ADP
An ayesa company

ADVERTISED
PLAN

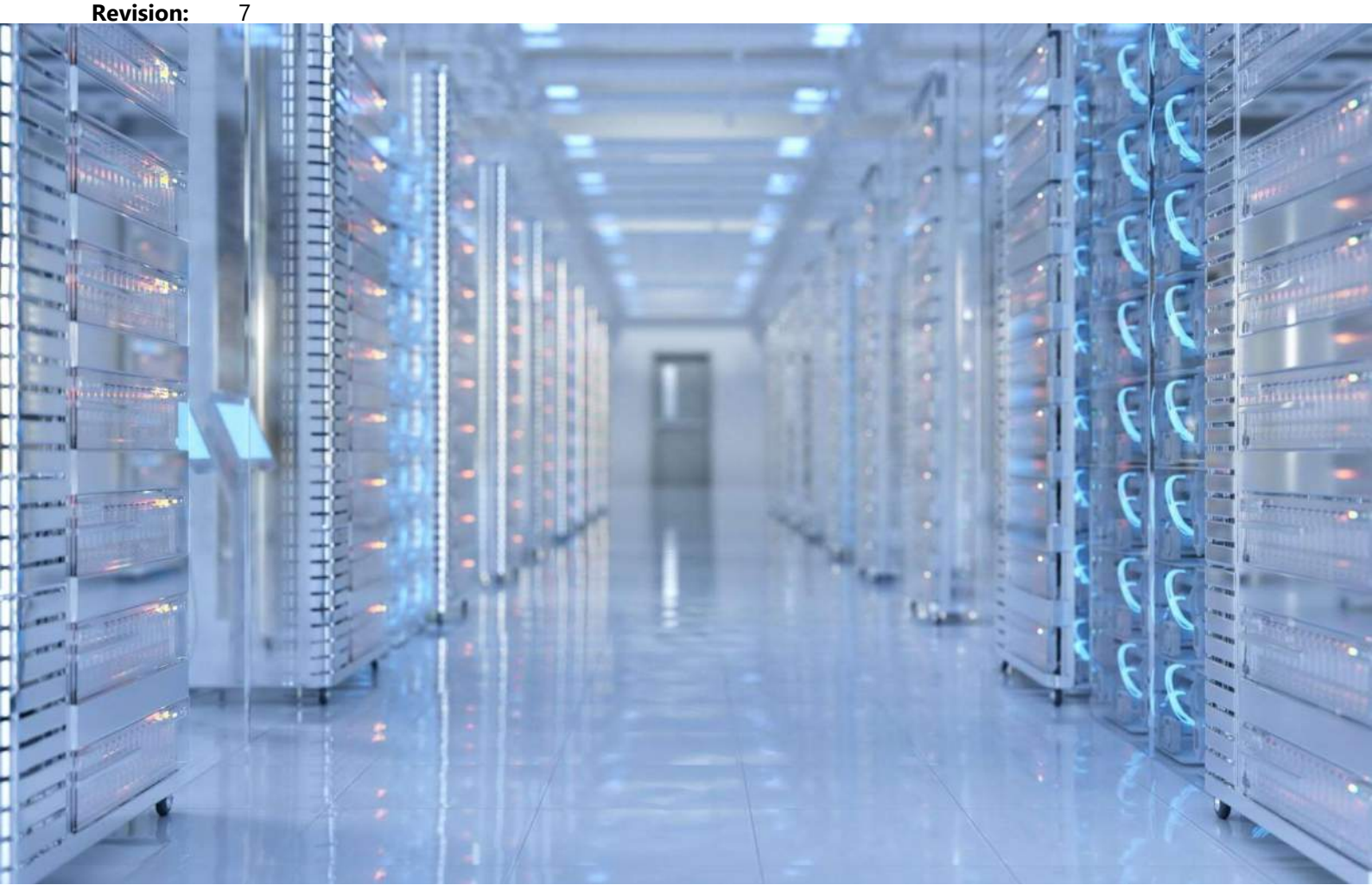
165 Williamsons Road, South Morang

Acoustic Report

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Prepared for: Legacy Project Management

Project No: MEL4807
Date: 7 October 2026
Revision: 7



Project:	165 Williamsons Road, South Morang
Location:	165 Williamsons Rd South Morang, Vic 3752
Prepared by:	ADP Consulting Pty Ltd Level 13, 55 Collins Street Melbourne VIC 3000
Project No:	MEL4807
Revision:	7
Date:	7 October 2026

Rev	Date	Comment	Author	Signature	Technical Review	Signature	Authorisa-tion & QA	Signature
0	23.7.25	Issue	WG	WG	JG	JG	JV	JV
1	29.7.26	Issue	WG	WG	JG	JG	JV	JV
2	7.8.26	Issue	WG	WG	MD	MD	JV	JV
3	27.8.26	Issue	WG	WG	MD	MD	JV	JV
4	31.8.26	Issue	WG	WG	MD	MD	JV	JV
5	31.8.26	Issue	WG	WG	MD	MD	JV	JV
6	6.10.26	Issue	WG	WG	MD	MD	JV	JV
7	7.10.26	Issue	WG	WG	MD	MD	JV	JV

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

ADVERTISED
PLAN

Contents

1. Context 4
2. Site Description 5
3. Proposed Development 6
4. Existing Noise Environment 7
4.1 Description 7
4.2 Noise Measurement 7
4.3 Noise Measurement Results 8
5. Noise Criteria 10
5.1 Operational Noise Limits 10
5.2 Cumulative Noise 11
5.3 Environmental Reference Standard 12
5.4 Noise Characteristics 12
6. Noise Modelling 14
7. Noise Modelling Results 16
8. Mitigation Requirements 18
8.1 Design Requirements 18
8.2 Generator Mitigation 18
8.3 Contingency Plan 19
9. Summary 20

Appendices

Appendix A Acoustic Terminology 21
Appendix B Zoning Levels 25
Appendix C Noise Monitoring 29
Appendix D Attended Noise Measurements 47
Appendix E Criteria 51
Appendix F Noise Data 61
Appendix G Noise Maps 69

Figures

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Figure 1: Site Context 5
Figure 2: Plant layout 6
Figure 3: Noise measurement locations 8
Figure 4: Noise Logger Locations 30
Figure 5: Predicted frequency and roll off 60

Tables

Table 1: Average background noise levels 8
Table 2: Attended background noise level 9
Table 3: Attended substation noise level 9
Table 4: EPA operating time periods 10
Table 5: Noise Criteria Summary 11
Table 6: Typical night-time operation 16
Table 7: Typical daytime/evening operation 16
Table 8: Daytime maintenance periods 16
Table 9: Emergency operation 17
Table 10: Noise measurement equipment 31
Table 11: Average measured day, evening night L90 background sound pressure noise levels 31
Table 12 Attended noise measurements 49
Table 13: Representative Background Noise Monitoring Locations 52
Table 14: Noise emission criteria NCA1 53
Table 15: Noise emission criteria NCA2 53
Table 16: Noise emission criteria NCA3 53
Table 17: Noise emission criteria NCA4 53
Table 18: EPA Low Frequency Screening Trigger Vales 54
Table 19: NCA1 Low Frequency Assessment 55
Table 20: NCA2 Low Frequency Assessment 55
Table 21: NCA3 Low Frequency Assessment 56
Table 22: NCA4 Low Frequency Assessment 56
Table 23: Cooling tower noise levels 62
Table 24: One third octave band low frequency cooling tower noise level 63
Table 25: Chillers noise level 64
Table 26: Generator noise levels 65
Table 27: One third octave band low frequency generator noise level 66
Table 28: Fans and AHUs noise level 67
Table 29: Transformer noise level 68

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

1. Context

The land at 165 Williamsons Rd, South Morang (the Subject Site) is proposed to be developed into a 3 level ~200MW data centre.

ADP Consulting Pty Ltd has been engaged by Legacy Project Management to undertake a noise impact assessment for a proposed data centre 165 Williamsons Road, South Morang (the Site). The following guidelines, standards and regulatory requirements have been used to define the site-specific acoustic criteria for the development:

- Victorian EPA's Noise Limit and Assessment Protocol for the Control of Noise from Commercial, Industrial and Trade Premises and Entertainment Venues, Publication 1826.5, dated 1 July 2021 (EPA Noise Protocol)
- Victorian EPA's Publication 1996 Noise Guideline: Assessing Low Frequency Noise
- Victorian EPA's Publication 1997 Technical Guide: Measuring and Analysing Industry Noise and Music Noise (EP technical guide)
- Victorian EPA's Environment Protection Act 2017 (EP Act)
- Victorian EPA's Environment Protection Regulations 2021 (EP Regulations)
- Victorian EPA's Environmental Reference Standard (No. S 245)
- Victorian EPA's Publication 1992 Guide to the Environment Reference Standard
- Victorian EPA's Publication 1856 Reasonably Practicable
- Victorian EPA's Publication EPA Application Requirements for Data Centres

This report assesses the noise impact to sensitive receivers from the operation of the proposed development. The proposed development includes:

- A new building to with data halls and office space
- Rooftop cooling plant
- Stacked emergency generators with façade ventilation
- At grade substation with transformers
- At grade carparking
- Loading dock.

The data centre will operate 24 hours a day, 7 days a week and includes back-up power supply (generators) for emergency operation.

Acoustic terminology is provided in Appendix A.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

2. Site Description

The site is located at 165 Williamsons Road, South Morang, approximately 10 km north east of the Melbourne central business district. The site is in a Commercial 2 Zone (C2Z) and is surrounded by the following:

- North: Four storey storage facility (under construction) across much of the northern aspect. To the north-east Findon Road is followed by residential dwellings located in a General Residential Zone (GRZ), approximately 70m from the proposed datacentre building A and 285m from the proposed building B.
- East: Vacant General Residential Zone (GRZ) land owned by the City of Whittlesea with limited development potential as a result or revegetation restrictions and Williamsons Road extension overlays, followed by Melbourne Water storage on Public Use Zone (PUZ).
- South: the Mernda railway line followed by residential dwellings (no north facing windows) and commercial buildings in an Activity Centre Zone (ACZ), approximately 370m from the proposed datacentre Site A and 195m from the proposed Site B.
- West: South Morang substation followed by Whittlesea community centre and council offices.

The site location and context are provided in the Figure below and the planning zoning map is provided in Appendix B.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

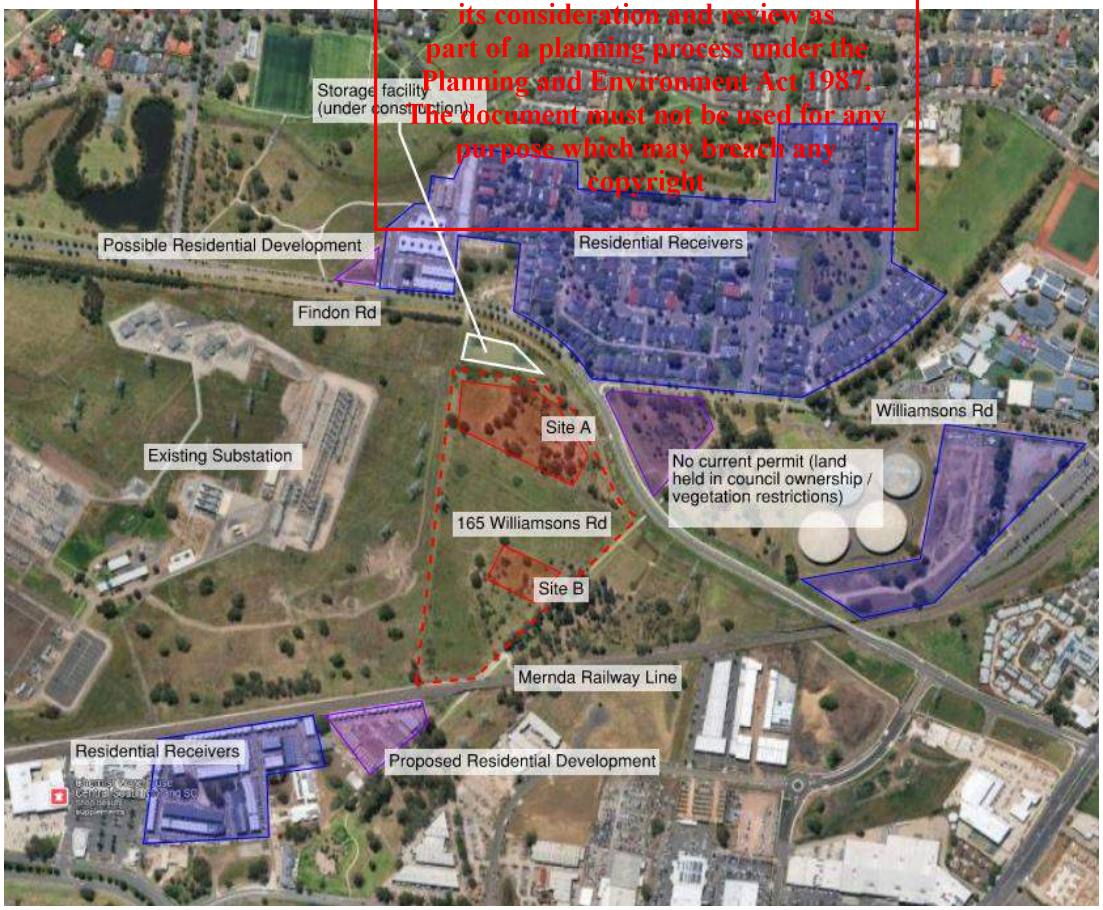


Figure 1: Site Context

3. Proposed Development

The proposed development includes two sites separated by an electricity transmission easement:

- Site A includes a datacentre building with server halls, office, generator banks and rooftop cooling
- Site B is a substation building and electrical gear including switchgear and power transformers.

The primary noise sources for the development include the following plant:

- 25x rooftop cooling towers units
- 25x chiller units serving each cooling tower
- 105x stacked diesel generators (84x would run in an emergency operation)
- Air handling units and fan banks
- 2x at grade 250 MVA transformers running at approximately 40% capacity

The diesel generators operate under emergency conditions[1] or for regular maintenance and testing. All other equipment will operate 24 hours a day for seven days a week.

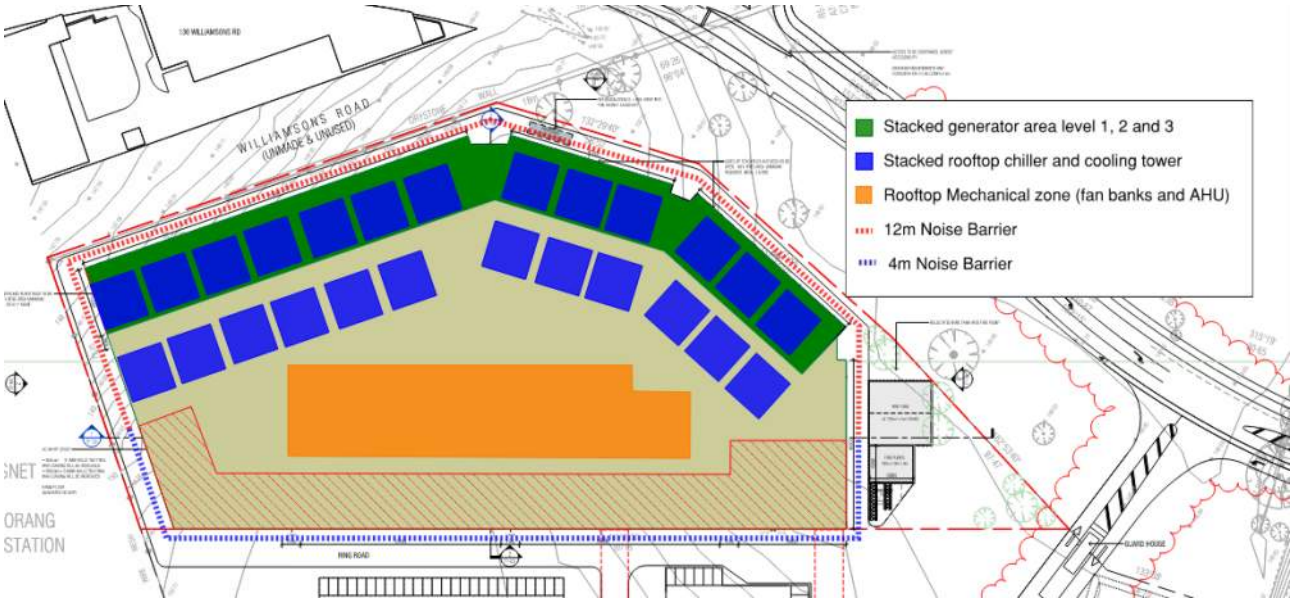


Figure 2: Plant layout

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

[1] In accordance with *Emergency Management Act 2013*

4. Existing Noise Environment

4.1 Description

During the daytime, the existing noise environment is dominated by road traffic noise on Findon Road with significant noise from wildlife (birds and insects) and community (people talking and music). The existing substation is not audible at receiver locations during the daytime.

During the night-time, the existing noise environment is dominated by distant traffic on Plenty Road with some noise from insects and occasional local road traffic pass-by events. The existing substation is only just audible at times where background noise is low at receiver locations on Findon Road closest to the substation and is not audible at receiver locations further from the substation.

4.2 Noise Measurement

Noise monitoring was undertaken in accordance with the EP Technical Guide at 3 locations representative of surrounding sensitive receivers between 9 and 16 September 2026[2].

Attended measurement was undertaken in accordance with the EP Technical Guide at locations representative of surrounding sensitive receivers and noise sources at the following dates and times:

- 26 June from 2.30pm to 4.30pm
- 8 July 2026 from 10pm to 11.30pm
- 2 October from midnight to 2am

The noise measurements are to confirm the background noise level for calculation of the EPA Noise Protocol criteria and provide an understanding of existing noise environment that may affect receivers.

Noise catchment areas (NCA) have been applied to group sensitive receivers that are expected to have similar background noise level and can be reasonably represented by conservative zoning assumptions.

Attended measurement locations (A#), Noise monitoring (Logger) and noise catchment areas (NCA) are provided in the Figure 3.

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

[2] Previous noise monitoring was undertaken between 24 June and 1 July 2026 however equipment was tampered with and data was incomplete and therefore not relied on for this assessment.

ADVERTISED
PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Figure 3: Noise measurement locations

Weather during the noise monitoring period included some periods of rain and wind which have been considered in the measurement analysis.

4.3 Noise Measurement Results

The noise monitoring arithmetic average of the hourly L_{90} background noise level for the time periods defined in the Noise Protocol is provided in Table 1 below.

Noise monitoring detail and graphed data are provided in Appendix C.

Table 1: Average background noise levels

Location	Day, dBL_{A90}	Evening, dBL_{A90}	Night, dBL_{A90}
Logger A	50	46	46
Logger B	44	44	39
Logger C	39	38	38

The noise level at Logger A was impacted by an unexpected local noise source which affected the data. The data is provided for information however Logger A is not used to derive noise limits. Further information is provided in Appendix C and E.

The relevant attended noise measurement of the L_{A90} background noise level is provided in Table 2 below.

Further attended noise measurement data is provided in Appendix D.

Table 2: Attended background noise level

Location	Day, dBL_{A90}	Night, dBL_{A90}
A6	36	30

The existing substation was only just audible during the night-time when background noise is low at the nearest NCA1 receiver location and was not audible at other receiver locations. The measured L_{Aeq} noise level at times where no other noise sources were audible is provided in Table 3 below.

Table 3: Attended substation noise level

Location	Night, dBL_{Aeq}
A3	37

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

5. Noise Criteria

5.1 Operational Noise Limits

Noise criteria are determined following the Environment Protection Act 2017 (the Act) as amended by the Environment Protection Amendment Act 2018 and follow the Environment Protection Regulations 2021 (the Regulations) and Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (EPA Publication 1826.5) (the Noise Protocol).

The Regulations use the three different operating time periods provided in the table below.

Table 4: EPA operating time periods

Description		Time (hrs)
Day	Monday – Saturday	07:00 – 18:00
Evening	Monday - Saturday	18:00 – 22:00
	Sunday, Public Holidays	07:00 – 22:00
Night	Monday – Sunday	22:00 – 07:00

Project and receiver specific noise limits are determined from the applicable zoning level and measured background noise levels provided in Section 4.3.

For equipment used only for emergency purposes an increase to the applicable operational noise limits during scheduled testing and maintenance is permitted as follows:

- 10 dB during the day period; and
- 5 dB during the evening and night periods.

The regulations[3] exclude noise from equipment that is used in an emergency such as grid failure. In this case there is no specific noise criteria and the EPA General Environmental Duty (GED) under Section 25 of the Environment Protection Act 2017 is to be considered. The GED requires any risk of harm be prevented or minimised so far as reasonably practical where harm is typically considered to be disruption of sleep for acoustic assessments.

The night-time noise limit at NCA1 has been adjusted to allow for cumulative noise from the existing substation from 42dBL_{Aeq} to 40dBL_{Aeq} (allowing for the 37dBL_{Aeq} from the existing substation).

There are 105 generators as part of this development (84 that run in an emergency and 21 redundancy) and testing of generators may include running each generator for between 1 and 4 hours. It is not practical to meet the Noise Protocol maximum period of 4 hours per month for maintenance and so the testing of generators is also assessed during the operational daytime noise criteria.

The project and receiver specific noise limits for operational, maintenance and emergency operation are provided in Table 5 below and detail is provided in Appendix E.

[3] Regulation 117(1)(c)(xi)

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Table 5: Noise Criteria Summary

Receiver	Period	Noise Limit, dBL$_{Aeq}$		
		Operational	Maintenance	Emergency
NCA1	Day	53	63	-
	Evening	47	-	-
	Night[4]	42(40)	-	-
NCA2	Day	48	58	-
	Evening	44	-	-
	Night	39	-	-
NCA3	Day	53	63	-
	Evening	47	-	-
	Night	42	-	-
NCA4	Day	54	64	-
	Evening	49	-	-
	Night	46	-	-

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

5.2 Cumulative Noise

The operational noise criteria apply to cumulative noise including contribution from any other existing industrial, commercial or trade premises affecting noise sensitive receivers. The only identifiable noise source affecting noise sensitive receivers in the study area is the existing South Morang Terminal Station (SMTS), which is only audible during night-time at NCA1 and inaudible at all other sensitive receiver locations.

The SMTS was measured to have a peak at 100Hz that does not meet the EPA definition of tonality and is below the EPA low frequency noise trigger at 100Hz.

The night-time noise limit at NCA1 has been adjusted to allow for cumulative noise from SMTS from 42dBL$_{Aeq}$ to 40dBL$_{Aeq}$ (allowing for the measured level of 37dBL$_{Aeq}$ from the existing SMTS). This is considered a conservative approach because the measured level of 37dBL$_{Aeq}$ included noise from distant traffic, insects and frogs.

Based on a noise level of 37dBL$_{Aeq}$ at NCA1, 120m from the SMTS, a reduction of approximately 5dB is predicted for the nearest NCA2 location, 280 from the SMTS. A noise level of 31dBLeq is

from A3 (37 dBL_{Aeq} at ~ 120 m from the substation transformers) to prove that at NCA2, NCA3, and NCA4 (~ 350 m to 600 m from the substation), the substation contribution is < 25–28 dBL_{Aeq}, which is > 12 to 18 dB below the night-time noise limits (39–46 dBL_{Aeq}) and therefore has 0.0 dB cumulative mathematical impact.

Further considerations for cumulative noise include:

[4] Adjusted by -2dB to allow for 37dBL$_{Aeq}$ of existing substation noise, see Section 5.2.

