela Leerdam
Acquisitions & Infrastructure Coordinator
Fraser's Property Industrial

14.5 Annual Average Wind Speed and Direction – Penrith Lakes

Rose of Wind direction versus Wind speed in km/h (15 Sep 1995 to 11 Aug 2021)

Custom times selected, refer to attached note for details

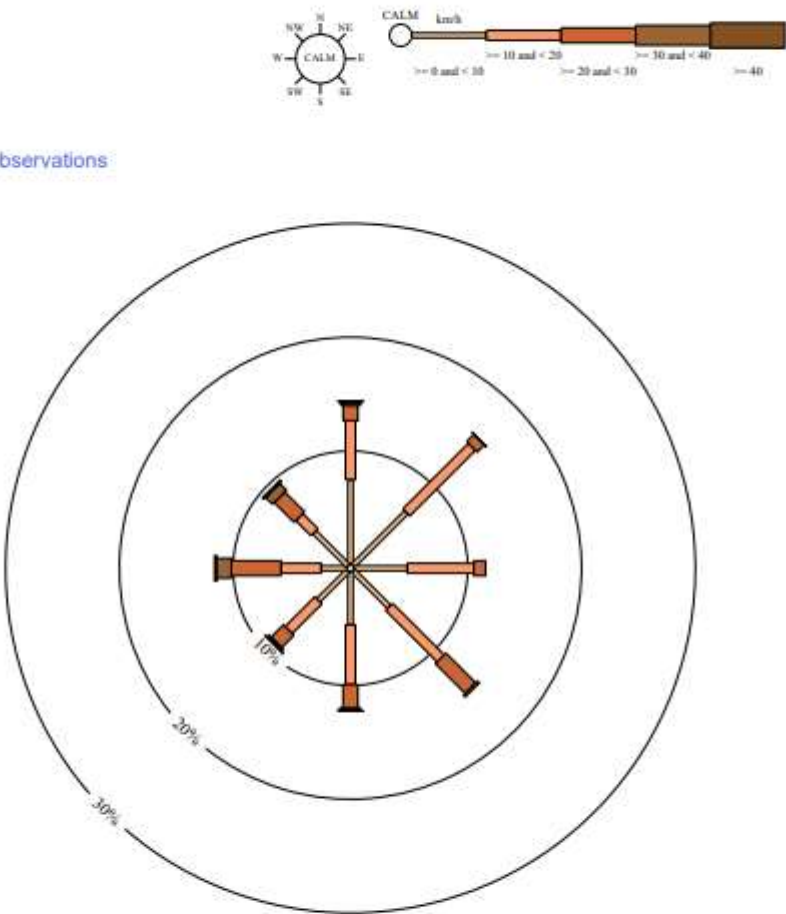
PENRITH LAKES AWS

Site No: 067113 • Opened Aug 1995 • Still Open • Latitude: -33.7195° • Longitude: 150.6783° • Elevation 24 m

An asterisk (*) indicates that calm is less than 0.5%.
Other important info about this analysis is available in the accompanying notes.

3 pm
9185 Total Observations

Calm 1%



Copyright © Commonwealth of Australia 2021. Prepared on 11 Aug 2021
Prepared by the Bureau of Meteorology.
Contact us by phone on (03) 9669 4082, by fax on (03) 9669 4515, or by email on climatedata@bom.gov.au
We have taken all due care but cannot provide any warranty nor accept any liability for this information.

14.6 Appendix A: Table 3.1 Decision Matrix

The table below presents the decision-making process used by Acoustic Works to determine the appropriate treatment methods for the site. It was determined that acoustic barriers were the ideal treatment method as they would allow the site to operate 24/7 with minimal operational restrictions.

Mitigation Option	Feasibility	Reasonability	Justification for Regarding or Disregarding
Limiting hours of operation	This could be easily implemented.	Onsite warehouses would require the ability to operate 24/7 given the nature of the logistics and warehousing industries, and anything less than 24/7 operation would negatively impact tenants' ability to do business	Limiting hours of operation was disregarded as a potential option due to the negative impact it would have on potential business for the eventual tenants of the development.
Operational restrictions (e.g. limiting the number of trucks arriving in a given time period)	This could be difficult to implement properly and would not account for variations in activity at different times of year	Limiting operations at certain times would negatively affect the ability of future tenants to manage busy periods.	Operational restrictions were disregarded as an option due to the difficulty in implementation and the negative effects to onsite tenants during busy periods.
Low-noise components (e.g. low noise air brakes, electric forklifts)	This is within the capability of current technology	Trucks operated by third-party companies may not be fitted with all required low-noise technology. In addition, low-noise components are more expensive and this cost would be passed onto tenants.	Low-noise components were disregarded due to cost and the difficulty in ensuring all vehicles potentially accessing the site are correctly fitted.
Acoustic Barriers	These can be easily constructed and removed when no longer required (e.g. when the receiver shielded by the barrier has been demolished and redeveloped into an industrial use)	The cost of constructing acoustic barriers is high, especially barriers of the height recommended in the report. The acoustic barriers may also be expensive to remove once no longer required. With acoustic barriers, businesses onsite would be able to operate 24/7 at the required capacity	Acoustic Barriers were adopted as a treatment option as they would allow the future onsite tenants to operate 24/7 without reducing capacity at certain times.