ADVERTISED PLAN

- Inspection of the undeveloped Commercial 2 Zone located to the north west and discussion with the project planner identified that the site is subject to high voltage overhead powerlines and very unlikely to be developed. If developed, the use would need to be low level and risk commercial use such as small workshop or storage. On this basis it is reasonable not to allow any specific noise level allowance and adjustment to NCA1 for potential developments in this area.
- The Activity Centre Zone (ACZ) to the south is developed and active with commercial wholesale outlets, car dealerships, small workshops (car wash, repairs) and includes some lots to be developed. The noise environment at the nearest NCA4 is dominated by road traffic noise on Plenty Road with some general industrial/services noise hum audible at night-time but not identifiable to any specific noise source. Similarly, inspection of the ACZ during the daytime and night-time observed an increased noise level, however no constant, identifiable noise. Based on the existing noise environment, the higher criteria at NC4 and the separation between NCA4 and undeveloped lots it is reasonable not to allow any specific noise level allowance and adjustment to NCA4 for potential developments in this area.
- The development directly to the north of the Subject Site is confirmed to be storage facilities with minor rooftop plant; based on building shielding and the distance between rooftop plant and receiver, this potential noise source is not expected to contribute to the future noise environment and no adjustment to NCA1, 2, or 3 is made.

5.3 Environmental Reference Standard

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

The EPA also provides the Environmental Reference Standard (ERS) which provides general objectives for noise environments based on land use categories in support of the General Environmental Duty. The ERS provides a benchmark for assessing noise impact on human health and does not set compliance criteria for noise.

Category	Planning Zone	Objective
Category III	General Residential Zone (GRZ)	50 $dBL_{Aeq16hr}$
	Activity Centre Zone (ACZ)	40 $dBL_{Aeq,8hr}$

The ERS objectives apply to an average noise level over the day ($dBLA_{eq16hr}$) and night ($dBLA_{eq8hr}$) periods.

5.4 Noise Characteristics

Penalties for noise characteristics can apply to the assessed noise level where the noise emission is considered to be tonal, impulsive or intermittent. Frequency and low frequency noise is not directly considered as a noise characteristic with penalty however is a consideration for whether noise is 'unreasonable'.

- This project does not include equipment or design that will introduce impulsive or intermittent noise characteristics and they are not considered.
- The predicted noise level at receiver locations for this project does not meet the definition of tonal and no penalty is applied. Detailed assessment is provided in Appendix E.
- Equipment used for this project may produce low frequency noise.

On this basis, penalties for noise characteristics have not been applied to the assessed level and a low frequency noise screening assessment has been undertaken in accordance with EPA requirements and is provided in Appendix E.

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

6. Noise Modelling

CadnaA 3d noise prediction software has been used to calculate plant noise emissions from the proposed development to the noise sensitive receivers. The acoustic model includes the proposed development geometry, architectural layouts, site elevations, surrounding buildings, existing environmental features, receiver locations, and associated mechanical plant noise sources.

Noise propagation calculations have been undertaken in accordance with the ISO 9613-2:1996 which considers distance attenuation, ground absorption, atmospheric effects, and shielding provided by intervening structures.[5]

The following assumptions are made as part of the noise assessment model:

- Ground conditions between the proposed development and receivers is either soft (absorption factor 0.7) or reflective for paved areas and roads (absorption factor 0).
- ISO 9613-2 typical worst case weather condition to each receiver location.
- The indicative mechanical plant layout.
- Cooling towers run at a maximum of 80% fan speed during the night-time period.
- Octave band noise data from representative equipment provided in Appendix F.
- Noise barriers and louvres provided in Section 8 are included.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Noise levels have been calculated for the following scenarios to represent the assessment cases and corresponding noise criteria provided in Section 5.

- **Standard daytime and evening operation** including all rooftop plant.
- **Standard night-time operation** all rooftop plant and cooling towers running at 80% fan speed[6].
- **Maintenance** including all rooftop plant and up to 4 generators.
- **Emergency** all rooftop plant and 84 generators.

Maintenance scenario will only occur during the daytime.

Acoustic modelling and prediction including variables and across source data, emission, environmental propagation and conditions and receiver conditions and this uncertainty is managed though applying compounding conservative assumptions at all stages of assessment resulting in a robust 'worst case'. This modelling includes the following conservative approach:

- The model assumes all rooftop mechanical plant operates at maximum expected capacity for the relevant time period simultaneously. Typically, ambient temperatures and thermal loads will be below the maximum design for each time period and actual source noise emissions will be lower than modelled.
- Rooftop plant includes a level of redundancy and will likely operate at partial load even during the highest design heat conditions; typical operation of rooftop cooling plant is expected to be lower than modelled.

[5] ISO 9613.1:1993 *Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere*, 1 June 1993 (ISO 9613-1)
[6] See Appendix F.1 for further information and detail of 80% fan speed operation.

- The ISO 9613-2 propagation algorithms inherently assume moderate temperature inversions and downwind conditions from the source to all receivers simultaneously. This is a meteorological impossibility that over-predicts noise levels at the receivers.
- The equipment sound power levels used in the model represent the manufacturers guaranteed maximum emissions, which often include their own internal safety and testing margins.
- The background noise levels and zoning positions used to establish the criteria were based on the lowest measured periods and conservative zoning allocations to apply the most conservative noise limit to each NCA.

Because these conservative inputs compound, the predicted noise levels represent a theoretical maximum that may not occur and do not represent the expected daily operational average. The included conservatism expected to outweigh the calculation uncertainties through the design and modelling approach.

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADVERTISED
PLAN

7. Noise Modelling Results

The predicted noise level for each scenario and relevant time period is provided in Table 6 to Table 9 below. Noise maps are provided in Appendix G.

No modifying factor adjustments for tonality, impulsiveness, or intermittency have been applied to the predicted receiver noise levels. See Section 5.4 for detail.

A low frequency noise screening assessment has been undertaken in accordance with EPA requirements and is provided in Appendix E.

Table 6: Typical night-time operation

Operation	Predicted Noise	Noise Limit	ERS Objective	Compliance
NCA1	31 dBL_{Aeq}	40 dBL_{Aeq}	40 dBL_{Aeq}	✓
NCA2	33 dBL_{Aeq}	39 dBL_{Aeq}	40 dBL_{Aeq}	✓
NCA3	35 dBL_{Aeq}	42 dBL_{Aeq}	40 dBL_{Aeq}	✓
NCA4	36 dBL_{Aeq}	43 dBL_{Aeq}	40 dBL_{Aeq}	✓

Typical operation is predicted to meet the night time noise criteria and ERS objectives and on this basis is also predicted to also meet evening criteria.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Table 7: Typical daytime/evening operation

Operation	Predicted Noise	Noise Limit	ERS Objective	Compliance
NCA1	35 dBL_{Aeq}	47 dBL_{Aeq}	50 dBL_{Aeq}	✓
NCA2	38 dBL_{Aeq}	44 dBL_{Aeq}	50 dBL_{Aeq}	✓
NCA3	39 dBL_{Aeq}	47 dBL_{Aeq}	50 dBL_{Aeq}	✓
NCA4	40 dBL_{Aeq}	49 dBL_{Aeq}	50 dBL_{Aeq}	✓

Typical daytime operation is predicted to meet the daytime noise criteria and ERS objectives.

Table 8: Daytime maintenance periods

Operation	Predicted Noise	Noise Limit	ERS Objective	Compliance
NCA1	38 dBL_{Aeq}	53 dBL_{Aeq}	50 dBL_{Aeq}	✓

Operation	Predicted Noise	Noise Limit	ERS Objective	Compliance
NCA2	41 dBL_{Aeq}	48 dBL_{Aeq}	50 dBL_{Aeq}	✓
NCA3	47 dBL_{Aeq}	53 dBL_{Aeq}	50 dBL_{Aeq}	✓
NCA4	40 dBL_{Aeq}	54 dBL_{Aeq}	50 dBL_{Aeq}	✓

Maintenance periods with emergency testing are predicted to meet the daytime noise criteria and ERS objectives with up to 4 generators running and will not occur during the evening or night-time periods.

Table 9: Emergency operation

Operation	Predicted Noise	Noise Limit/ERS Objective	Compliance
NCA1	43 dBL_{Aeq}	-	See Section 8
NCA2	46 dBL_{Aeq}	-	See Section 8
NCA3	53 dBL_{Aeq}	-	See Section 8
NCA4	40 dBL_{Aeq}	-	See Section 8

Emergency operation is predicted to be up to 53 dBL_{Aeq} at sensitive receiver locations and is required to consider the state of knowledge for generator noise and methods to eliminate or minimise risk of harm as far as reasonably practical.

The predicted noise level for typical operation meets the day, evening and night-time noise criteria and ERS objectives including for the maintenance scenario with up to 4 generators running during the daytime period.

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED
PLAN

8. Mitigation Requirements

The operation of the proposed datacentre is predicted to meet the acoustic criteria and objectives based on the equipment selections and in principle noise mitigation. The following in principle noise attenuation is required as part of the compliant design:

8.1 Design Requirements

- A 12m high barrier to the west, north and east sides of the chiller and cooling tower unit blocks, higher than cooling tower air intake with a minimum insertion loss of 25 dB(A) as shown in Figure 2.
- A 4m high barrier (or acoustic louvre) to the south side of the building, blocking line of sight between rooftop plant and receivers in NCA4 with a minimum insertion loss of 15 dB(A) as shown in Figure 2.
- Cooling towers are to include construction, fan type or water mitigation to achieve maximum sound power levels provided in Appendix F.1.
- Chillers are to be located in any plantroom or enclosure required to mitigated noise to at least 10dB below the cooling tower noise level and achieve the sound power levels provided in Appendix F.2.
- Emergency generators are only to be tested during daytime hours as part of the maintenance programme are not to test more than 4 generators at one time.[7]
- All rooftop AHU, fans and ventilation is to include any in-duct attenuation to achieve a maximum noise level of 70 dB(A) at 1 m and the sound power levels provided in Appendix F4.
- There are to be no acoustically unmitigated air pathways through the building façade.
- Equipment and associated mitigation measures are to be selected with manufacturer data confirming that impulsive and tonal characteristics are eliminated, and low frequency noise characteristics are minimised so far as reasonably practicable in accordance with the GED.
- Acoustic review and sign-off for cooling towers, chillers and generators is to form a hold point during the project design & construction.
- On-site 1/3-octave spectral testing to be conducted during post-installation commissioning to verify compliance and mitigation measures at sensitive boundary locations.
- All significant plant items are to be installed on isolation springs or mounts to minimise vibrational energy turning into low frequency structural resonance.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

8.2 Generator Mitigation

Noise from the operation of generators during an emergency is required to consider the state of knowledge for methods to eliminate or minimise risk of harm as far as reasonably practical and apply Best Available Techniques or Technology (BATT). Full consideration of BATT is provided in Appendix E.1.3 and specific generator mitigation and management requirements are provided below.

- The selected generator must meet the 'overall mitigated' sound power levels provided in Appendix F.3 and as a minimum include design:

[7] Up to 105 generators are to be tested in blocks of 4, each running for approximately 4 hours every 6 months for a total of 210 hours of testing time per year.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

  - Heavy weight enclosure with no open-air pathways.
  - Tuned, reactive muffler.
  - Fully attenuated air intake and outlets.
  - Fully packaged design allowing simple installation & replacement with updated technology during project lifetime.
- The project must include the following design to support generator mitigation approach:
  - Internal battery banks to manage short term grid instability and avoid generator banks 'false starts'.
  - A modular, manufacturer agnostic generator plantroom with enough space to include acoustic attenuators, allowing for design to incorporate any quieter or better performing generators at later design phases or though the project lifetime.
  - Removeable acoustic louvered façade that minimises damage and maintains acoustic performance after removal and replacement.
  - Acoustic louvre to meet a minimum of R_w15 and consider higher performance following final generator selection and confirmation of airflow requirements.
  - Generator plantroom is to include absorptive ceiling to achieve reverberation time <1.0 seconds.
- The project operation must meet the following requirements to support generator mitigation approach:
  - Minimum number of generators required to support the project during an emergency will be used (84).
  - Full use of generators is restricted to emergency events[8] defined as an unplanned loss of mains utility power.
- The generator supplier is required to provide:
  - Third-party 1/3-octave band acoustic test data down to 20Hz (or 10Hz where available) prior to sign-off and delivery to site.
  - Specific letter confirming that generator has consider BATT in accordance with the GED and consideration of any expected future technology or changes.

8.3 Contingency Plan

In the case that post construction commissioning shows exceedance over EPA criteria, the following steps are to be taken:

- Building Management System (BMS) will be used to limit cooling tower fan speed to reduce noise levels and meet criteria at each receiver location for the relevant time period.
- Number of generators running during maintenance will be reduced (with time running reduced).

ADVERTISED PLAN

[8] In accordance with Emergency Management Act 2013.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

9. Summary

A new datacentre is proposed in a commercial zoned area approximately 70m away from noise sensitive receivers, located in a residential zoned area. The proposed datacentre includes noise generating rooftop plant and generators that would operate in emergency conditions.

A noise measurement survey and noise assessment has been undertaken to determine the relevant noise limit and objectives for noise sensitive receivers and to predict the noise level based on preliminary plant selections and layout.

The assessment has included noise mitigation that has been included in the plant selection and layout as well as the building design and includes:

- Acoustic mitigation or enclosures generators
- Acoustic attenuators for ventilation paths and exhaust
- An acoustic barrier (or acoustic louvre) around cooling towers (around rooftop plant)
- Acoustic enclosure kits for generators
- Acoustic louvre and absorptive soffit for generator plantrooms
- Plant locations that do not allow any direct line of sight between rooftop plant items and receiver locations
- Acoustic input and approval of all rooftop plant items to confirm specified noise levels are met
- Equipment and associated mitigation selection with no impulsive, tonal or low frequency noise characteristics.
- Continuous review of the state of knowledge for generator noise and mitigation through the design (and lifetime) of the project.

Acoustic design input is expected to be required at all stages of the proposed data centre development to confirm the above requirements are integrated into the engineering and architectural design and confirm that the overall EPA noise limit is met.

Based on the above approach, the noise requirements for the project are predicted to be met as follows:

- Compliance with the Noise Protocol and ERS objectives is predicted to be met for 24 hour typical operation and including maintenance of up to 4 generators during for periods during the daytime.
- Compliance with the GED is met through demonstration of minimising the occurrence and level of potential harm and providing design that includes and allows for a current and continuous understanding of the state of knowledge for generator noise.

ADVERTISED PLAN

ADP
Consulting : Engineering

ADVERTISED
PLAN

Appendix A
Acoustic Terminology

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Air-borne sound
The sound emitted directly from a source into the surrounding air, such as speech, television or music.

Ambient sound
Of an environment: the all-encompassing sound associated with that environment, being a composite of sounds from many sources, near and far. This is normally taken to be the L_{Aeq} value.

Background noise level
The average of the lowest levels of the noise levels measured in an affected area in the absence of noise from occupants and from unwanted external ambient noise sources. Usually the L_{A90} value represents the background noise level.

dB(A)
Unit of acoustic measurement weighted to approximate the sensitivity of human hearing to sound frequency.

Decibel scale
The decibel scale is logarithmic in order to produce a better representation of the response of the human ear. Therefore, a 3 dB increase in the sound pressure level corresponds to a doubling in the sound energy. It is generally accepted that a 10 dB increase in the sound pressure level corresponds to a perceived doubling in loudness.

Examples of decibel levels of common sounds are as follows:

- 0 dB(A) Threshold of human hearing
- 30 dB(A) A quiet country park
- 40 dB(A) Whisper in a library
- 50 dB(A) Open office space
- 70 dB(A) Inside a car on a freeway
- 80 dB(A) Outboard motor
- 90 dB(A) Heavy truck pass-by
- 100 dB(A) Jackhammer / Subway train
- 110 dB(A) Rock Concert
- 115 dB(A) Limit of sound permitted in industry
- 120 dB(A) 747 take off at 250 metres

ADVERTISED
PLAN

Frequency
The repetition rate of the cycle measured in Hertz (Hz). The frequency corresponds to the pitch of the sound. A high frequency corresponds to a high-pitched sound and a low frequency to a low-pitched sound.

General Environmental Duty (GED)

Part of the Environment Protection Act which requires risk of human harm be prevented or minimised so far as reasonably practical, including noise.

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

L_{90}, L_{10}, etc
A statistical measurement giving the sound pressure level which is exceeded for the given percentile of a measurement period (i.e. L_{90} is the level which is exceeded for 90 percent of a measurement period). L_{90} is commonly referred to as a basis for measuring the background sound level.

$L_{Aeq,T}$
The equivalent continuous A-weighted sound pressure level. The value of the A-weighted sound pressure level of a continuous steady sound that, within a measurement time interval T, has the same A-weighted sound energy as the actual time-varying sound.

L_{Amax}
The maximum sound pressure level measured over the measurement period.

L_{Amin}
The minimum sound pressure level measured over the measurement period.

Day
Referred to as the period between 7 am and 6 pm for Monday to Saturday and 8 am to 6 pm for Sundays and Public Holidays.

Evening
Referred to as the period between 6 pm and 10 pm for Monday to Sunday and Public Holidays.

Night
Referred to as the period between 10 pm and 7 am for Monday to Saturday and 10 pm to 8 am for Sundays and Public Holidays.

Noise catchment area (NCA)
An area of sensitive receivers that are expected to have similar background noise level and can be reasonable represented by the most conservative zoning to allow a reasonable, conservative noise limit to apply to all receivers in the noise catchment area.

Sound pressure level, L_p, dB of a sound
A measurement obtained directly obtained using a microphone and sound level meter. Sound pressure level varies with distance from a source and with changes to the measuring environment. Sound pressure level equals 20 times the logarithm to the base 10 of the ratio of the R.M.S. sound pressure to the reference sound pressure of 20 micro Pascals.

ADVERTISED
PLAN

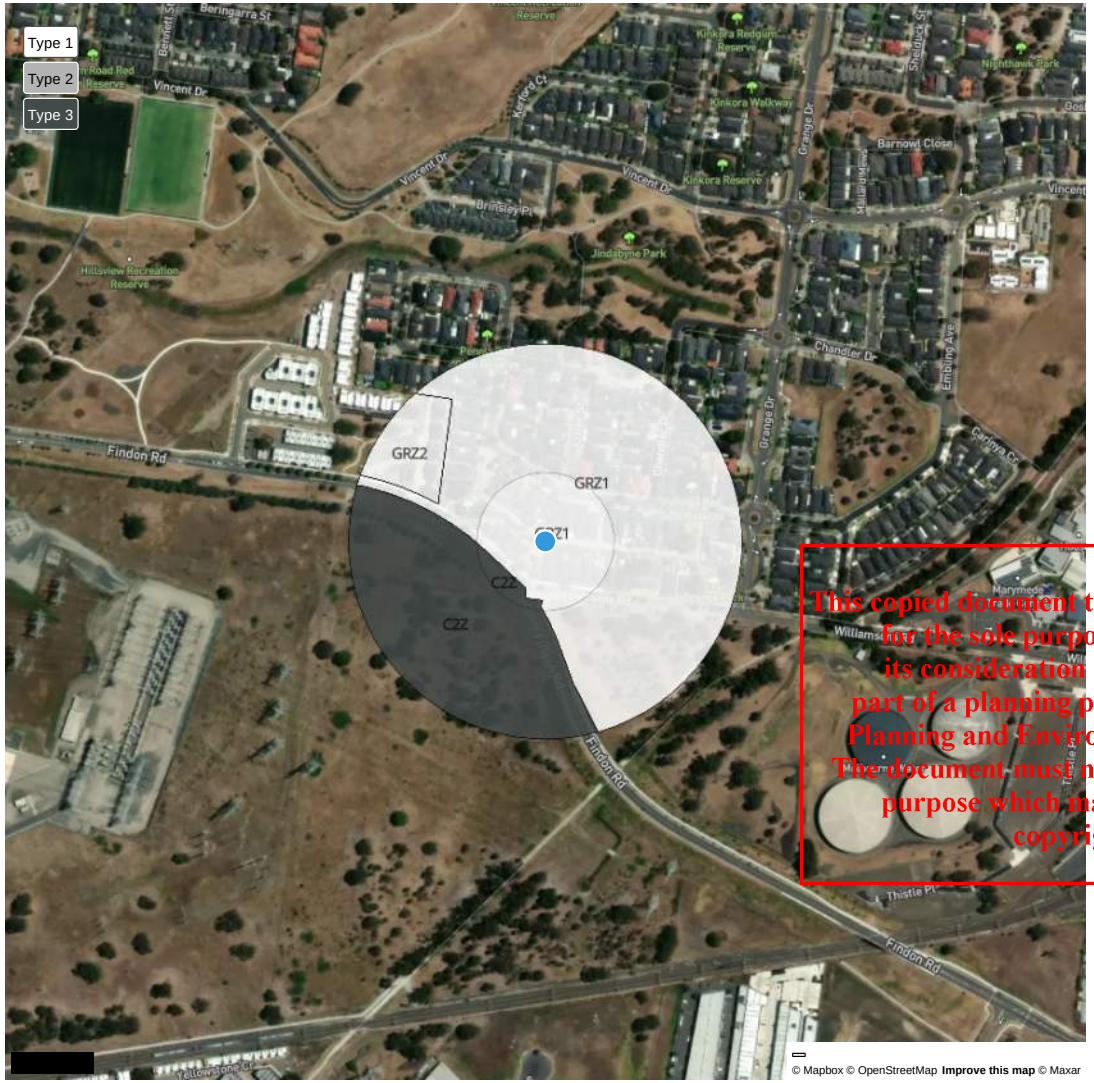
ADP
Consulting : Engineering

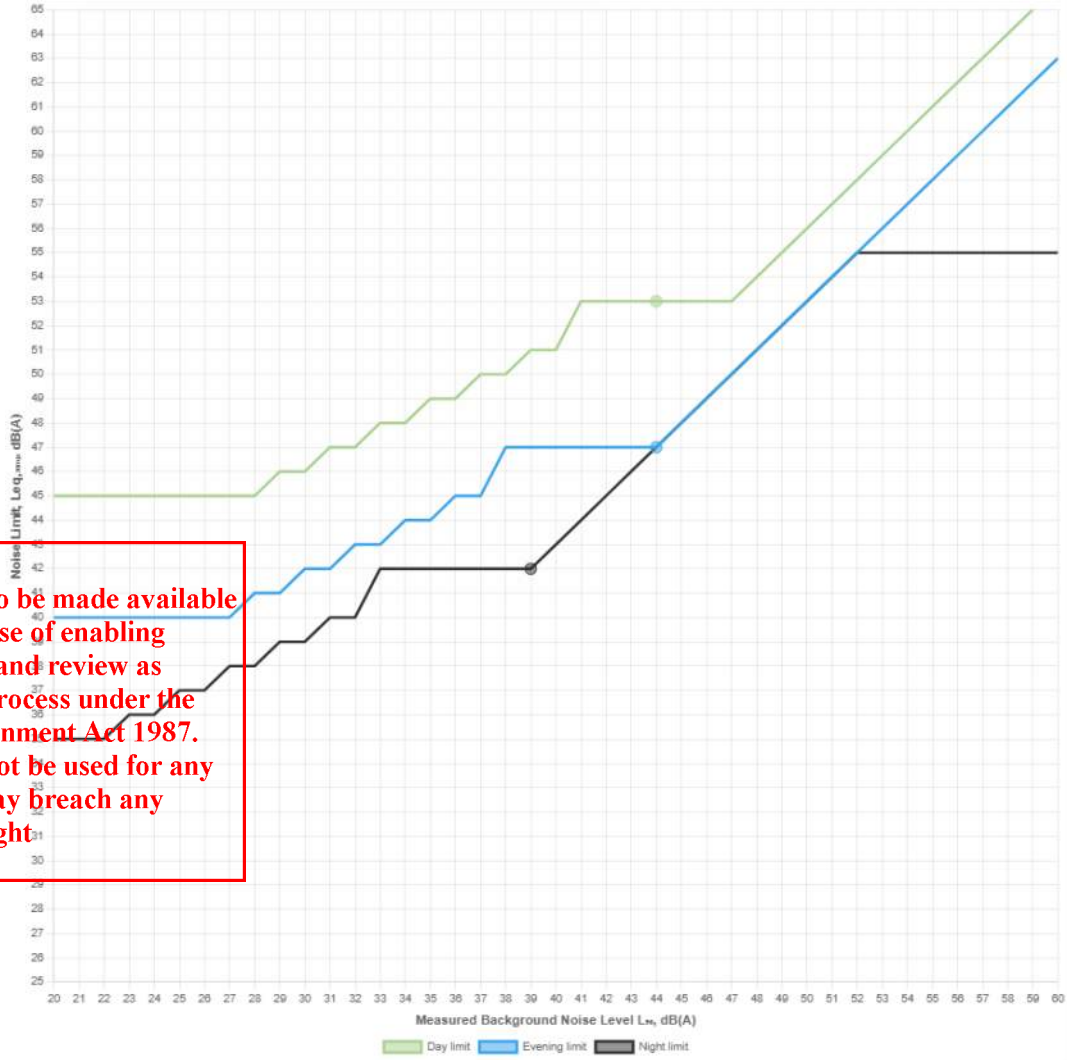
ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Appendix B
Zoning Levels

wgouthro@adpconsulting.com.au



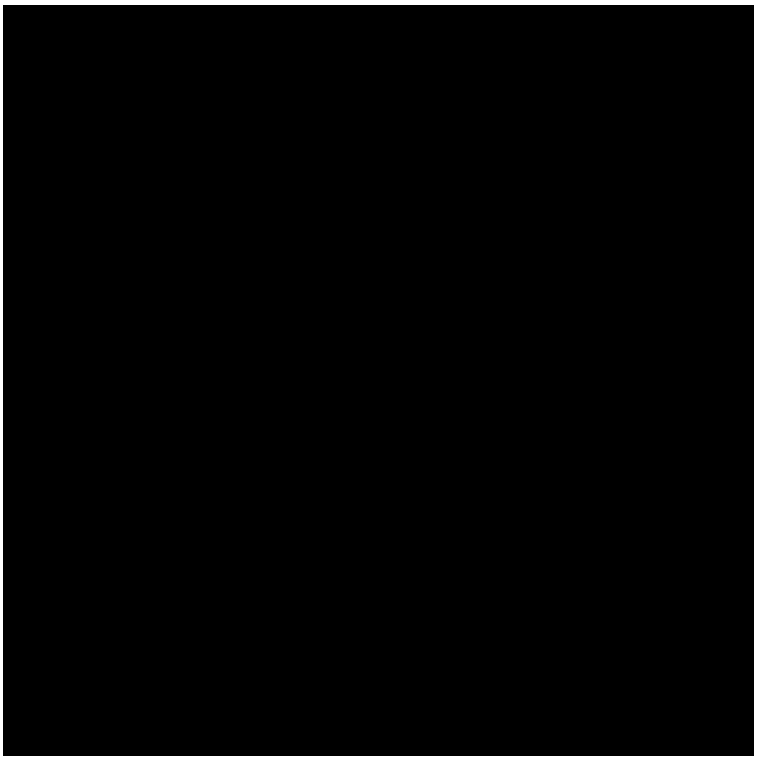


This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

		Day	Evening	Night
Zoning Level		53	47	42
Background Noise	L_{90} dB(A)	44	44	39
Background Condition		neutral	neutral	neutral
Noise Limit	$L_{eq,30min}$ dB(A)	53	47	42

Type	Zone	Description	140m			400m		
1	GRZ2 GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 2 GENERAL RESIDENTIAL ZONE - SCHEDULE 1	0 13948	13948	91%	6390 82453	88843	71%
2				0	0%		0	0%
3	C2Z	COMMERCIAL 2 ZONE	1445	1445	9%	36819	36819	29%
Influencing Factor				**0.193**				

ADVERTISED
PLAN



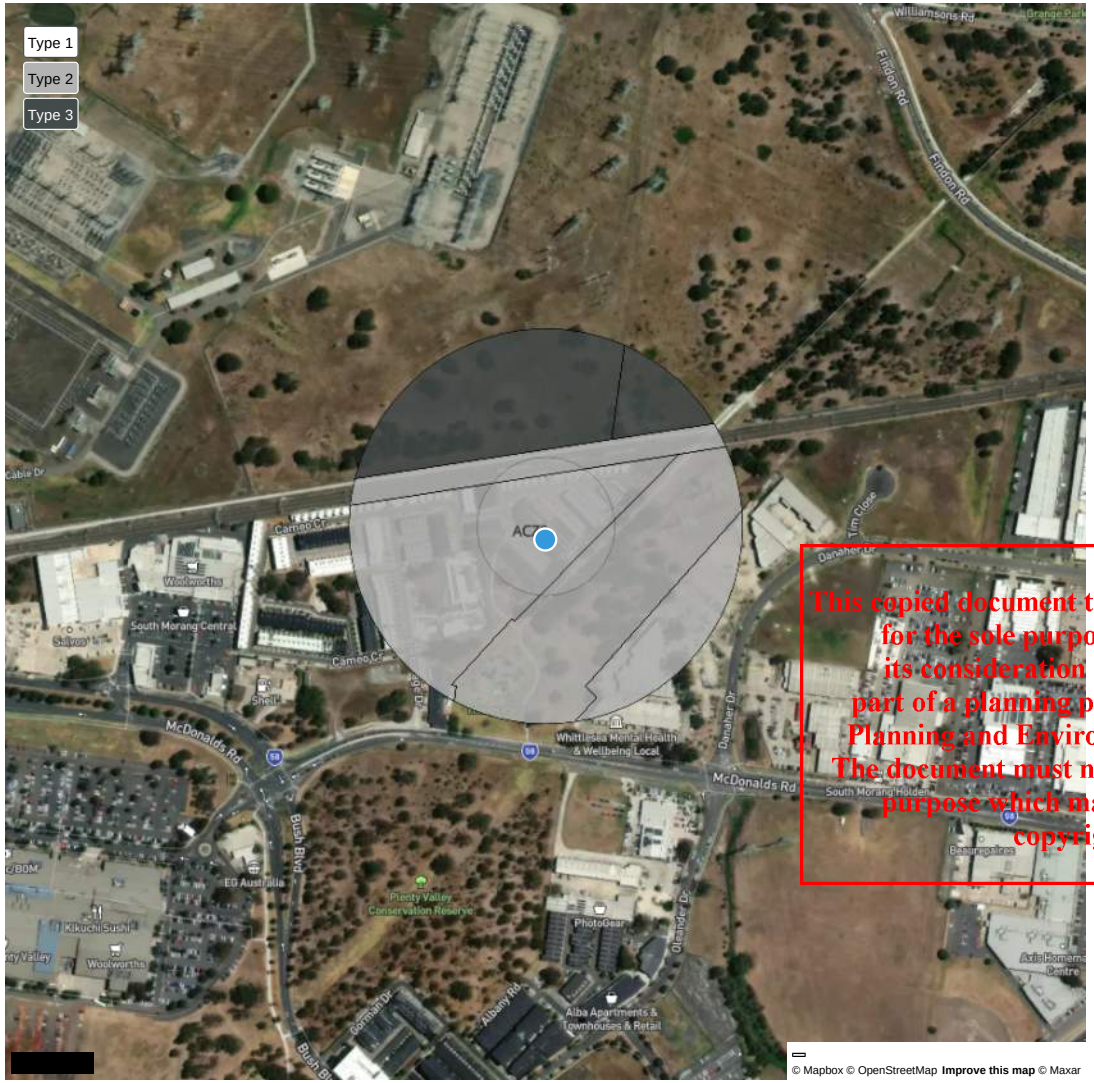
		Day	Evening	Night
Zoning Level		53	47	42
Background Noise	L_{90} dB(A)	44	44	39
Background Condition		neutral	neutral	neutral
Noise Limit	$L_{eq,30min}$ dB(A)	53	47	42

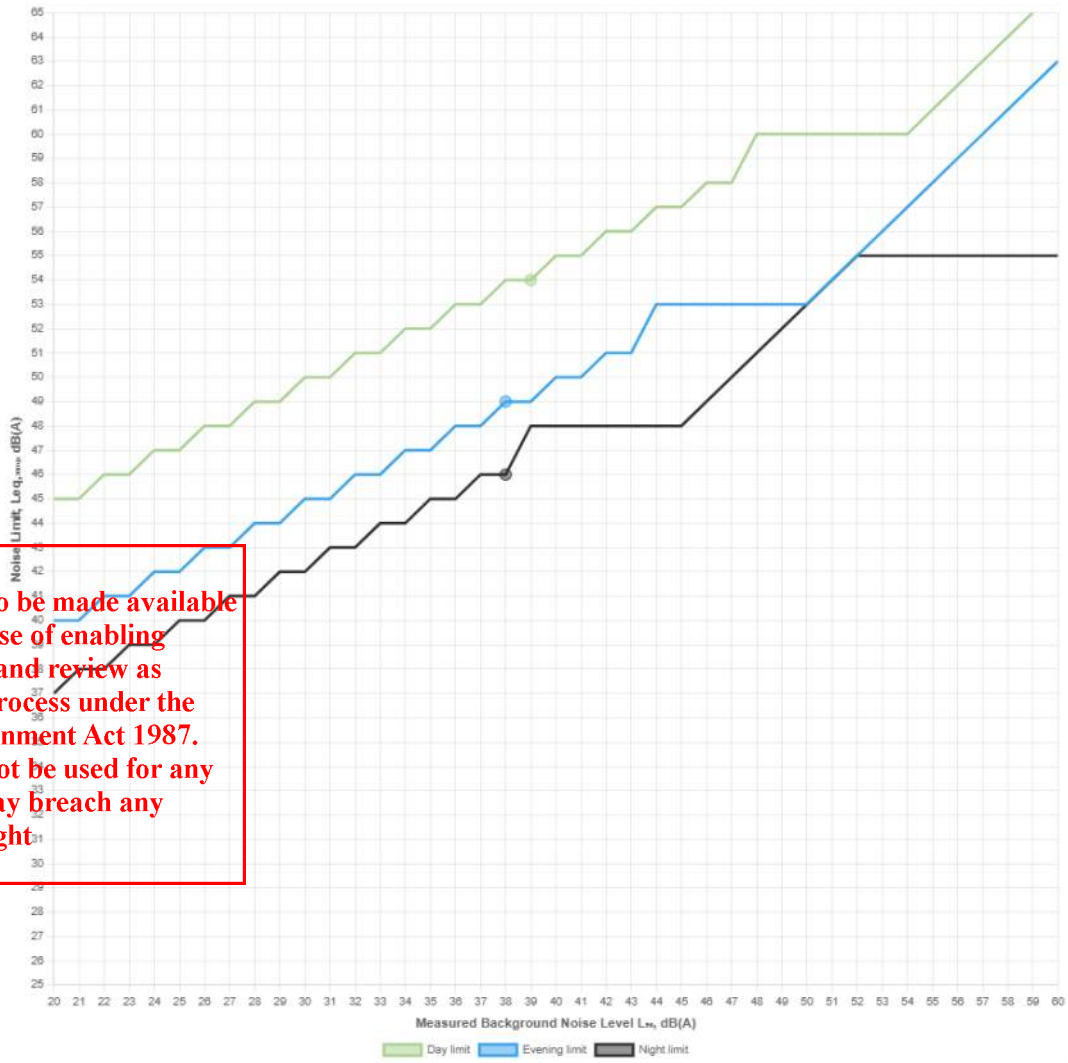
Type	Zone	Description	140m			400m		
1	GRZ2 UFZ PPRZ GRZ1	GENERAL RESIDENTIAL ZONE - SCHEDULE 2 URBAN FLOODWAY ZONE PUBLIC PARK AND RECREATION ZONE GENERAL RESIDENTIAL ZONE - SCHEDULE 1	10378 0 4718 298	15394	100%	29548 2403 43495 7774	83219	66%
2				0	0%		0	0%
3	C2Z SUZ6	COMMERCIAL 2 ZONE SPECIAL USE ZONE - SCHEDULE 6	0 0	0	0%	18224 24219	42443	34%
Influencing Factor				0.169				

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

wgouthro@adpconsulting.com.au





This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

		Day	Evening	Night
Zoning Level		60	53	48
Background Noise	L_{90} dB(A)	39	38	38
Background Condition		low	low	low
Noise Limit	$L_{eq,30min}$ dB(A)	54	49	46

Type	Zone	Description	140m			400m		
1				0	0%		0	0%
2	PUZ1 ACZ2 TRZ1	PUBLIC USE ZONE - SERVICE AND UTILITY ACTIVITY CENTRE ZONE - SCHEDULE 2 TRANSPORT ZONE 1 - STATE TRANSPORT INFRASTRUCTURE	3086 12200 107	15394	100%	34091 54806 9410	98307	78%
3	C2Z SUZ6	COMMERCIAL 2 ZONE SPECIAL USE ZONE - SCHEDULE 6	0 0	0	0%	4237 23117	27354	22%
Influencing Factor				0.554				

ADVERTISED PLAN

ADP Consulting : Engineering

ADVERTISED PLAN

Appendix C Noise Monitoring

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

C.1 Methodology

Noise monitoring was undertaken in accordance with the EP Technical Guide at 3 locations representative of surrounding sensitive receivers between 9 and 16 September 2026. Logger locations are provided in in Figure 4 below.

Previous noise monitoring was undertaken between 24 June and 1 July 2026 however equipment was tampered with and data was incomplete and therefore not relied on for this assessment.

The purpose of the noise measurement is to confirm the background noise level for calculation of the EPA Noise Protocol criteria and provide an understanding of the baseline noise environment for future reference.

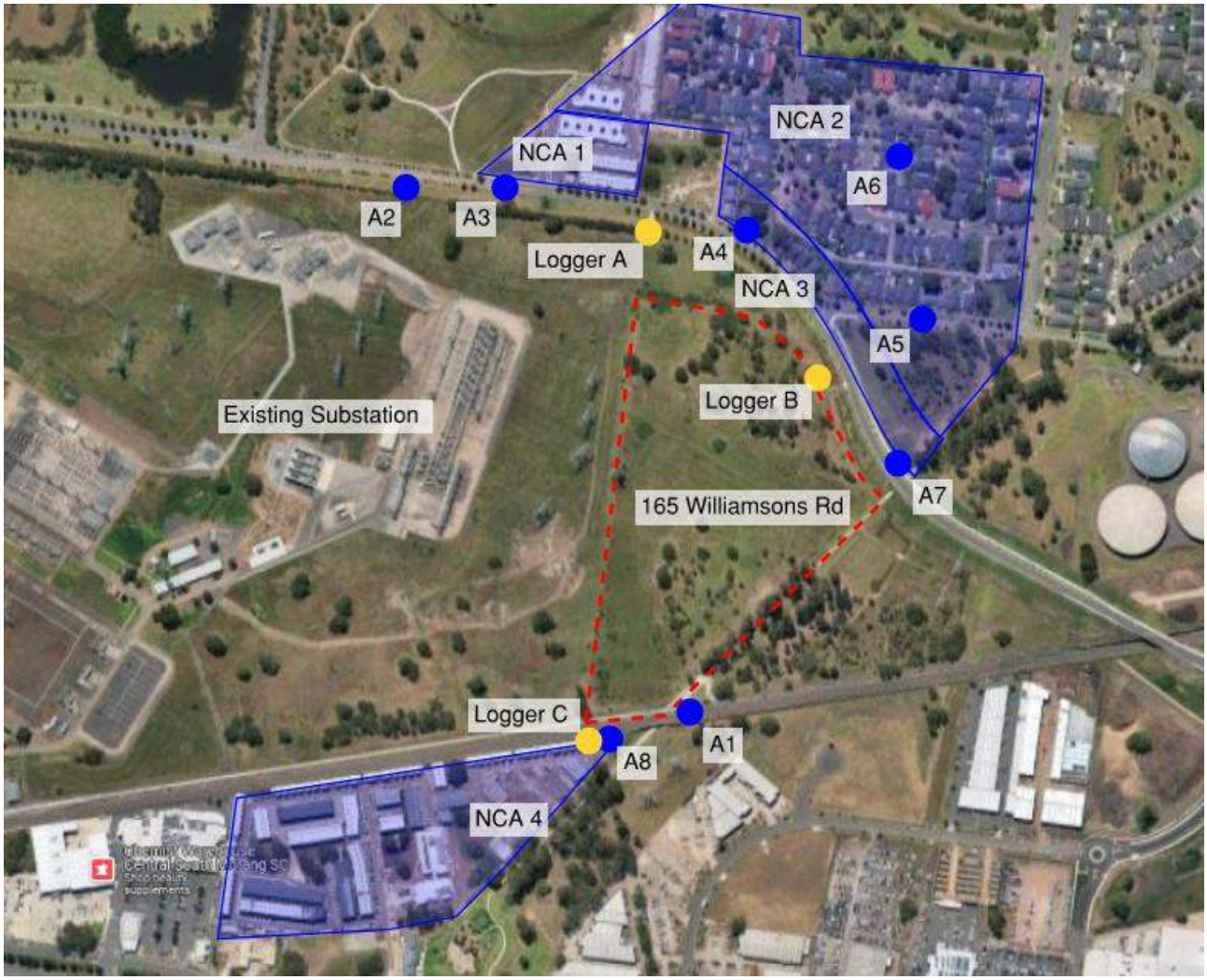


Figure 4: Noise Logger Locations

ADVERTISED
PLAN

ADVERTISED PLAN

C.2 Equipment

The equipment used to measure the noise levels is provided in Table 10 below.

Table 10: Noise measurement equipment

Manufacturer	Type	Application
Convergence	Sentry NSRT Mk3	Monitoring at location A
Convergence	Sentry NSRT Mk3	Monitoring at location B
Convergence	Sentry NSRT Mk3	Monitoring at location C
Bruel and Kjaer	Type 2250 SLM	Attended noise measurement
Svantek	SV-36	Site calibration

All equipment holds current NATA certification and was calibrated before and after measurements with no significant calibration difference found.

C.3 Logger Locations

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

The locations where the long-term noise monitors were installed are provided below.

- Logger A: On the North project boundary, approximately 20m from the centreline of Findon Rd and representative of the sensitive receivers to the north of Findon Rd nearby the substation. The microphone was placed approximately 1.5m above ground level and had full view of the road and the existing substation.
- Logger B: On the East project boundary, approximately 40m from the centreline of Findon Rd and representative of receivers of the sensitive receivers to the north of Findon Road away from the substation. The microphone was placed approximately 1.5m above ground level and had view of Findon Rd northbound lane and partial view to southbound lane.
- Logger C: On vacant land to the south of the project site and Mernda railway, approximately 10m from the centre of the railway. The microphone was placed approximately 1.5m above ground level and had direct view to the railway and partial view to the substation, partially shielded by the raised railway ballast.

All locations are subject to road traffic, birds and insect noise which was present during site attendance and increased towards the evening. The substation was only audible at Logger A during the night-time period and was not audible at other locations.

C.4 Tabulated Results

The arithmetic average of the measured hourly L_{90} background noise level is provided in Table 11 below for the time periods defined in the Noise Protocol.

Table 11: Average measured day, evening night L90 background sound pressure noise levels

Location	Day, dBL_{A90} (7am to 6pm)	Evening, dBL_{A90} (6pm to 10pm)	Night, dBL_{A90} (10pm to 7am)

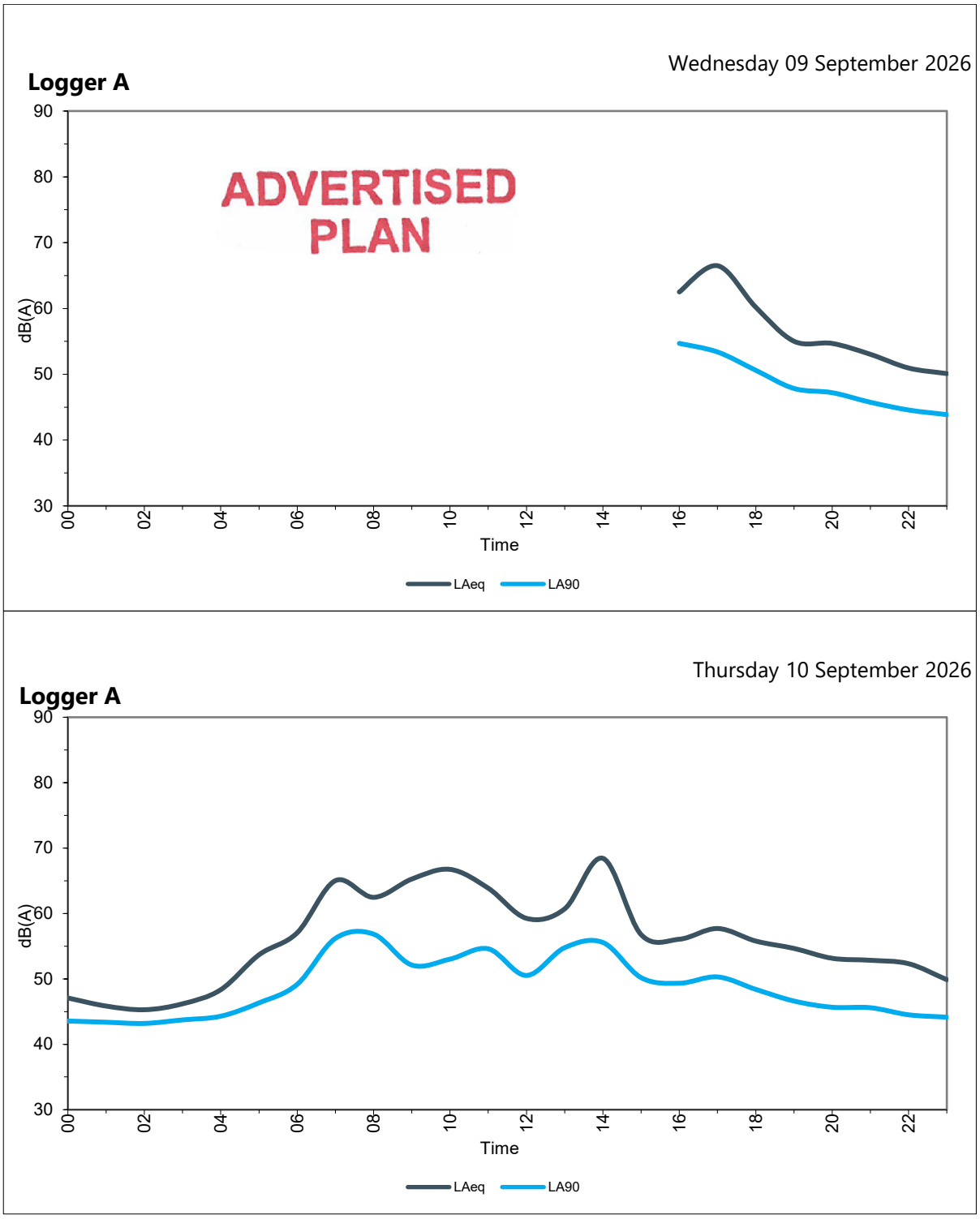
A	50	46	46
B	44	44	39
C	39	38	38

The noise level at Logger A was impacted by an unexpected small generator serving a display home located approximately 90m to the north east which was only discovered post monitoring during a night-time attended noise survey. The daytime and evening noise levels are likely unaffected however the night-time noise level is affected. The noise logging data is provided for information and to provide additional context for the daytime and evening periods but is not used to derive noise limits.

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

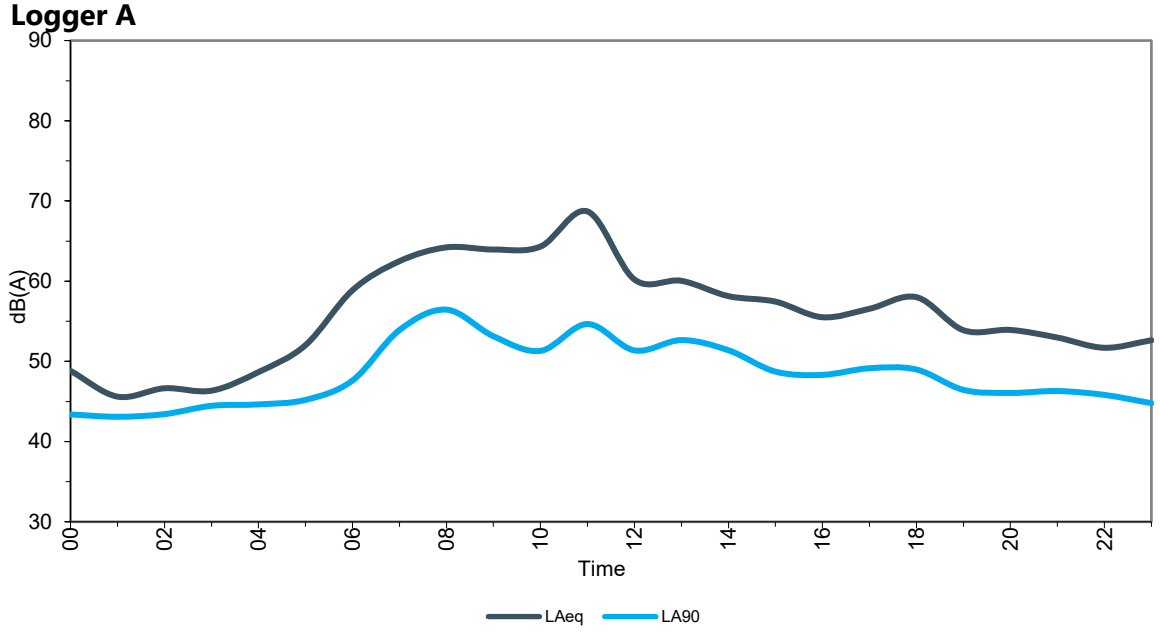
C.5 Logger A Data (North Boundary)



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

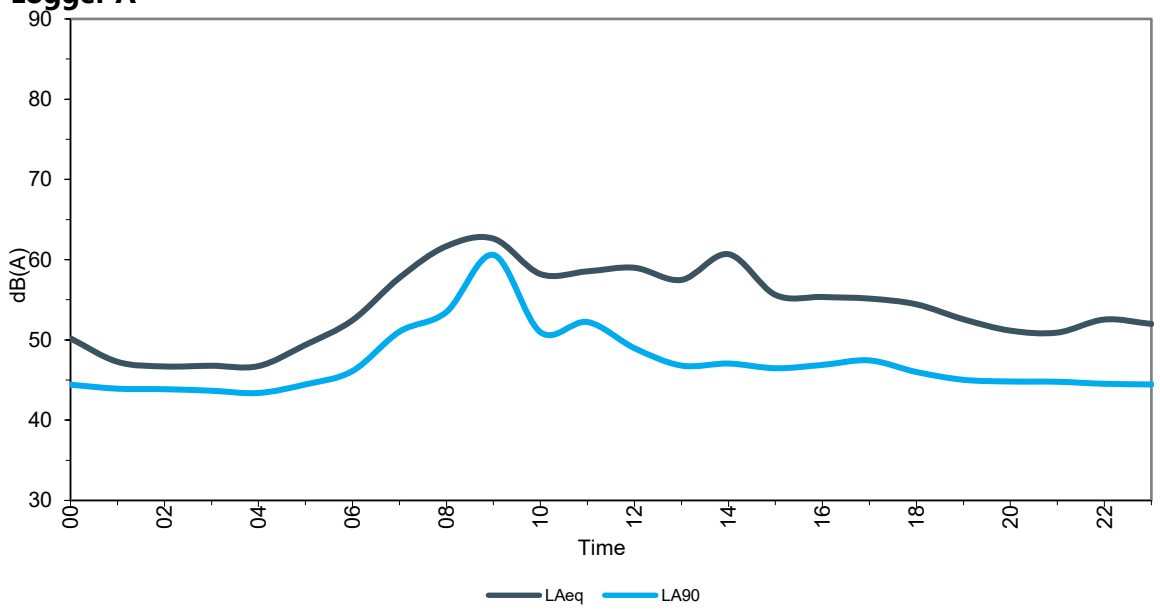
Friday 11 September 2026

Logger A



Saturday 12 September 2026

Logger A

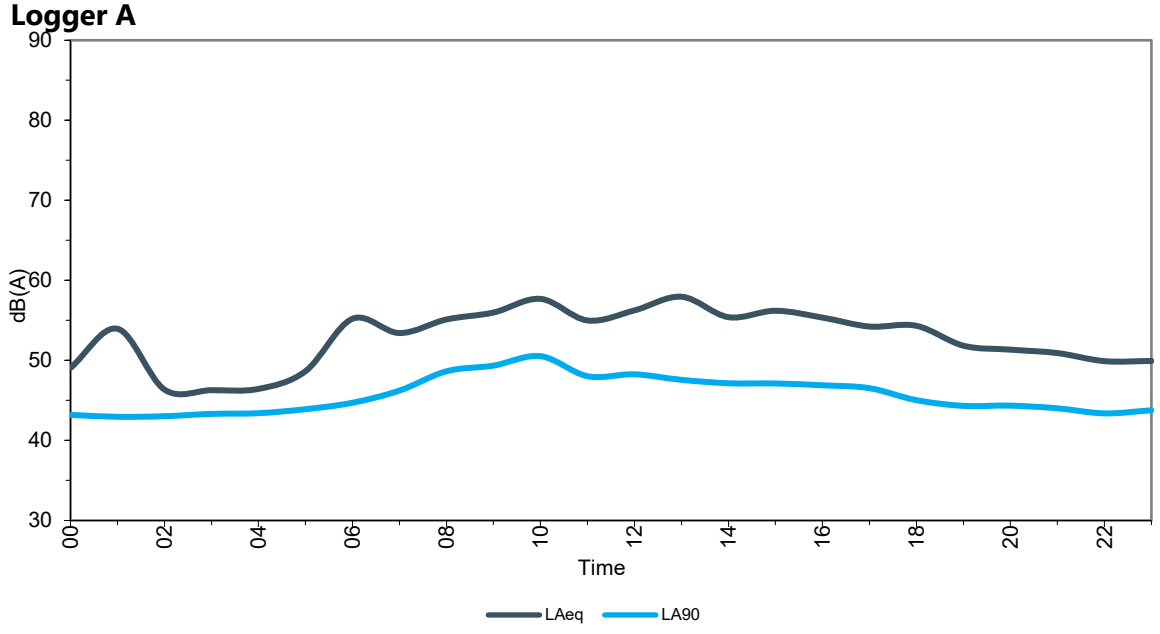


ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

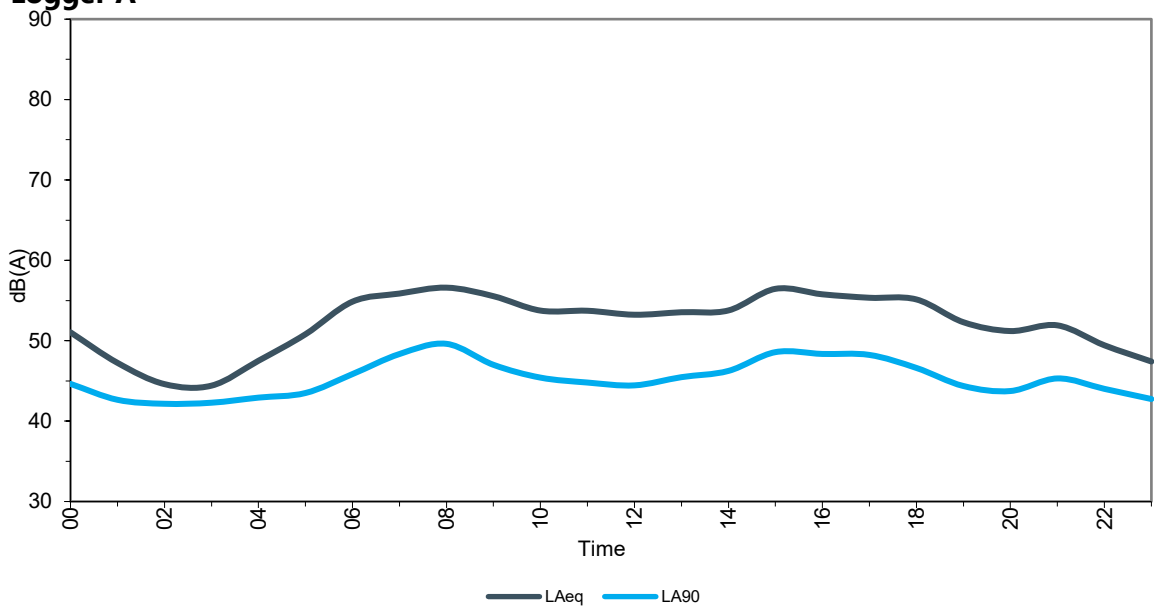
Sunday 13 September 2026

Logger A



Monday 14 September 2026

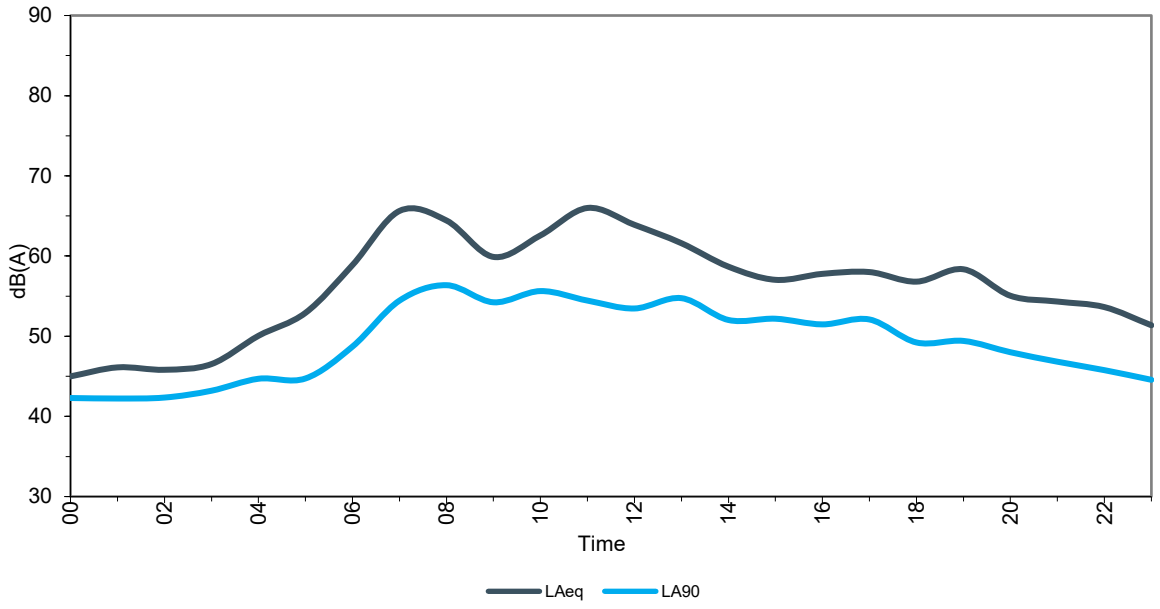
Logger A



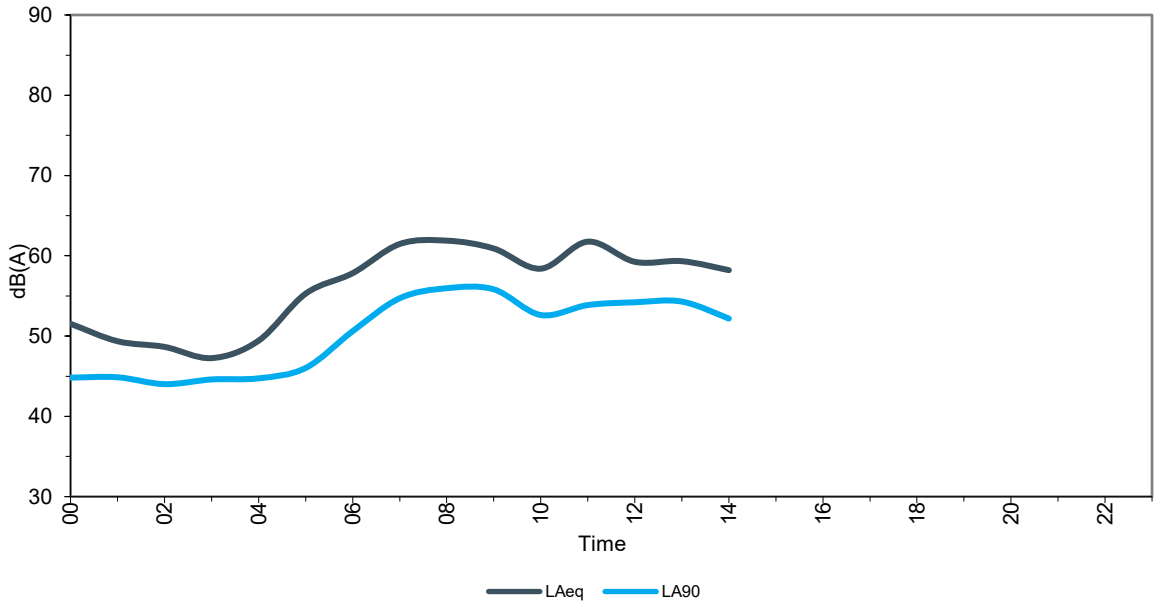
ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Logger A Tuesday 15 September 2026



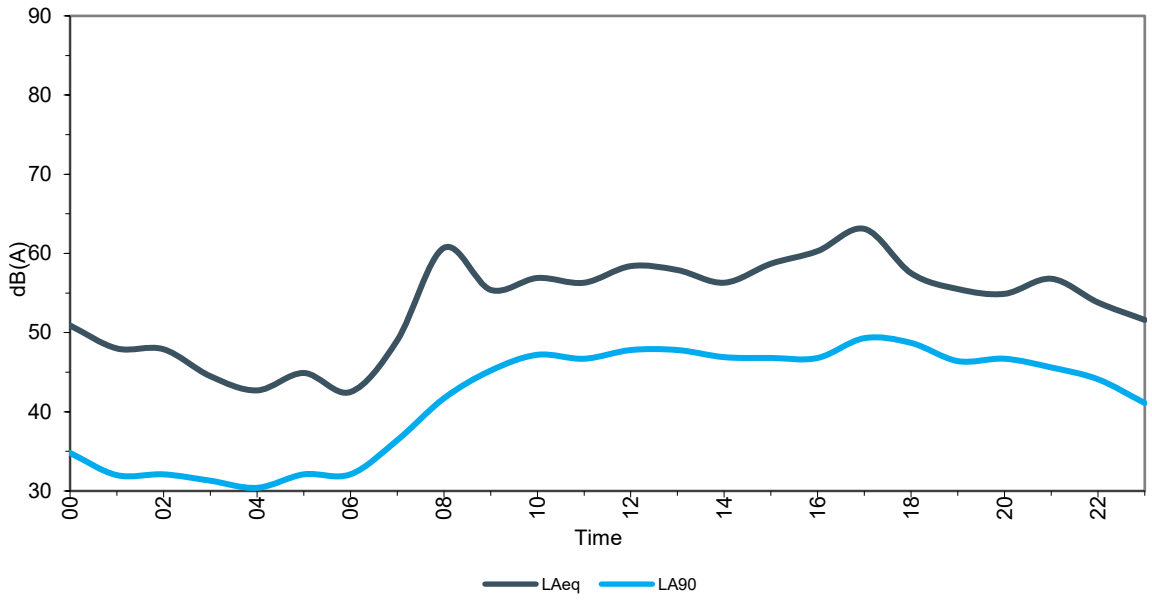
Logger A Wednesday 16 September 2026



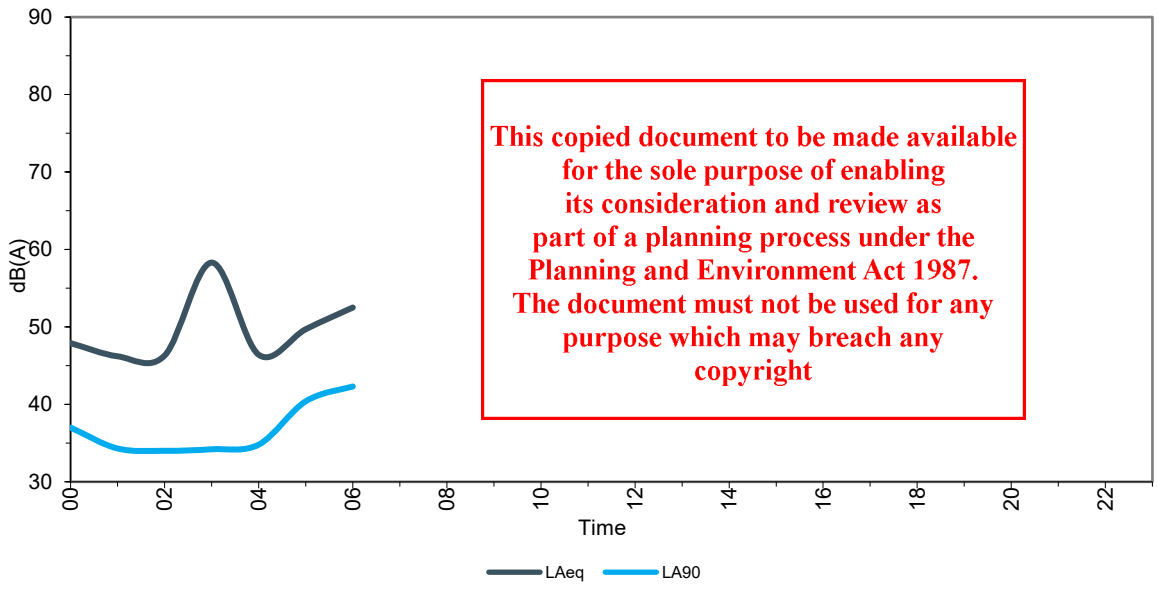
ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Logger A Sunday 28 June 2026



Logger A Monday 29 June 2026



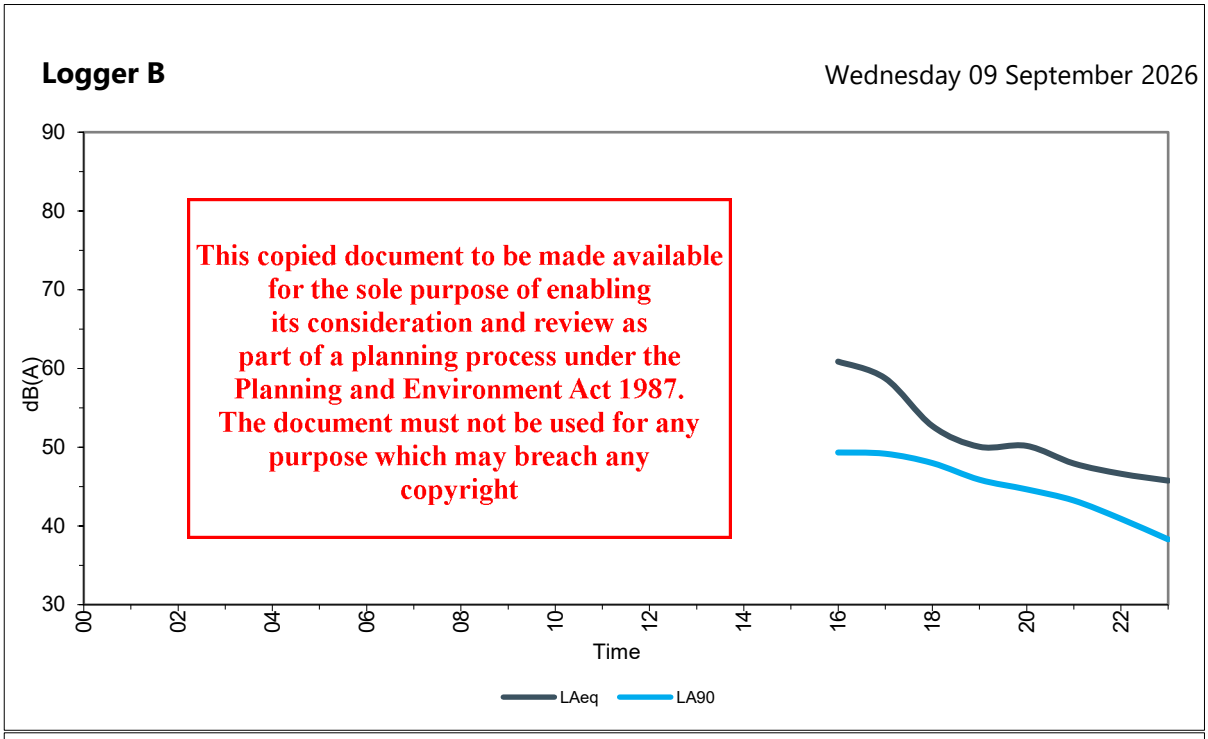
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

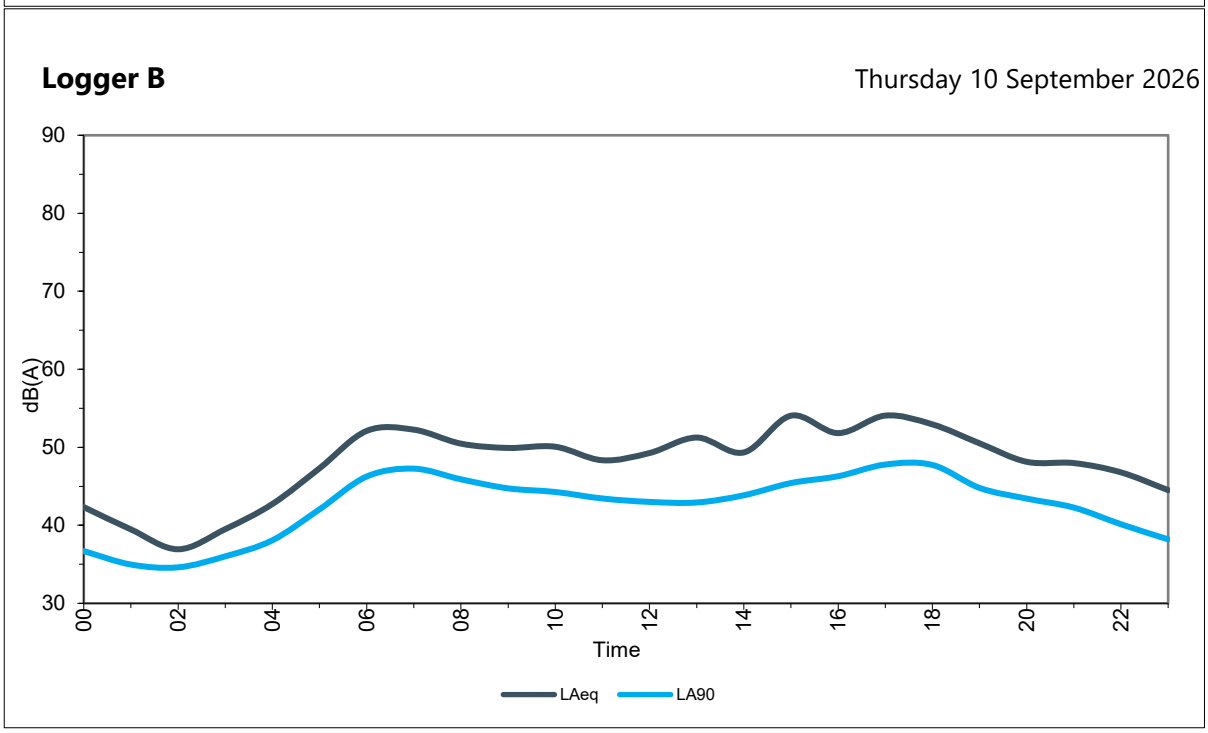
C.6 Logger B Data (East Boundary)

ADVERTISED
PLAN

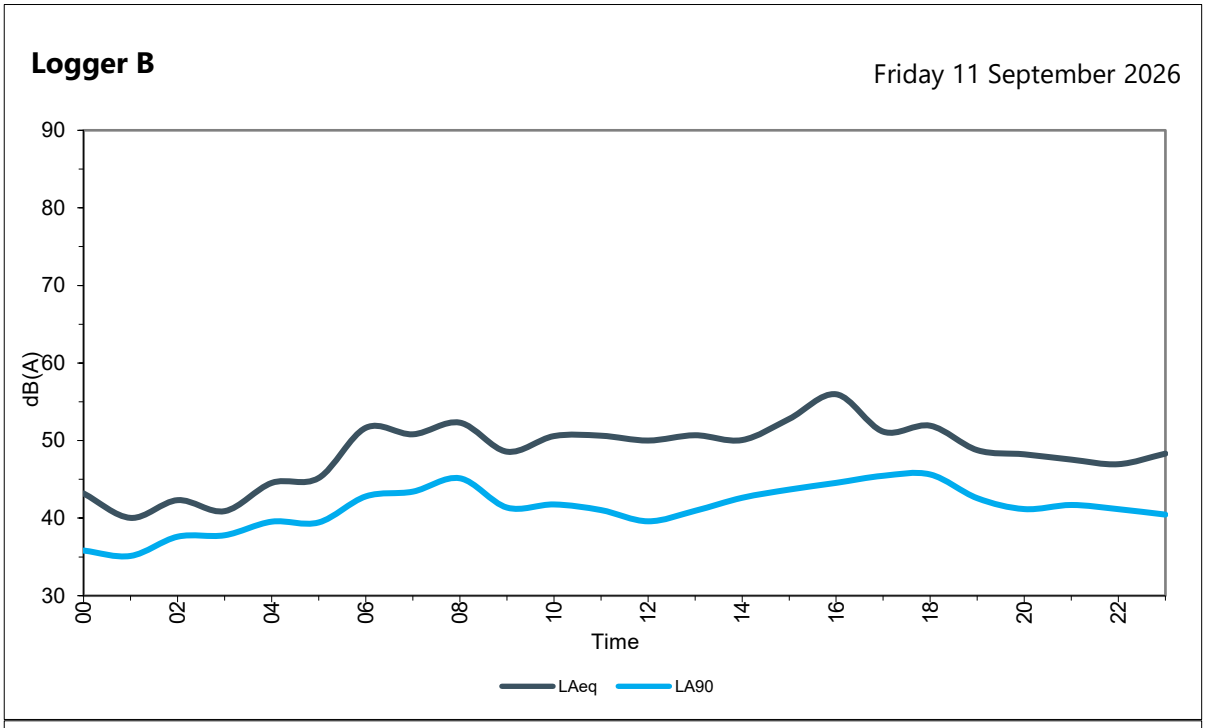
This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

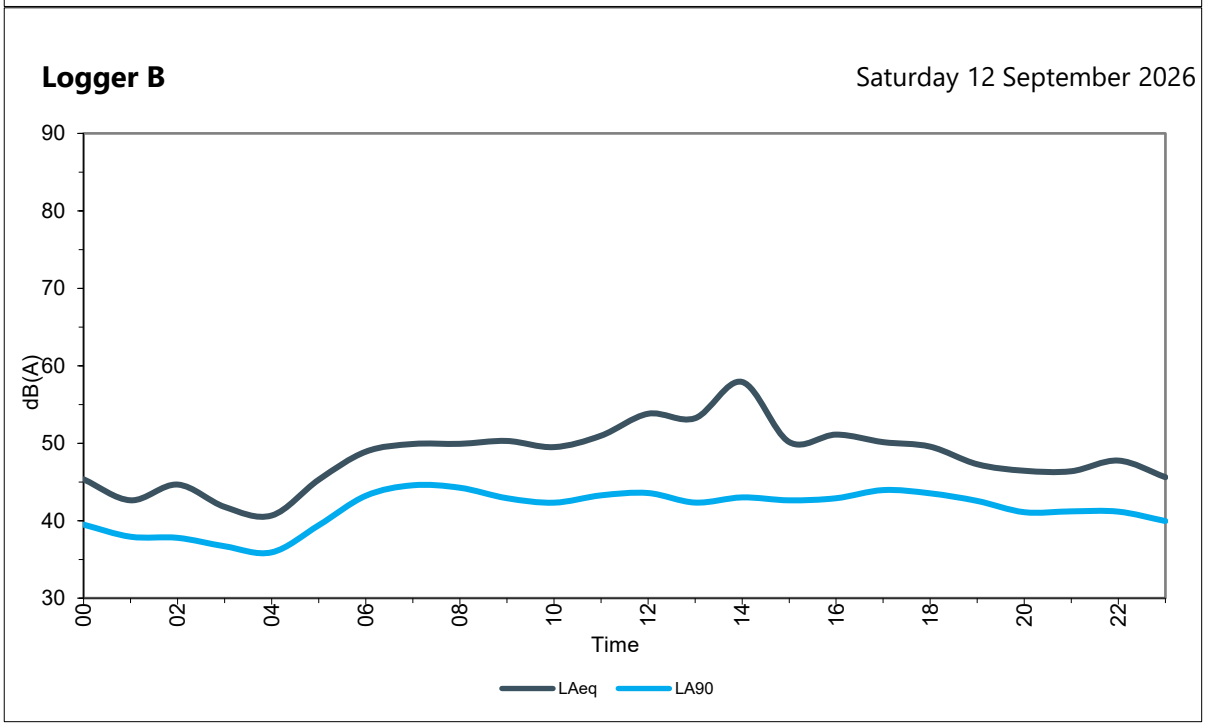


This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright



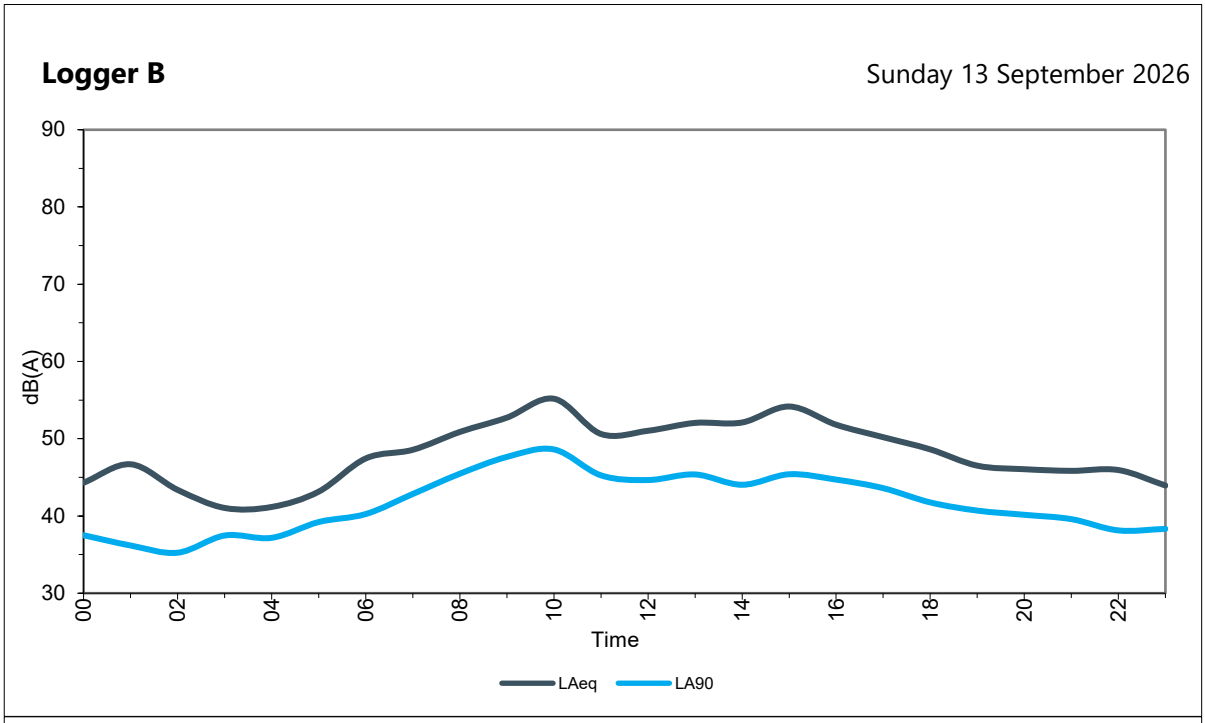
ADVERTISED
PLAN

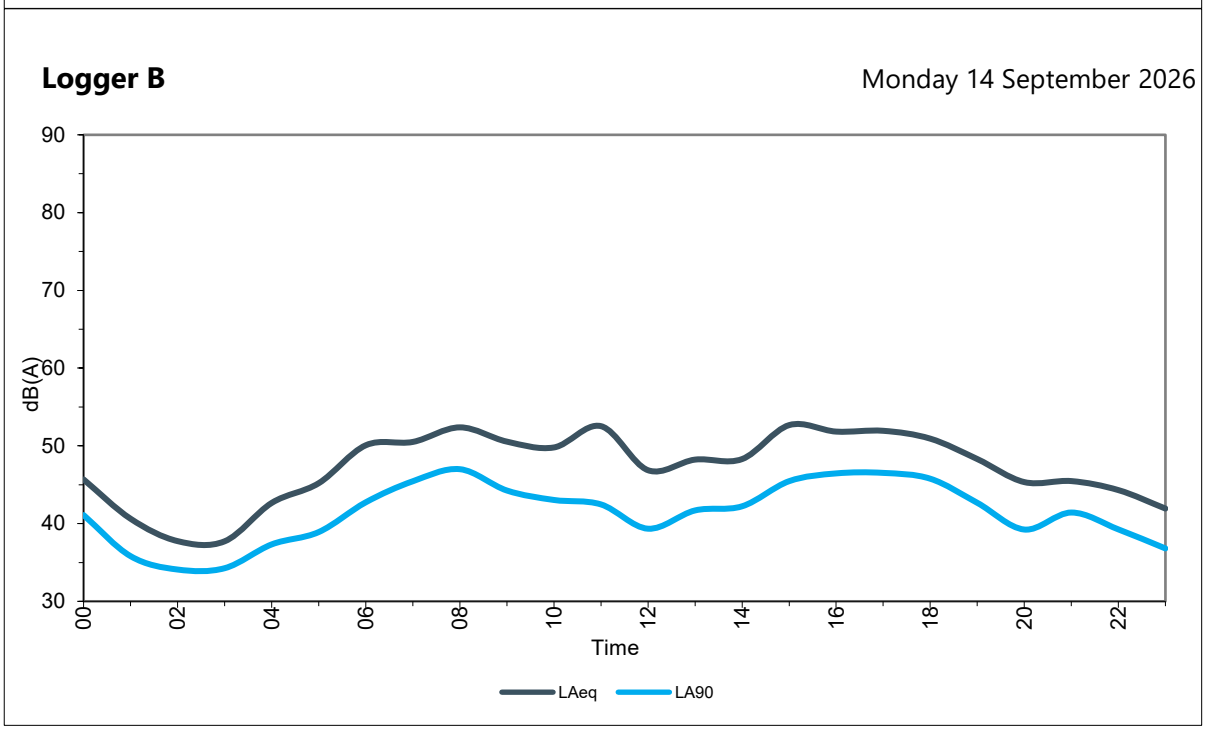




ADVERTISED
PLAN

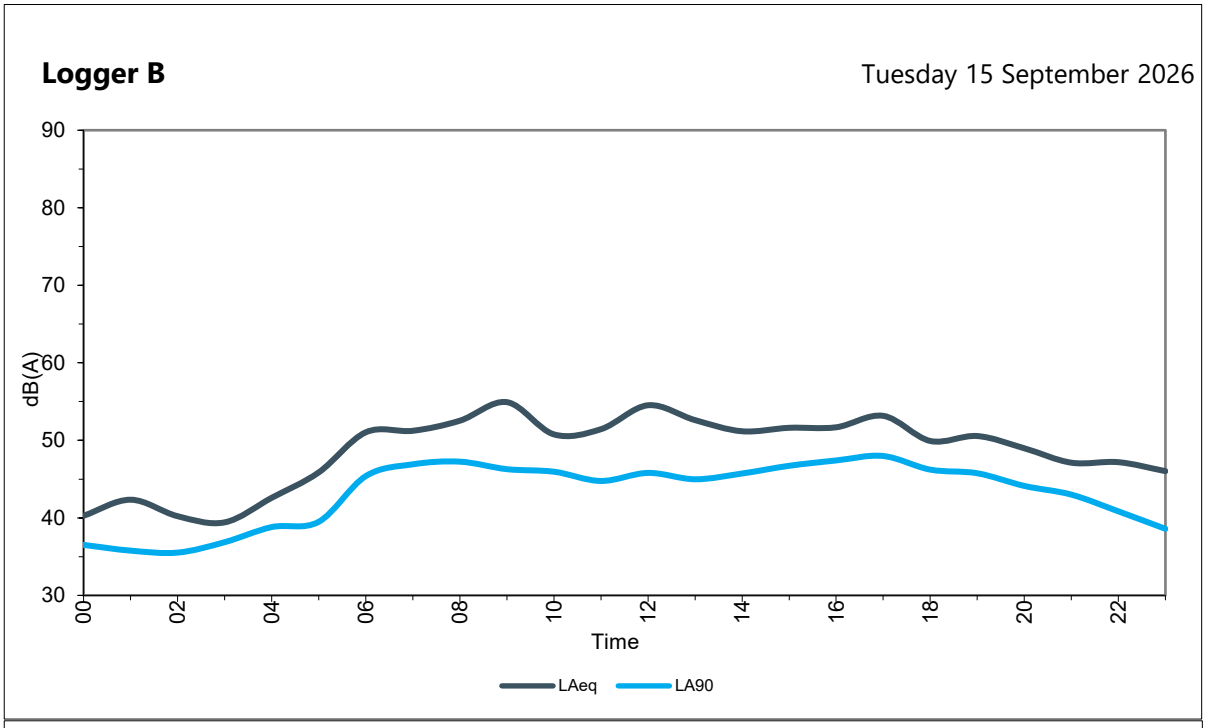
This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

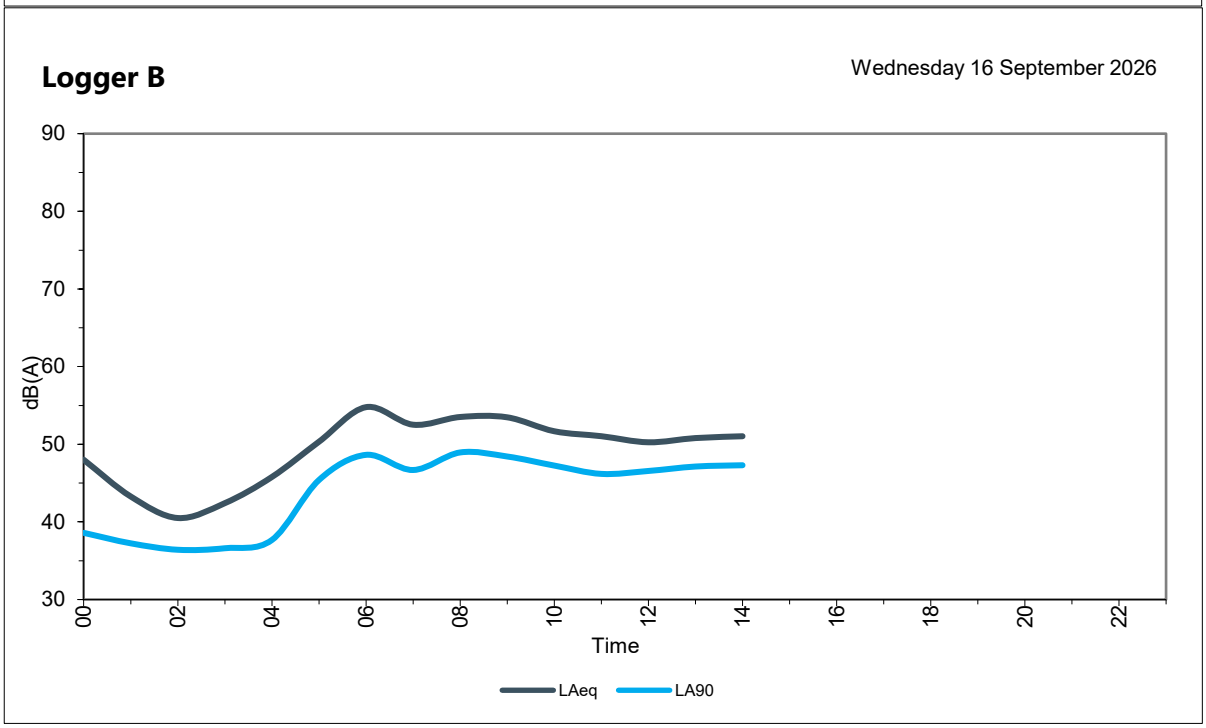




ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

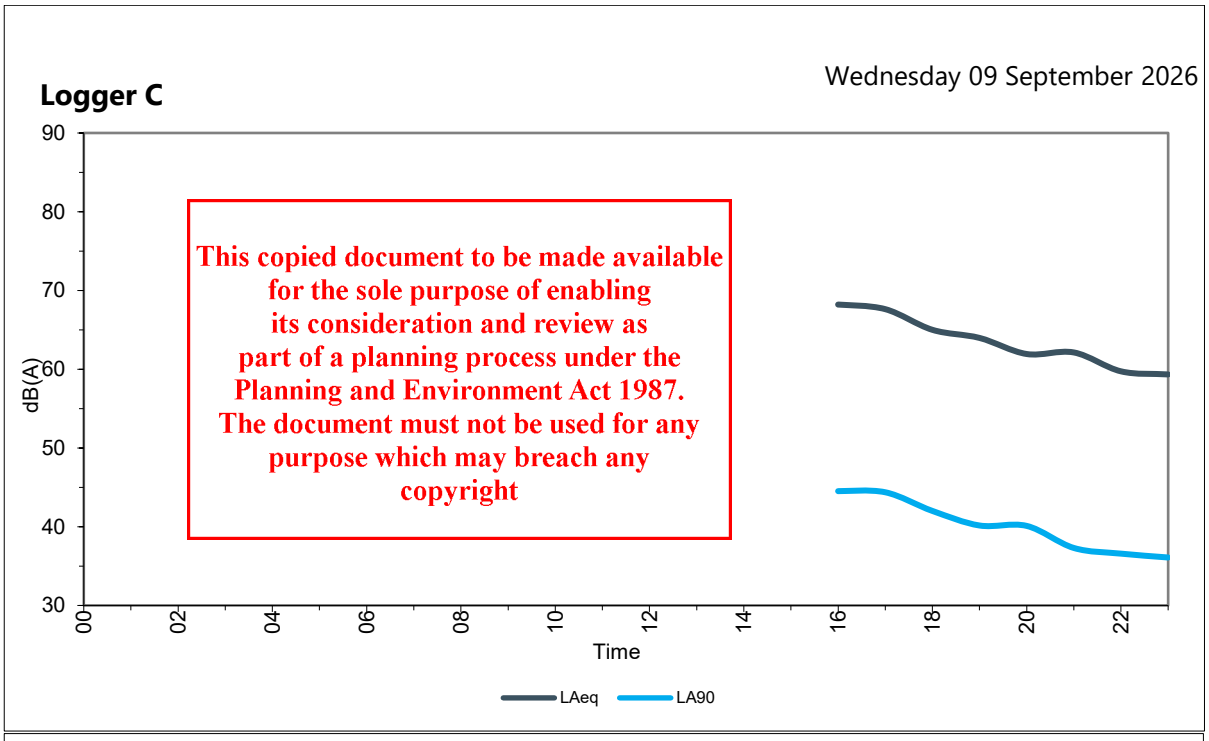




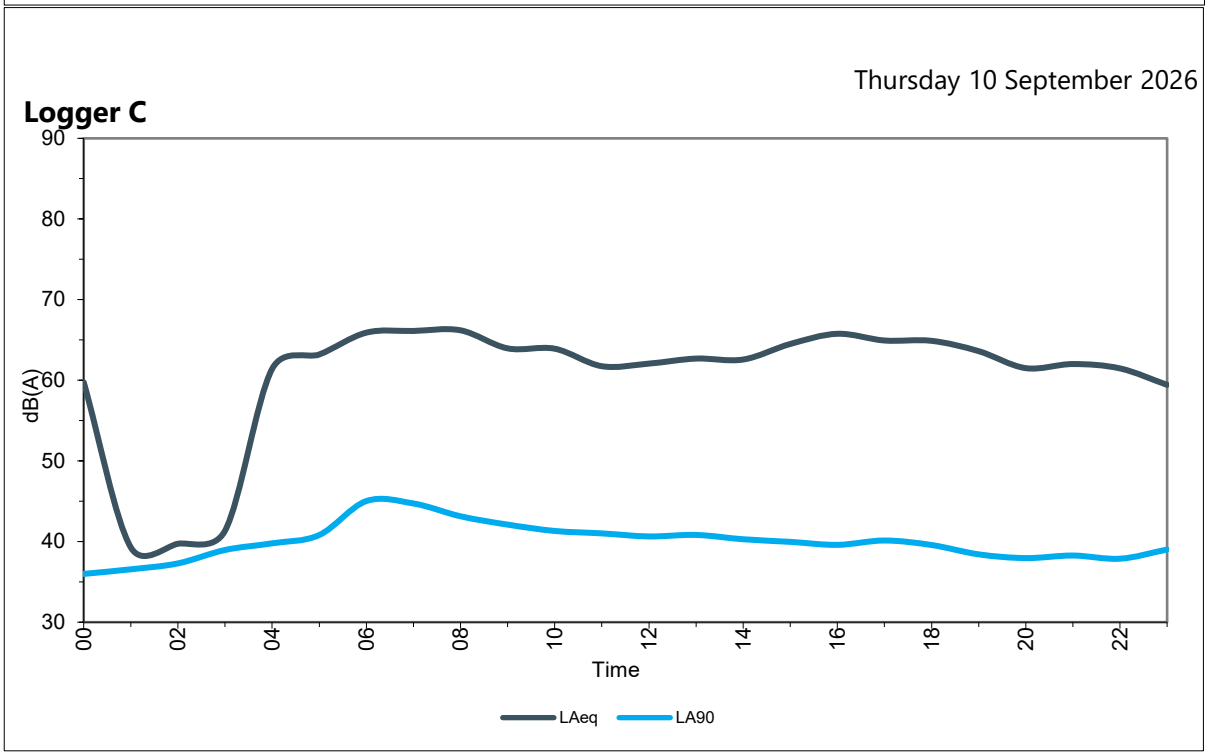
ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

C.7 Logger C Data (South)



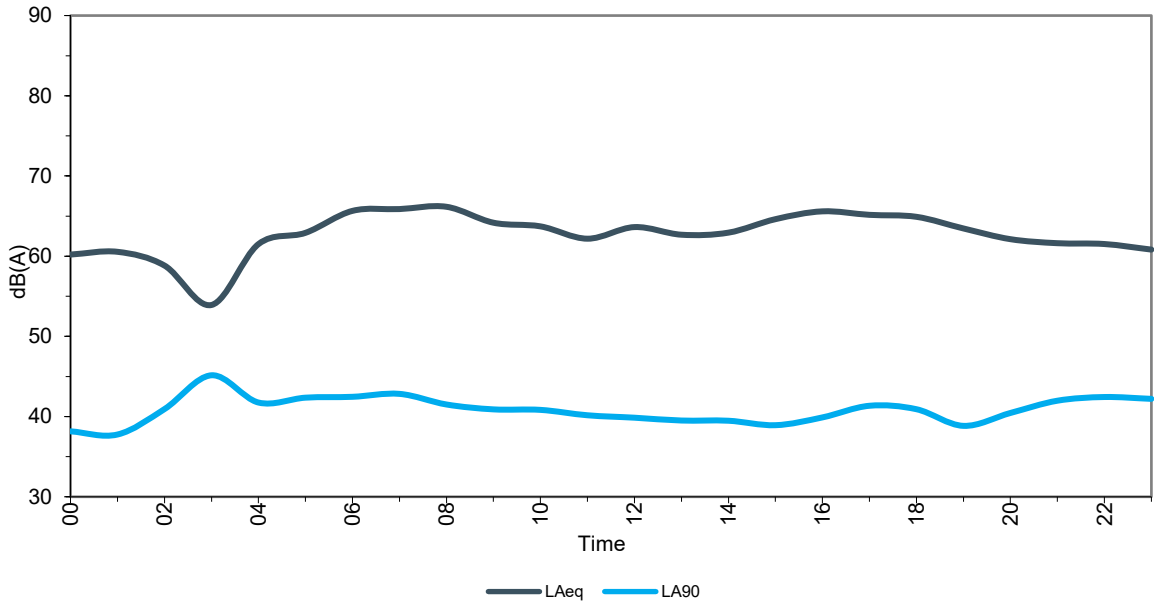
This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright



ADVERTISED PLAN

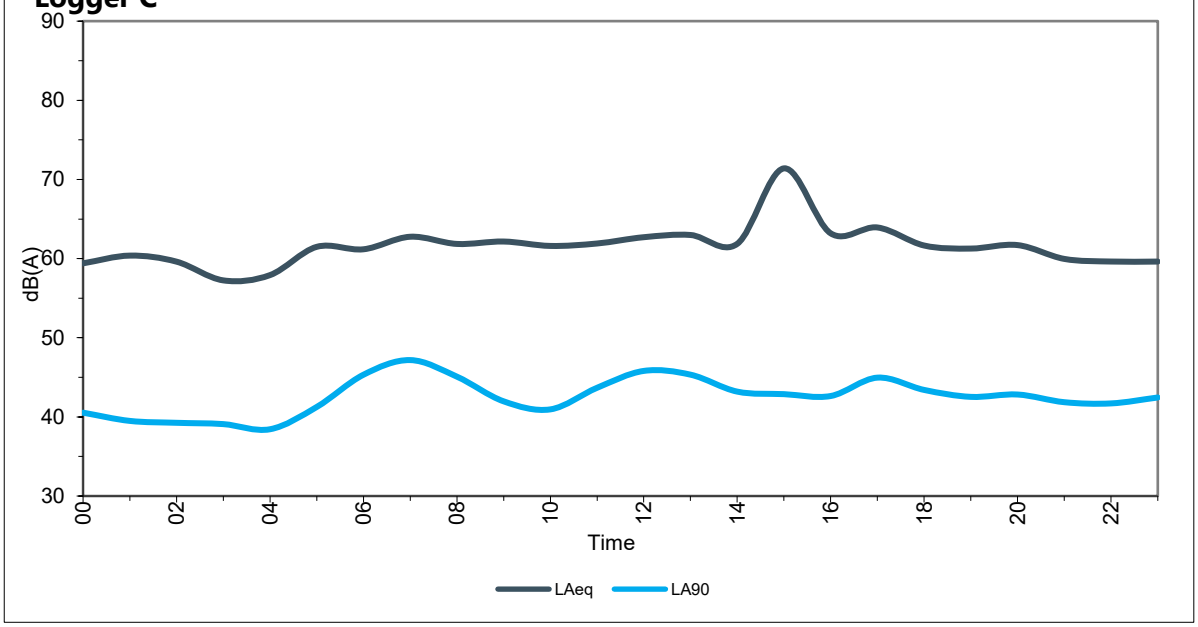
Friday 11 September 2026

Logger C



Saturday 12 September 2026

Logger C

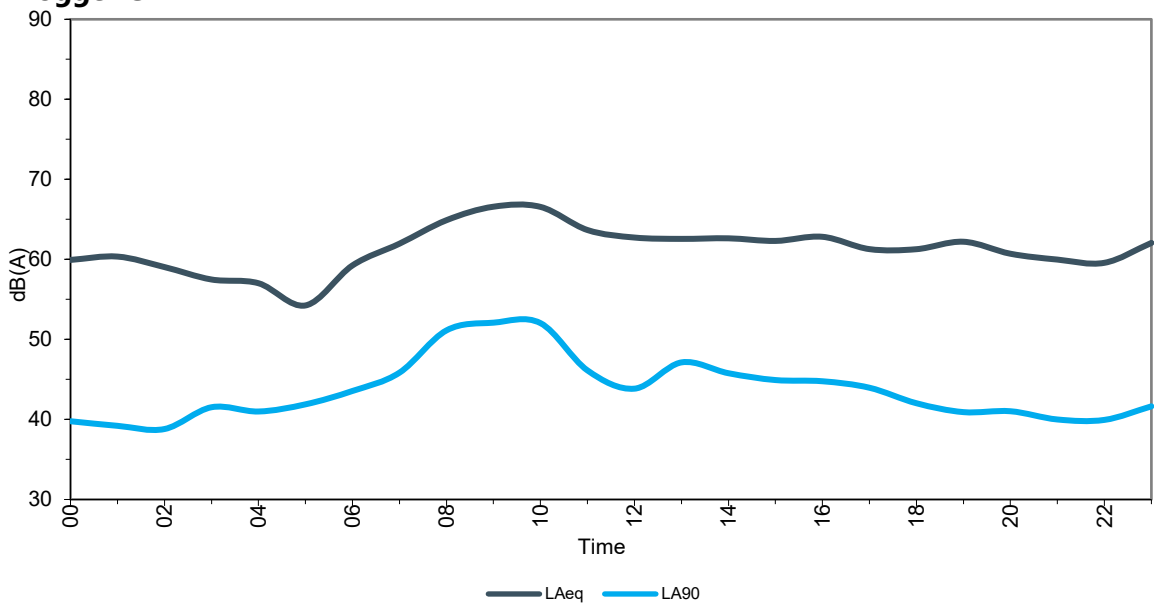


ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

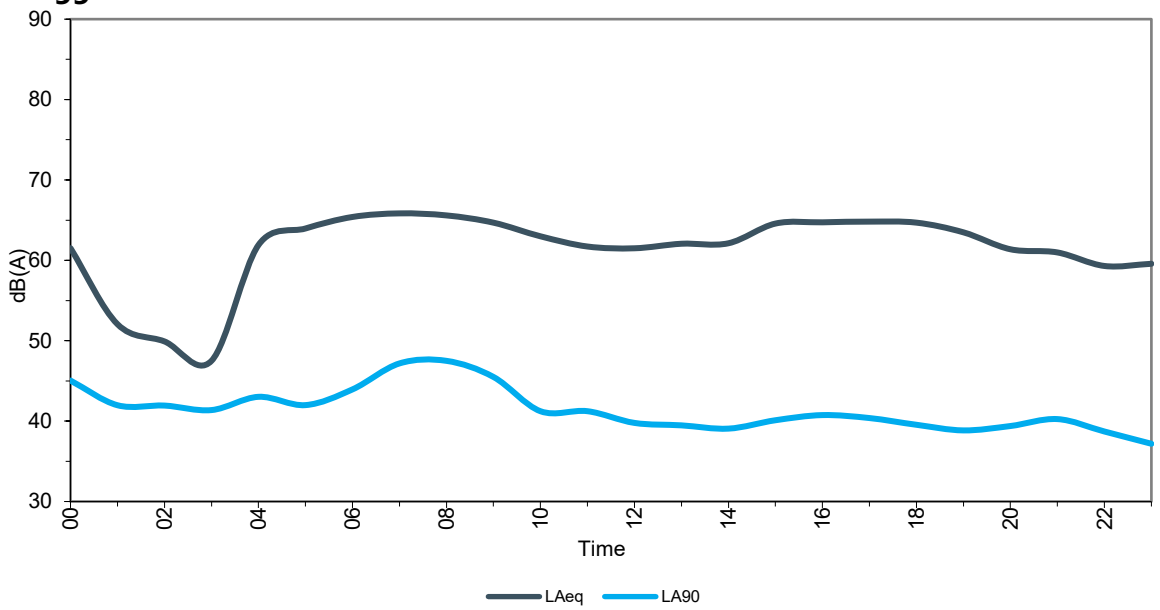
Sunday 13 September 2026

Logger C



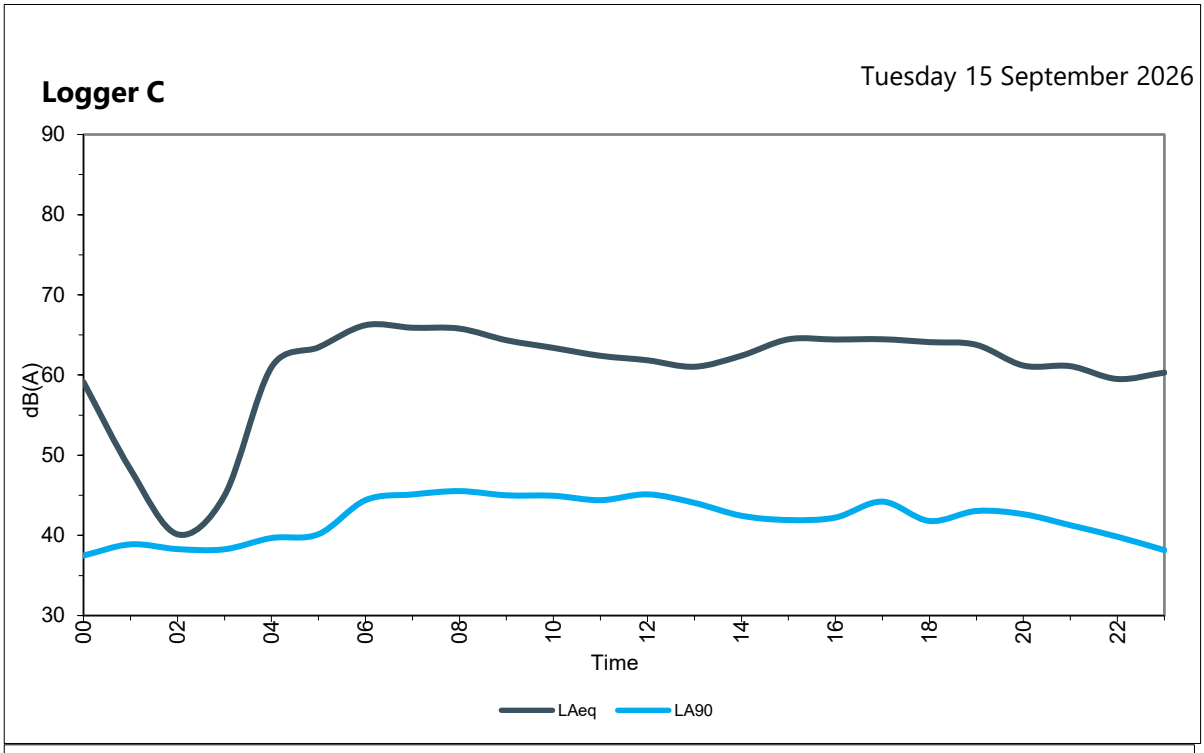
Monday 14 September 2026

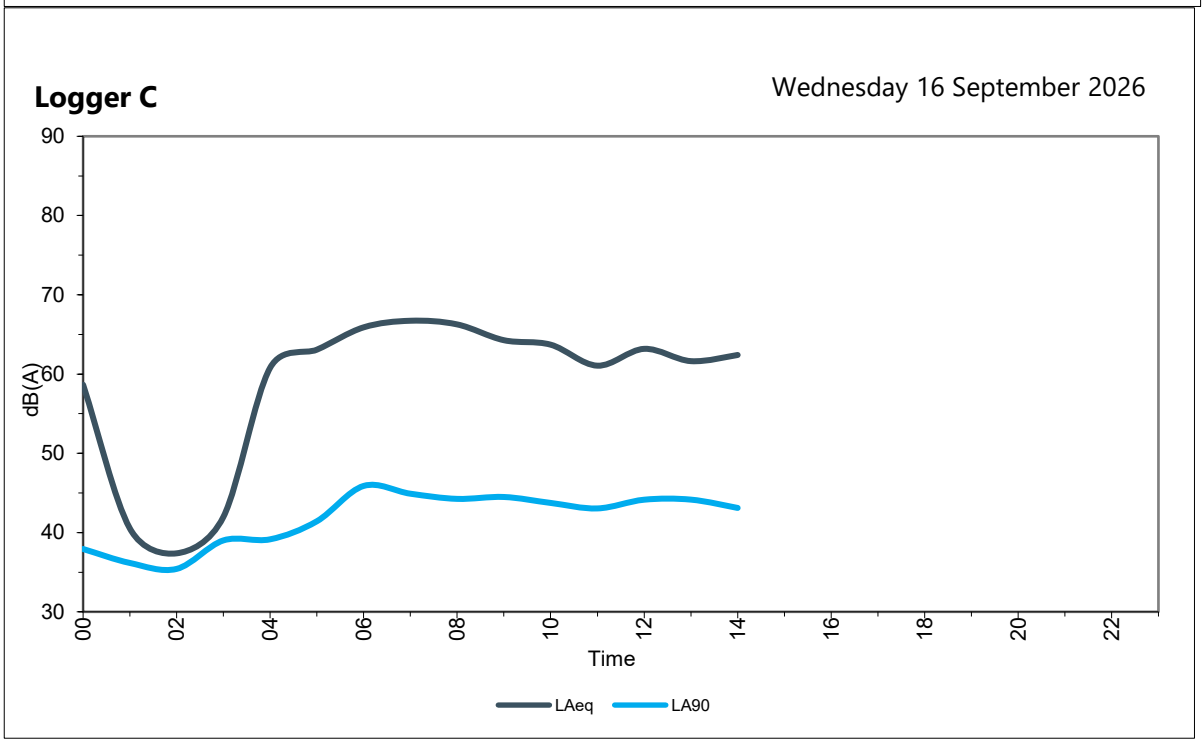
Logger C



ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright





ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADP Consulting : Engineering

ADVERTISED PLAN

Appendix D Attended Noise Measurements

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

D.1 Noise measurements

Attended Noise measurements have been conducted at the locations A1-7 as shown in the Figure below to qualify and quantify the noise levels in the area.

D.2 Instrumentation

The following instrumentation was used for noise measurement and analysis:

- Bruel and Kjaer 2250 Integrating Sound Level Meter (S/N: 3030531)
- Svantek SV-36 Class 1 acoustic calibrator (S/N 106880)

The equipment was calibrated prior and subsequent to the measurement period using a Svantek SV36 sound calibrator. No significant drift in calibration was observed.

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

D.3 Attended measurement results

Attended measurements were conducted during daytime and night-time periods at location A1-A7. Results are provided in Table 12.

Table 12 Attended noise measurements

Loc.	Date & Time	Description	dBL_{Aeq}	dBL_{A90}
A1	07 July 2026 10:06pm – 10:09pm	Measured along walkway with occasional patron pass by. Just audible Traffic from Findon Road.	37	35
	26 June 2026 2:47pm – 3:02pm	Traffic audible from Findon Road. Train pass by and motorbike along the walking track noted. Distant construction noise to the north.	50	37
	2 October 2026 2.41am - 2.44am	Traffic audible from Plenty Road, some general industrial/services noise not able to be located or identified (it is not existing substation).	47	46
A2	07 July 2026 10:21pm – 10:25	Constant vehicle pass bys on Findon Road. Just audible road traffic from Plenty Road.	56	39
A3	07 July 2026 10:28pm – 10:31pm	Constant vehicle pass bys on Findon Road. Just audible road traffic from Plenty Road. Substation only just audible at times.	57	39
	07 July 2026 10:32pm – 10:34pm	Measurement excluding all local traffic or other noise sources, representative of substation at NCA1.	37	36
	26 June 2026 4:23pm – 4:28pm	Constant vehicle pass bys on Findon Road. Some construction noise	57	50
	2 October 2026 2.06am - 2.09am	Light rain, some distant traffic, insects, frogs and substation audible.	42	41
A4	07 July 2026 10:38pm -10:41pm	Constant vehicle pass bys on Findon Road. Audible road traffic from Plenty Road.	60	41
	26 June 2026 3:46pm – 4:01pm	Constant vehicle pass bys on Findon Road. Audible construction noise on the other side of Findon Road.	63	54
	2 October 2026 2.13am - 2.16am	Small portable generator audible north of measurement location.	52	51

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

A5	07 July 2026 10:44pm -10:47pm	Some vehicle pass bys on Findon Road. Quite audible road traffic from Plenty Road.	54	41
	26 June 2026 3:29pm – 3:44pm	Audible traffic on Findon Road, occasional pass by along Williamsons Road including a bus	61	45
	2 October 2026 2.26am - 2.29am	Light rain, frogs, insects and distant traffic on Plenty rd.	42	41
A6	07 July 2026 10:51pm-10:53pm	Measured along walkway with occasional patron pass by. Traffic from Plenty Road was audible.	32	30
	26 June 2026 4:10pm – 4:15pm	Distant audible traffic noise from Findon Road, infrequent construction noise audible as well as a dog barking frequently.	40	36
	2 October 2026 2.33am - 2.36am	Local power transformer, distant insects and traffic.	36	35
A7	26 June 2026 2:28pm – 2:43pm	Cars audible on Findon Road, occasional pedestrians on the walking track as well as a cyclist. Distant construction noise from both the north and south of the subject site.	48	41
A8	2 October 2026 2.20am-2.25am	Light rain, frogs, insects and distant traffic on Plenty rd.	44	41

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADP
Consulting : Engineering

ADVERTISED
PLAN

Appendix E Criteria

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

E.1 EPA Noise Protocol

The EP Regulations include the EPA Noise Protocol as the reference document which sets the required approach to determine noise limits and assess noise emissions.

Noise emission restrictions apply to future base building and tenant activities and systems. These must be planned, designed, and installed to include suitable sound attenuation, vibration isolation and other necessary acoustic treatments. This report provides an approach that needs to be incorporated in the proposed development to meet the noise emission requirements of the EPA Noise Protocol Part I.

The EPA Noise Protocol Part I requirements include determination of noise limits at the nearest external noise sensitive receivers as well as within the subject site.

The EP Regulations define the following as noise sensitive areas:

- Residential premises
- Retirement villages
- Hospitals
- Child-care centres
- Kindergartens
- Primary and secondary schools
- Tourist establishments
- Camping grounds
- Caravan parks in rural areas.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

The methodology to determine the noise limits for the nearest noise sensitive receivers is described in the EPA Noise Protocol. It requires the establishment of background noise levels, and a zoning level determined by the surrounding land use.

The background noise measurements that are representative of the surrounding noise catchment based on their proximity and selection of conservative values are provided in Table 13. The location used to determine the noise criterion was conservatively selected to provide the most sensitive zoning radius within a given noise catchment area (NCA). Where attended measurements were representative of the noise catchment, evening background noise levels were assumed to be equal to the daytime background noise levels. This is a conservative assumption, as daytime noise environments are typically louder than those during the evening.

Table 13: Representative Background Noise Monitoring Locations

Noise catchment area	Representative background noise measurement
NCA1	Logger B
NCA2	Attended A6
NCA3	Logger B
NCA4	Logger C

The EPA defines a standby generator as emergency equipment when it is used to provide electrical power as an alternative to the mains supply during an emergency, or for routine maintenance and testing for no more than four hours per month. Where the noise source under consideration is equipment used solely in relation to emergencies, the relevant noise limit applying to the testing or maintenance of such equipment, is increased by 10 dB for a day period and by 5 dB for all other periods.

The Tables below presents the EPA site-specific noise emission criteria applicable for the proposed noise catchment areas.

Table 14: Noise emission criteria NCA1

Period	**Background** dBL_{A90}	**Zoning Level**	**Noise Limit**	
			Operational dBL_{Aeq}	**Maintenance** dBL_{Aeq}
Day	44	53	53	63
Evening	44	47	47	52
Night	39	42	42	47

Table 15: Noise emission criteria NCA2

Period	**Background** dBL_{A90}	**Zoning Level**	**Noise Limit**	
			Operational dBL_{Aeq}	**Maintenance** dBL_{Aeq}
Day	36	50	48	58
Evening	36	44	44	49
Night	30	39	39	44

Table 16: Noise emission criteria NCA3

Period	**Background** dBL_{A90}	**Zoning Level**	**Noise Limit**	
			Operational dBL_{Aeq}	**Maintenance** dBL_{Aeq}
Day	44	53	53	63
Evening	44	47	47	52
Night	39	42	42	47

Table 17: Noise emission criteria NCA4

Period	**Background** dBL_{A90}	**Zoning Level**	**Noise Limit**	
			Operational dBL_{Aeq}	**Maintenance** dBL_{Aeq}
Day	39	60	54	64
Evening	38	53	49	54
Night	38	48	46	51

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

E.1.1 Predicted Noise Level Adjustment

Penalties for noise characteristics can apply to the assessed noise level where the noise emission is considered to be tonal, impulsive or intermittent. Frequency and low frequency noise is not directly considered as a noise characteristic with penalty however is a consideration for whether noise is 'unreasonable'.

This project does not include equipment or design that will introduce impulsive or intermittent noise characteristics and they are not considered.

Low frequency and tonal noise assessments are provided below.

E.1.2 Low Frequency Assessment

The EPA *1996 Noise guideline – assessing low frequency noise* is used to determine whether low frequency noise may be considered unreasonable noise at receiver locations.

Low frequency noise is difficult to predict and assess and therefore an initial screening assessment is used to determine where low frequency noise may be considered unreasonable noise.

The screening threshold levels for where low frequency noise may be considered unreasonable noise is provided in the table below.

Table 18: EPA Low Frequency Screening Trigger Vales

	One-third Octave Band Centre Frequency, Hz, dB												
Description	**10**	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
L_{eq}(dB)	92	89	86	77	69	61	54	50	50	48	48	46	44

In the case that low frequency noise is found to exceed the screening threshold, recommendations are to be made to manage the low frequency noise including consideration of the following factors:

- The overall noise level
- Duration of the noise level and how often it may occur
- Any additional characteristics such as frequency modulation, fluctuation or tonality
- The time of day that this noise may occur
- The receiver location and sensitivity

The predicted noise level is compared to the screening threshold and a representative measured existing noise level for each NCA in the tables below for typical night-time operation, daytime operation, daytime maintenance and emergency.

Key: Bold = Existing level exceeds EPA threshold; **Orange** = Exceeds EPA threshold but ≤ existing ambient level; **Red** = Exceeds both EPA threshold and existing ambient level.

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

Table 19: NCA1 Low Frequency Assessment

	One-third Octave Band Centre Frequency, Hz, dBL_{eq}												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Screening threshold	92	89	86	77	69	61	54	50	50	48	48	46	44
Existing Conditions													
Existing daytime	-	49	50	52	54	58	**70**	**63**	**63**	**60**	**60**	**62**	**58**
Existing night-time	-	46	46	44	43	44	43	45	45	42	47	38	37
Project Conditions													
Standard daytime	42	44	46	48	50	50	50	50	50	50	42	42	42
Standard night-time	36	38	40	42	44	44	44	44	44	44	36	36	36
Maintenance (day)	43	45	47	49	51	51	51	51	51	51	46	46	46
Emergency (day)	45	47	49	51	53	53	53	53	53	53	52	52	52
Emergency (night)	45	47	49	51	53	53	53	53	53	53	52	52	52

Table 20: NCA2 Low Frequency Assessment

	One-third Octave Band Centre Frequency, Hz, dBL_{eq}												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Screening threshold	92	89	86	77	69	61	54	50	50	48	48	46	44
Existing Conditions													
Existing daytime	-	50	54	57	58	55	**61**	**61**	**62**	**58**	**57**	**59**	**58**
Existing night-time	-	52	49	46	45	48	45	46	39	38	37	34	34
Project Conditions													
Standard daytime	44	46	48	50	52	52	52	52	52	52	44	44	44
Standard night-time	38	40	42	44	46	46	46	46	46	46	38	38	38
Maintenance (day)	45	47	49	51	53	53	53	53	53	53	49	49	49
Emergency (day)	47	49	51	53	55	55	55	55	55	55	55	55	55
Emergency (night)	47	49	51	53	55	55	55	55	55	55	55	55	55

ADVERTISED
PLAN

ADVERTISED PLAN

Table 21: NCA3 Low Frequency Assessment

	One-third Octave Band Centre Frequency, Hz, dBL_{eq}												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Screening threshold	92	89	86	77	69	61	54	50	50	48	48	46	44
Existing Conditions													
Existing daytime	-	49	50	52	54	58	**70**	**63**	**63**	**60**	**60**	**62**	**58**
Existing night-time	-	54	52	49	49	50	47	48	43	42	41	36	35
Project Conditions													
Standard daytime	46	48	50	52	54	54	54	54	54	54	45	45	45
Standard night-time	39	41	43	45	47	47	47	47	47	47	40	40	40
Maintenance (day)	47	49	51	53	55	55	55	55	55	55	56	56	56
Emergency (day)	52	54	56	58	60	60	60	60	60	60	62	62	62
Emergency (night)	52	54	56	58	60	60	60	60	60	60	62	62	62

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Table 22: NCA4 Low Frequency Assessment

	One-third Octave Band Centre Frequency, Hz, dBL_{eq}												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Screening threshold	92	89	86	77	69	61	54	50	50	48	48	46	44
Existing Conditions													
Existing daytime	-	48	50	49	52	54	53	**53**	**56**	**56**	**55**	**54**	**50**
Existing night-time	-	68	67	65	64	**62**	**61**	**60**	**59**	**55**	**53**	**51**	**49**
Project Conditions													
Standard daytime	41	43	45	47	49	49	49	49	49	49	43	43	43
Standard night-time	35	37	39	41	43	43	43	43	43	43	38	38	38
Maintenance (day)	41	43	45	47	49	49	49	49	49	49	43	43	43
Emergency (day)	41	43	45	47	49	49	49	49	49	49	43	43	43
Emergency (night)	41	43	45	47	49	49	49	49	49	49	43	43	43

The following low frequency noise outcomes are based on the screening assessment in Table 19 to Table 22:

- The standard night-time operation is predicted to be below EPA low frequency threshold at all receiver locations.
- The standard day-time operation is predicted to be below either the EPA low frequency threshold at all or the measured existing low frequency environment at all receiver locations.

ADVERTISED PLAN

- The maintenance operational scenario is predicted to be below either the EPA low frequency threshold or the measured existing low frequency environment at all receiver locations.
- The emergency operational scenario is predicted exceed the EPA low frequency threshold and the measured existing low frequency environment at all receiver locations except NC04 which exceeds EPA low frequency threshold by 1dB at 80Hz.

The predicted low frequency noise level is higher than the screening threshold and existing measured background level in the emergency operational scenario. Low frequency noise is a risk for emergency operation and therefore recommendations for managing low frequency noise are to be investigated.

The following risk factors have been considered:

- Typical operation and maintenance scenarios are predicted to meet noise criteria and are below EPA low frequency threshold or measured existing low frequency noise environment.
- Emergency operation has the highest low frequency impact and all reasonable and practical controls are in place to minimise emergency operation, use of the generators and noise from the generators.
- The predicted noise level & threshold are based on outside noise and is expected to be lower at inside locations; people are expected to be indoors at highest risk periods (night-time).

The following engineering controls have been considered:

- Low frequency noise is expected to come from generators or building resonance.
- Generator exhaust systems can include tuned reactive mufflers.
- Where possible, building construction and louvres/airways can include high mass or thick construction to improve low frequency transmission loss.
- All significant plant items can be installed on isolation springs or mounts to minimise vibrational energy turning into low frequency structural resonance.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

The following administrative controls have been considered:

- Equipment procurement can require manufacturers to supply third-party 1/3-octave band acoustic test data (down to 20 Hz) prior to sign-off and delivery to site.
- Scheduled testing protocols can limit the number of generators running simultaneously (e.g. testing in small banks) to minimise cumulative low-frequency buildup during maintenance.
- On-site 1/3-octave spectral testing can be conducted during post-installation commissioning to verify compliance and mitigation measures at sensitive boundary locations.
- Equipment and associated mitigation measures can be selected so as to ensure that low frequency noise characteristics are minimised as far as reasonably practical in accordance with the GED to also put some responsibility on the equipment suppliers, who may be better placed to confirm reasonably practical mitigation.

E.1.3 Best Available Techniques or Technology

Noise from the operation of generators during an emergency is required to consider the state of knowledge for methods to eliminate or minimise risk of harm as far as reasonably practical and apply Best Available Techniques or Technology (BATT). The following has been considered as part of the design:

- Likelihood of harm occurring is minimised (and aligned with developer and operator requirements) based on the project location adjacent to the substation, protected underground connection to power

ADVERTISED PLAN

and redundancy of power connection to minimise the occurrence of power failure and use of generators in an emergency.

- Likelihood of harm is further reduced through use of (internal) battery banks to make up for short term instability in the power grid which avoids 'false start up' of generator banks that may have otherwise occurred during night-time hours.
- The state of knowledge and BATT has been applied through:
    - Detailed multi-discipline review of the project generator requirements and specification
    - Review of available generators on market and associated acoustic data
    - Available attenuator kits, enclosures and mufflers and associated acoustic data
    - Previous datacentre project approvals and approach
    - A modular, manufacturer agnostic generator plantroom with enough space to include acoustic attenuators, allowing for design to incorporate any quieter or better performing generators at later design phases, or even though the project lifetime.
- The cost of generator noise mitigation is not significant with respect to the scale of overall project cost and instead all reasonable and practical noise mitigation was based on:
    - Functional requirements, where applying any further noise mitigation or alternative will result in non-functional equipment or insufficient area or space for the development to go ahead.
    - Technical limitations, where applying any further noise mitigation or alternatives will be unrealistic and suppliers or manufacturers may not be able to achieve the performance specified.
- The potential harm (and noise) is minimised through:
    - Minimum number of generators required to support the project during an emergency will be used (84).
    - Generator that meets functional requirements and has robust acoustic data used as basis for design (quietest generator not used to avoid risk of under designing mitigation).
    - Highest performing acoustic enclosure kit based on market data and review of previous project is specified.
    - Generator plantroom included absorptive ceiling and required to have reverberation time <1.0 seconds.
    - The highest performing acoustic louvre that meets mechanical airflow requirements is included at the generator plantroom façade.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Consistent with the General Environmental Duty, the above approaches minimise the risks as far as reasonably practical and considers the Best Available Techniques and Technology in the context of the high voltage transmission lines located to the south of the site. These high voltage transmission lines and the associated Safety in Design obligations preclude the location of the plant on the south side of the building.

E.1.4 Tonality assessment

The EPA Noise Protocol and EPA Publication 1997 are used to determine if a tonality penalty of +2dB (just detectable) or +5dB (prominent) applies to the predicted noise source. The predicted noise at receiver

locations is objectively considered tonal if any 1/3 octave band exceeds the level of both adjacent 1/3 octave bands by:

- 15dB between 25Hz and 125Hz
- 8dB between 160Hz and 400Hz
- 5dB between 500Hz and 10kHz

1/3 octave band data is not available for all equipment and conversion from octave band to 1/3 octave may mask tonality. On this basis, tonality assessment is undertaken as both physical source consideration and conservative calculation.

The physical source consideration for the noise generating plant includes:

- Cooling towers fitted with (min.) 5 blade wide chord forward swept axial impellers (super low sound fan) engineered to supress the tonal blade pass frequency (BPF) with simultaneous operation of 25 units on independent VSD control is expected to introduce speed variations, minimising risk of coherent tonal summation of units.
- Chillers and general AHU and building exhaust fans are at least 10dB below the cooling towers and include noise levels expected to be masked by the cooling tower water spray noise.
- High voltage transformers operate at 40% load and are screened or set back sufficiently from NCAs so that the 100Hz peak is below background and the cooling tower noise levels.
- Generators are packaged units in acoustic enclosures with multi-stage reactive and absorptive exhaust mufflers and attenuated airpaths inside an acoustically lined plantroom located behind acoustic louvres, attenuating discrete engine tonality prior to discharge. Multiple units are not coherent minimising risk of tonal summation of units.

A conservative objective assessment of the octave band data assumes that all acoustic energy with in an octave band is located in a single 1/3 octave band and therefore a reduction of 4.8dB is applied the source is considered tonal if any octave band exceeds both adjacent octave bands by:

- 10 dB between 63Hz and 125Hz
- 3 dB at 250Hz
- 0 dB between 500Hz and 4kHz

The predicted noise level at receiver locations continuously rolls off from 63Hz to 4kHz and no local octave band peaks exceed both adjacent bands. The roll off can is visualised in Figure 5 below showing all predicted NCAs and scenarios (excluding emergency).

Combined with the procurement hold point requiring 1/3 octave band manufacturer test data and post installation commissioning, no tonality penalty is applied to for this assessment.

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

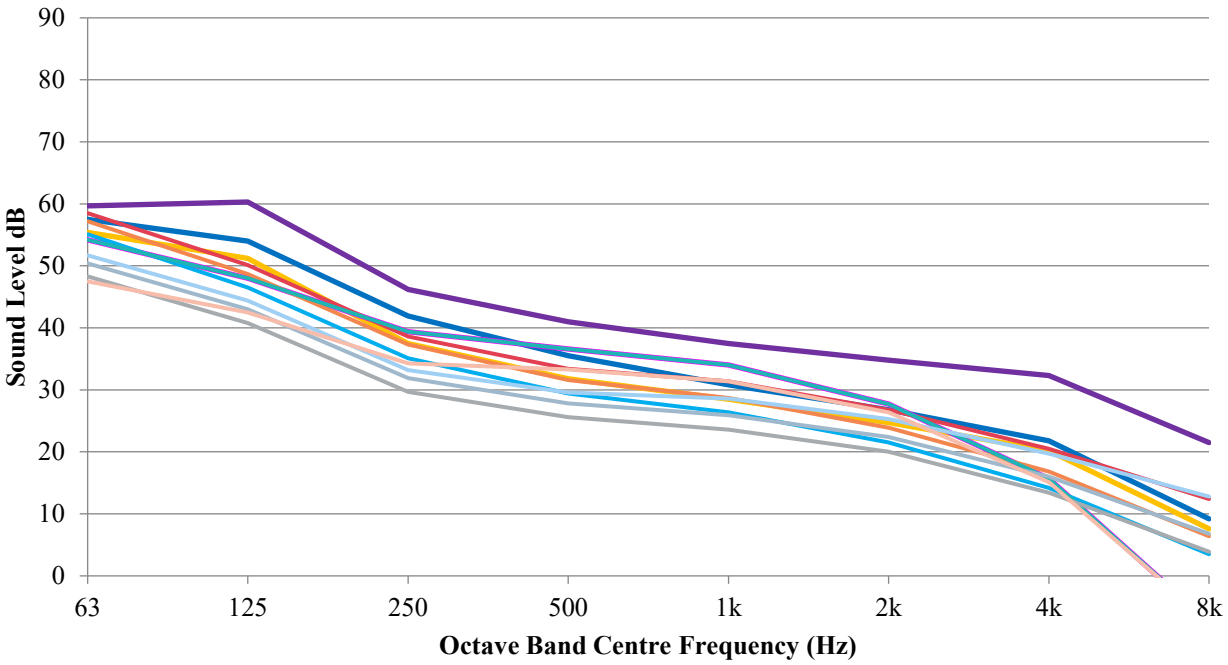


Figure 5: Predicted frequency and roll off

ADVERTISED
PLAN

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

ADP
Consulting : Engineering

ADVERTISED
PLAN

Appendix F Noise Data

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

F.1 Cooling Towers

Noise data is based on preliminary selection for an EVAPCO 3000kW (two cell) cooling tower with a Variable Speed Drive (VSD) top mounted 78 m^3/s axial fan discharge and low-level air intake. This unit includes low noise fan and water silencers.

The maximum sound power is due to the fan at full speed when the wet bulb temperature of the incoming (surrounding) air is 25°C or higher and maximum worst case night-time wet bulb temperature measured at Viewbank weather station is 22°C recorded on 4 February 2011 (tropical cyclone Yasi).

A wet-bulb temperature of 22°C or below allows the cooling towers to reject 100% of the peak thermal load while operating the fan at or below 80% under VSD control.

On this basis, the night-time acoustic modelling includes the following sound power adjustments:

- 5 dB reduction for octave bands between 63 and 250Hz, which are dominated by fan noise, based on fundamental fan sound power scaling[9].
- No correction for 4kHz or higher octave bands which are expected to be dominated by falling water noise.
- Interpolation between 250Hz and 4kHz.

The manufacturer maximum sound power levels[10]. for the two-cell unit running at full fan speed and adjusted to 80% fan speed is provided in the table below.

Table 23: Cooling tower noise levels

Descriptor	Sound Power Level Octave band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Max. fan speed	104	102	94	91	89	85	81	95
80% fan speed	99	97	89	88	87	84	81	92

Noise from the cooling towers may include low frequency noise and further analysis is undertaken to extrapolate and review 1/3 octave band noise down to 10Hz.

Fan design elements relevant to low frequency extrapolation include:

- 2.13m diameter belt drive axial fans
- Wide chord (width)
- Forward swept impeller shaped
- 5 blades on each fan

ADVERTISED
PLAN

These design elements are part of the 'super low sound fan' and work to suppress discrete blade-pass frequency and provide reasonable justification for applying each octave band evenly across each 1/3 octave band.

The following steps have been undertaken to convert to 1/3 octaves and extrapolate the cooling tower noise levels down to 10Hz.

[9] ASHRAE Handbook, HVAC Applications (Chapter 49: Noise and Vibration Control): ΔLw = 50log10(0.80) = -4.8dB
[10] EVAPCO, Cooling Tower Technical Data Sheet – AT 29-2L28, 9 November 2022

ADVERTISED PLAN

- Each octave band sound energy is evenly distributed across 1/3 octaves using fundamental log rule 10log(1/3) = -4.8dB per 1/3 octave.
- 31.5Hz octave band is conservatively set equal to 63Hz instead of applying a roll off because the blade pass frequency (BPF) is predicted to fall between 20 and 40Hz based on the number of blades and 220 to 340 RPM (even though the fan design is expected to minimise BPF impact).
- Frequencies less than 25Hz are below the BPF and the 2.1m cowl is signicantly smaller than the wavelength of between 17 and 34m and on this basis a reduction of -6dB per octave or -2dB per 1/3 octave is applied based on standard end-reflection loss[11].

The extrapolated 1/3 octave band sound power level used for low frequency noise assessment is provided in Table 24 below.

Table 24: One third octave band low frequency cooling tower noise level

Descriptor	**Sound Power Level**												
	One third octave band centre frequency (Hz)												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Max. fan speed	91	93	95	97	99	99	99	99	99	99	97	97	97
80% fan speed	86	88	90	92	94	94	94	94	94	94	92	92	92

[11] Bies & Hanson, *Engineering Noise Control, Chapter 8 (End Loss)* 5th Edition, 2017

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

F.2 Chillers

Noise data for a Carrier water cooled centrifugal chiller (dual barrel) is used for assessment.

The chiller is typically quieter than the cooling towers required to reject the heat and mitigation is simpler due to lower requirements for airflow. The chillers are to be located inside a plantroom or enclosure and do not contribute significantly to the noise emission.

Table 25: Chillers noise level

Descriptor	Sound Power Level Octave band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Unmitigated chiller	101	96	87	82	78	75	74	86
Enclosed chiller	89	86	77	72	68	65	64	76

ADVERTISED
PLAN

ADVERTISED PLAN

F.3 Generators

Noise data for the Kohler KD4500 KD103V20-5C (3600kW) has been used. The sound power for engine and exhaust has been provided separately and used in the calculation of generator noise.

A mitigated noise level is based on a manufacturer designed acoustic enclosure including muffler, airway attenuators and sealed access panels.

The sound power levels provided in the table below are equivalent to a sound pressure of between 70dB(A) and 75dB(A) at 1m from the generator enclosure and should be considered very onerous to achieve; full detail and testing will be required before and during procurement.

Table 26: Generator noise levels

Descriptor	Sound power level Octave band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Engine	115	124	120	116	115	115	112	121
Exhaust	130	144	136	130	126	126	126	135
Mitigated Engine	102	97	92	87	82	82	77	90
Mitigated Exhaust	102	97	92	87	82	82	77	90
Overall Mitigated	105	100	95	90	85	85	80	93

Noise from the generators may include low frequency noise and further analysis is undertaken to extrapolate and review 1/3 octave band noise down to 10Hz.

Fan design elements for the Kohler KD4500 (KD103V20-5C) relevant to low frequency extrapolation include:

- 20-cylinder (V20) four-stroke diesel engine operating at 1500 RPM (50Hz)
- Engine frequency of 250Hz (and 125Hz per 10-cylinder bank)
- Rotational frequency of 25Hz (1500 RPM / 60) and enclosure cooling fan blade-pass frequency between 25Hz and 50Hz
- Reactive and absorptive exhaust mufflers and attenuated enclosure airpaths

The following steps have been undertaken to convert to 1/3 octaves and extrapolate the generator noise levels down to 10Hz.

- Each octave band sound energy is evenly distributed across 1/3 octaves using fundamental log rule 10log(1/3) = -4.8dB per 1/3 octave.
- 31.5Hz octave band is conservatively set equal to 63Hz instead of applying a roll off because the rotational frequency and blade pass frequnecy (BPF) may fall within this range.
- Frequencies less than 25Hz are below the BPF and enclosure discharge is signicantly smaller than the wavelength of between 17 and 34m and on this basis a reduction of -6dB per octave or -2dB per 1/3 octave is applied based on standard end-reflection loss[12].

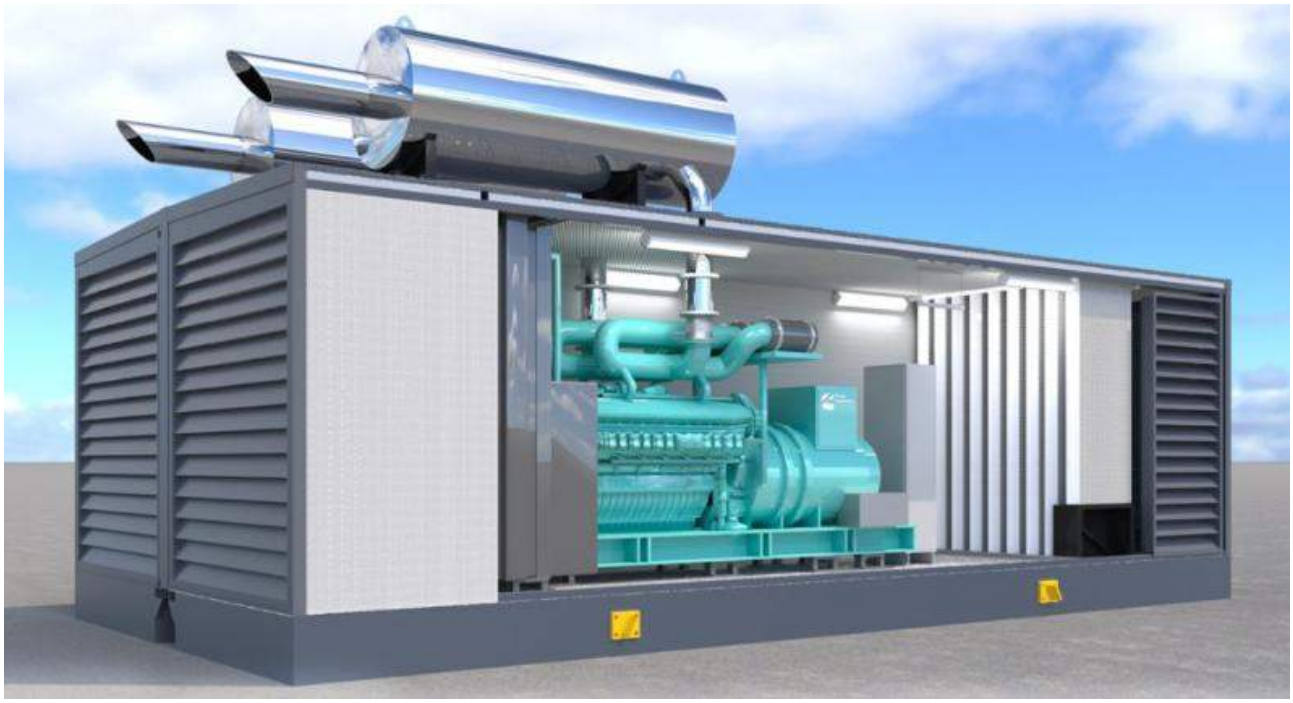
The extrapolated 1/3 octave band sound power level used for low frequency noise assessment is provided in Table 27 below.

[12] Bies & Hanson, *Engineering Noise Control, Chapter 8 (End Loss)* 5th Edition, 2017

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

Table 27: One third octave band low frequency generator noise level

Descriptor	Sound Power Level One third octave band centre frequency (Hz)												
	10	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
Overall mitigated	92	94	96	98	100	100	100	100	100	100	95	95	95



ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

F.4 Fans and AHUs

Fan and AHU design and data is not confirmed at this stage.

Therefore, the required noise levels for all fans and AHU's have been assumed with any mitigation or enclosure required to achieve a maximum level of 70 dB(A) at 1 m so that they do not contribute to the overall noise level with respect to the known cooling towers and chillers.

The fans and AHU typically include the space and often duct length to incorporate lined ductwork or attenuators required to meet this noise level.

In both cases the typical manufacturer noise level provided has been adjusted higher (ie levels are typically below the maximum allowable).

Table 28: Fans and AHUs noise level

Descriptor	Sound pressure level Octave band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Fan sound pressure at 1 m	82	79	76	64	58	53	47	70
AHU sound pressure at 1 m	67	67	70	69	65	61	57	70

ADVERTISED PLAN

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

This copied document to be made available
for the sole purpose of enabling
its consideration and review as
part of a planning process under the
Planning and Environment Act 1987.
The document must not be used for any
purpose which may breach any
copyright

F.5 Transformer

The HV transformer noise level is based on calculation of a 250MVA transformer based on Australian Standard AS 60076.10:2023 and is provided in the table below.

The transformers will both run at 40% capacity which has been estimated by adjusting the AS60076.10:2023 calculation to 100MVA.

Table 29: Transformer noise level

Descriptor	Sound Power Level Octave band centre frequency (Hz)							
	63	125	250	500	1000	2000	4000	dB(A)
Sound Power Level	94	96	91	91	85	80	75	92
Sound Power Level 40%	90	92	87	87	81	76	71	87

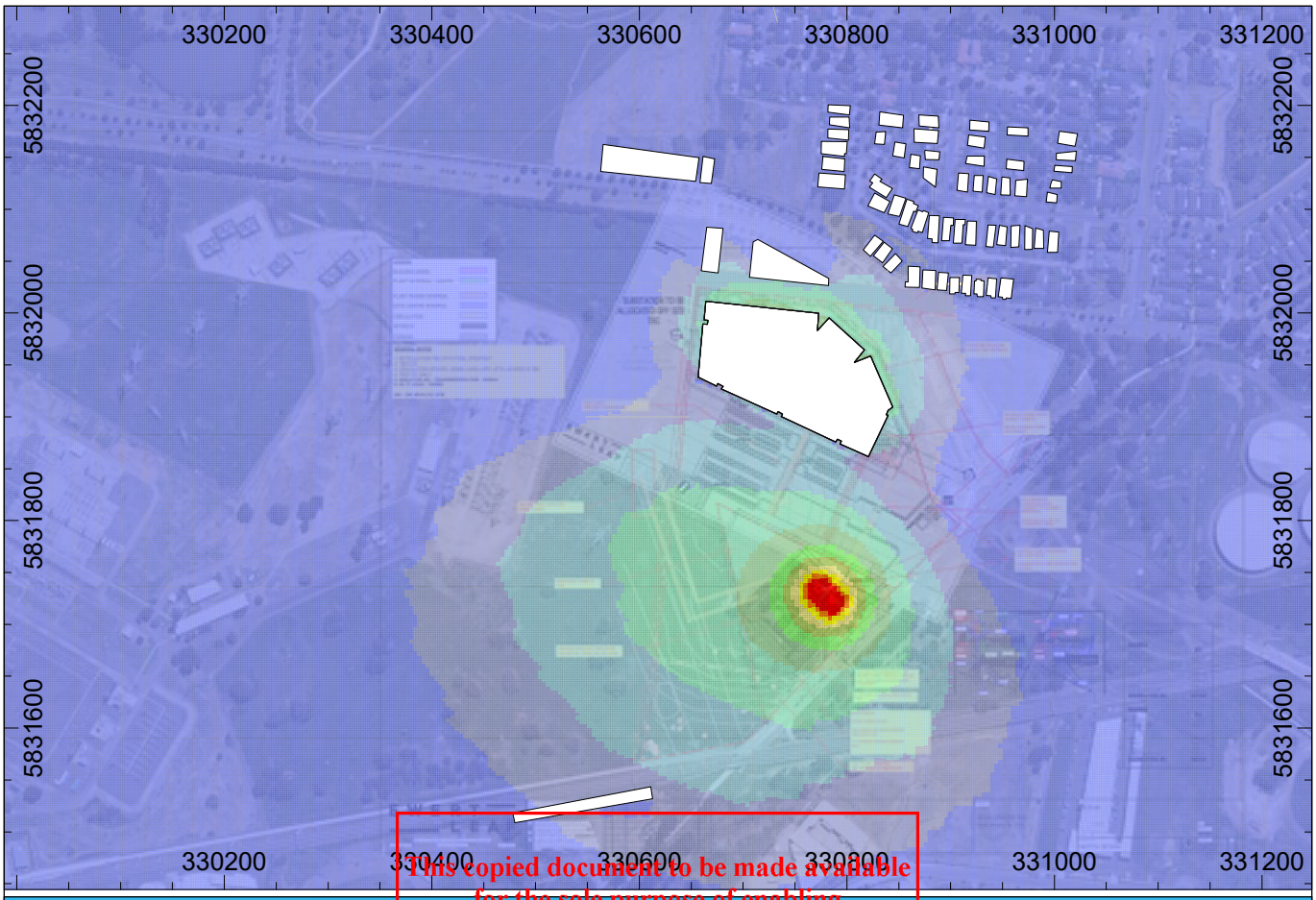
ADVERTISED
PLAN

ADP
Consulting : Engineering

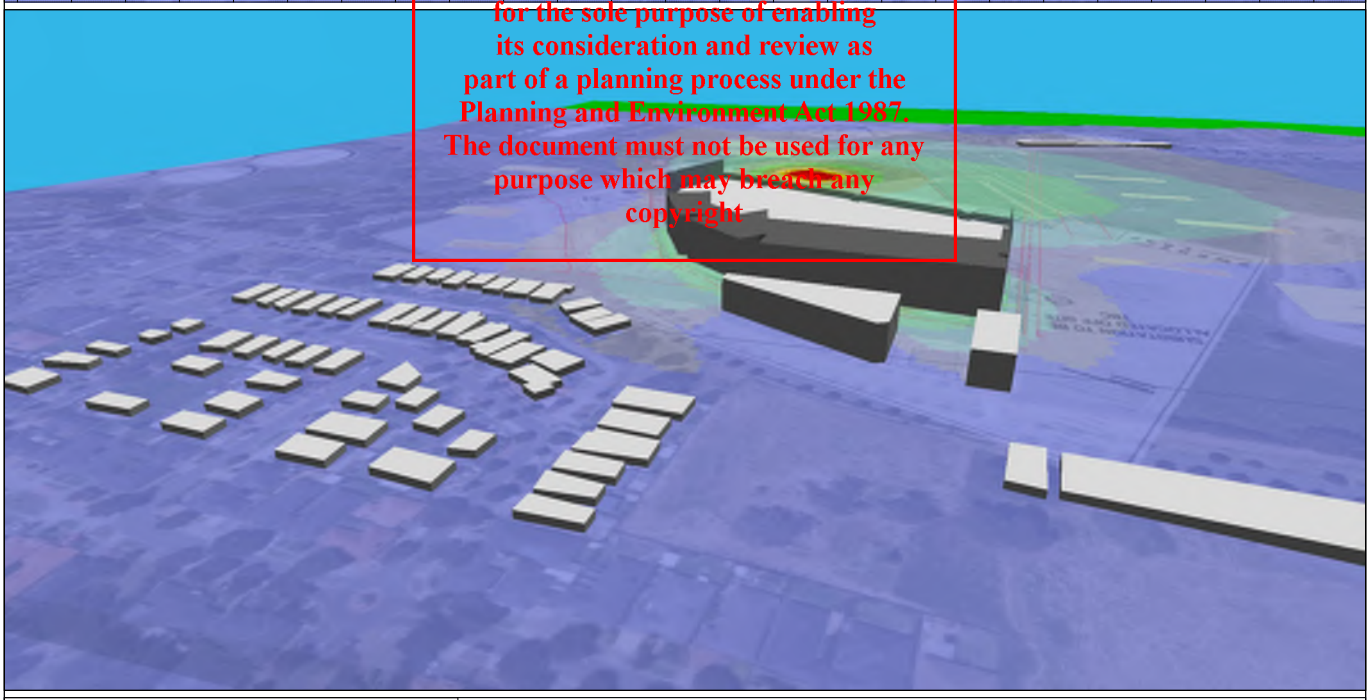
ADVERTISED
PLAN

Appendix G Noise Maps

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

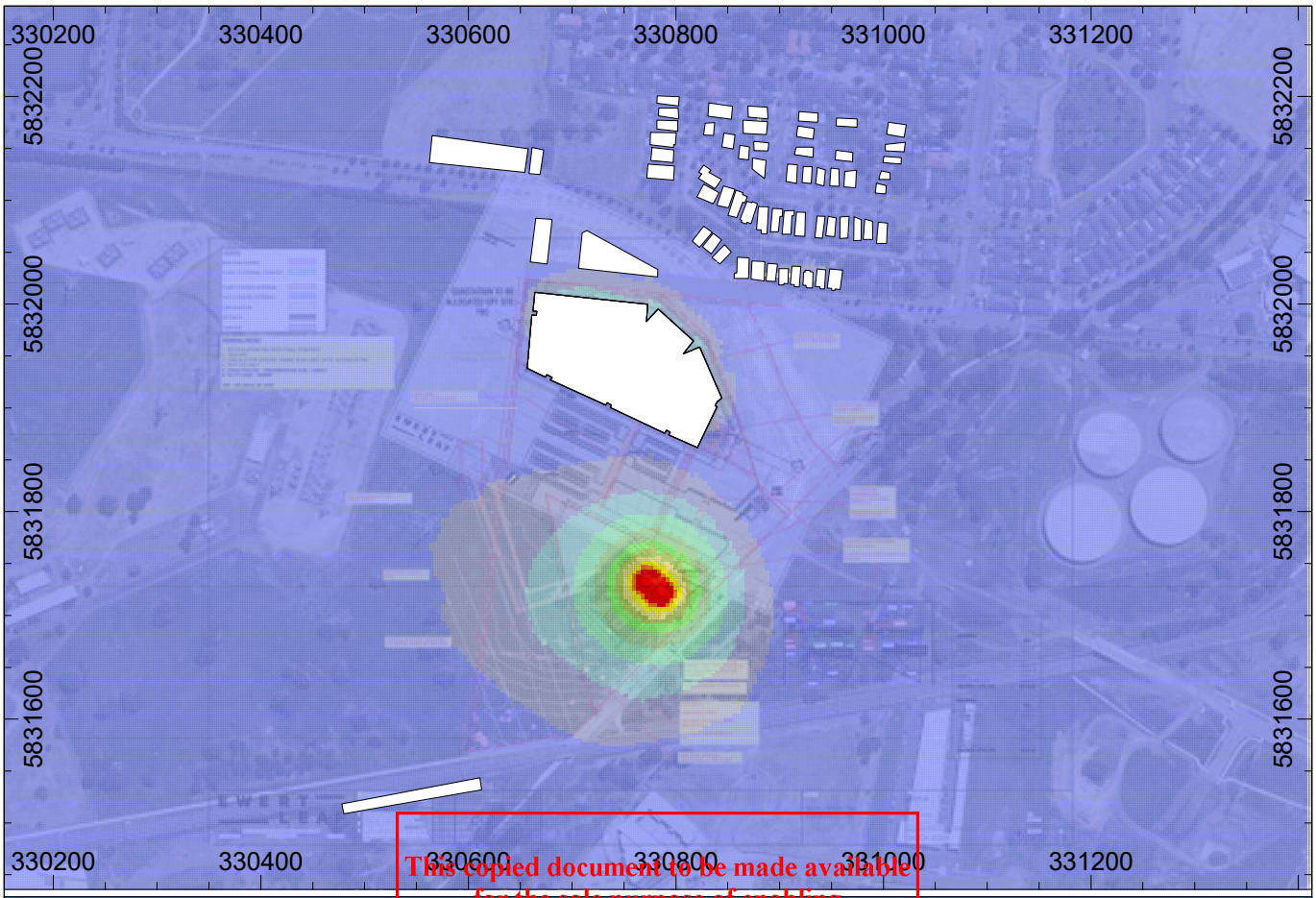


... < 38
38 <= ... < 40
40 <= ... < 42
42 <= ... < 44
44 <= ... < 46
46 <= ... < 48
48 <= ... < 50
50 <= ... < 52
52 <= ... < 54
54 <= ... < 56
56 <= ...

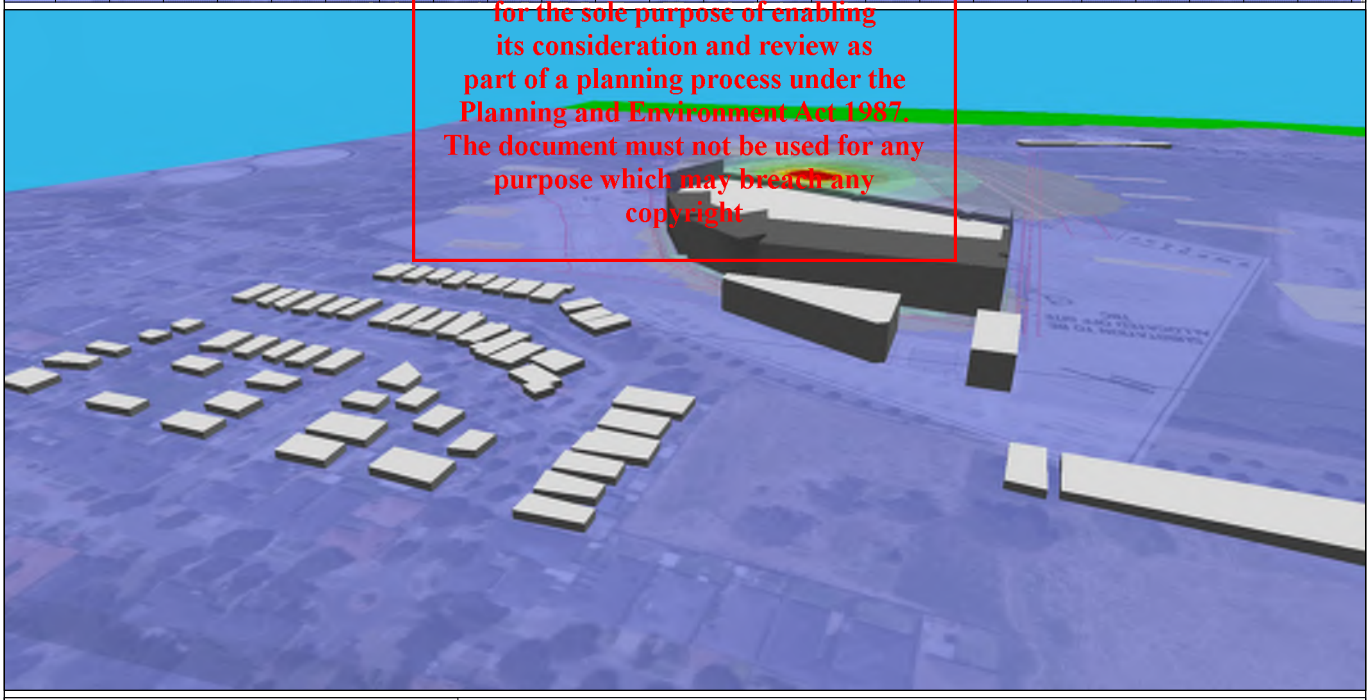
ADVERTISED PLAN

N

Project:	South Morang Data Centre	**Job Number:**	MEL4807
Title:	Standard Daytime	**Date:**	06/10/2026
Variant:		**Revision:**	



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

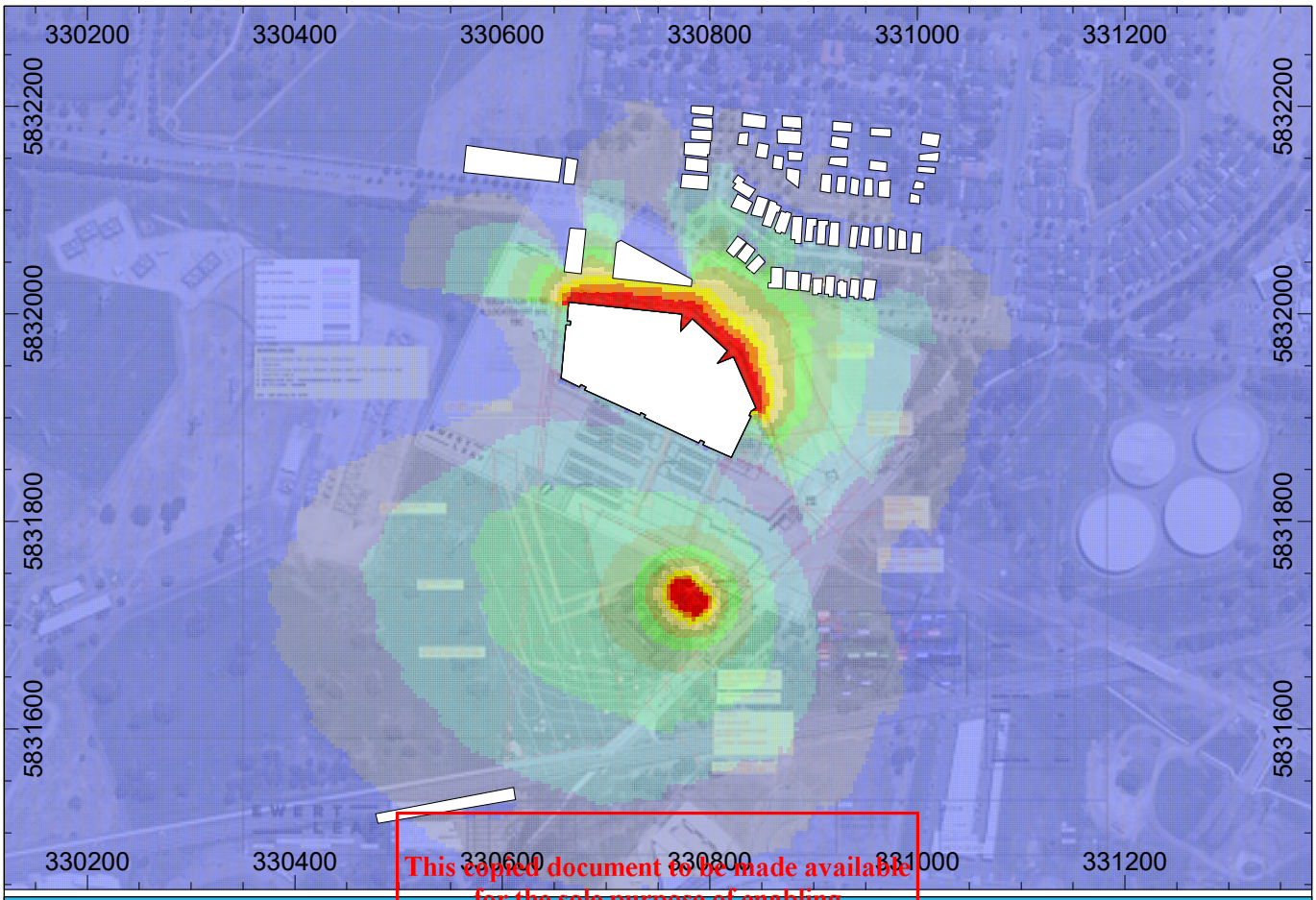


... < 38
38 <= ... < 40
40 <= ... < 42
42 <= ... < 44
44 <= ... < 46
46 <= ... < 48
48 <= ... < 50
50 <= ... < 52
52 <= ... < 54
54 <= ... < 56
56 <= ...

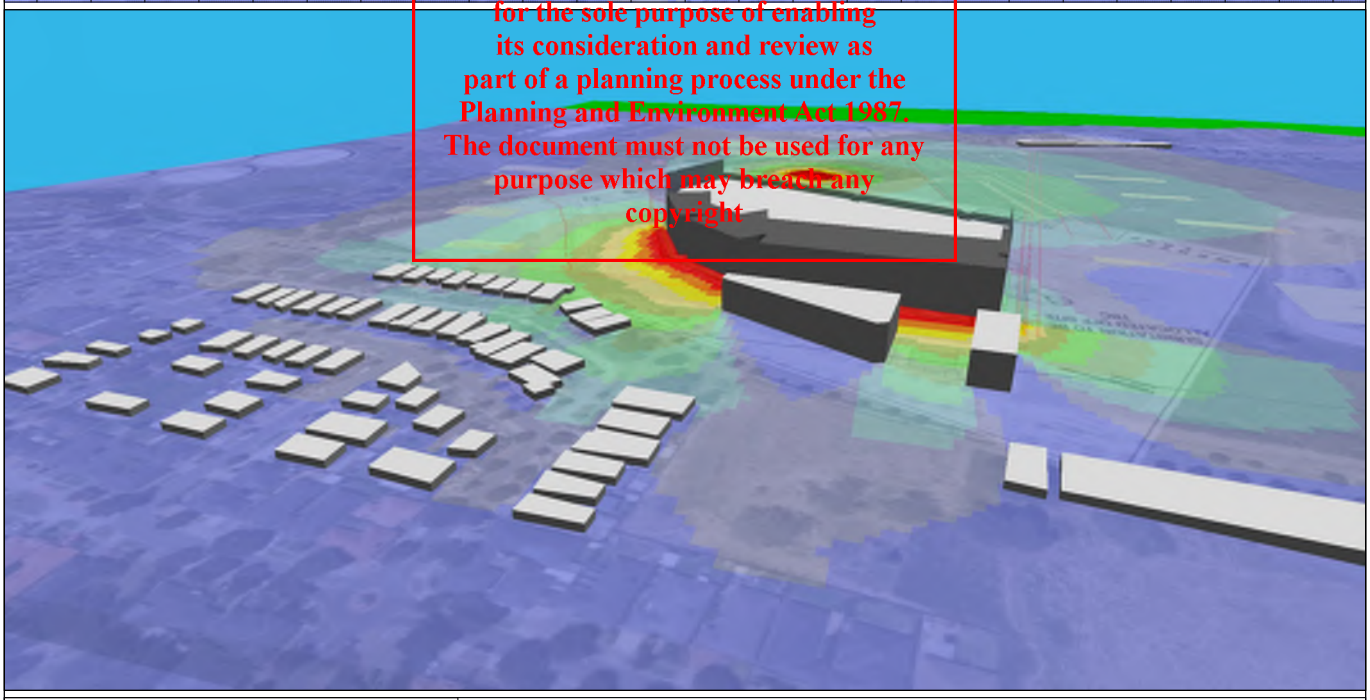
ADVERTISED PLAN

N

Project:	South Morang Data Centre	**Job Number:**	MEL4807
Title:	Standard Night -time	**Date:**	06/10/2026
Variant:		**Revision:**	



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

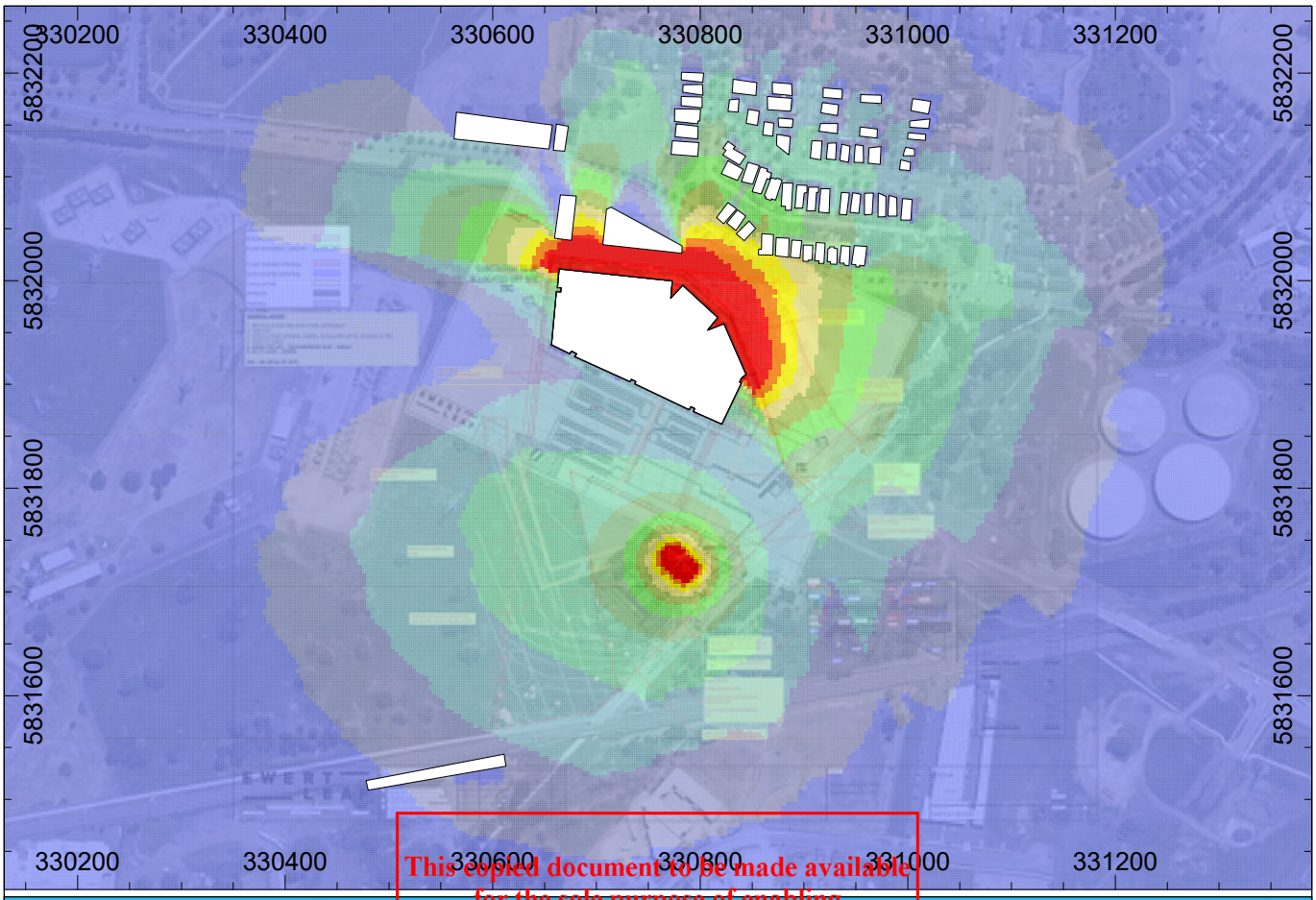


... < 38
38 <= ... < 40
40 <= ... < 42
42 <= ... < 44
44 <= ... < 46
46 <= ... < 48
48 <= ... < 50
50 <= ... < 52
52 <= ... < 54
54 <= ... < 56
56 <= ...

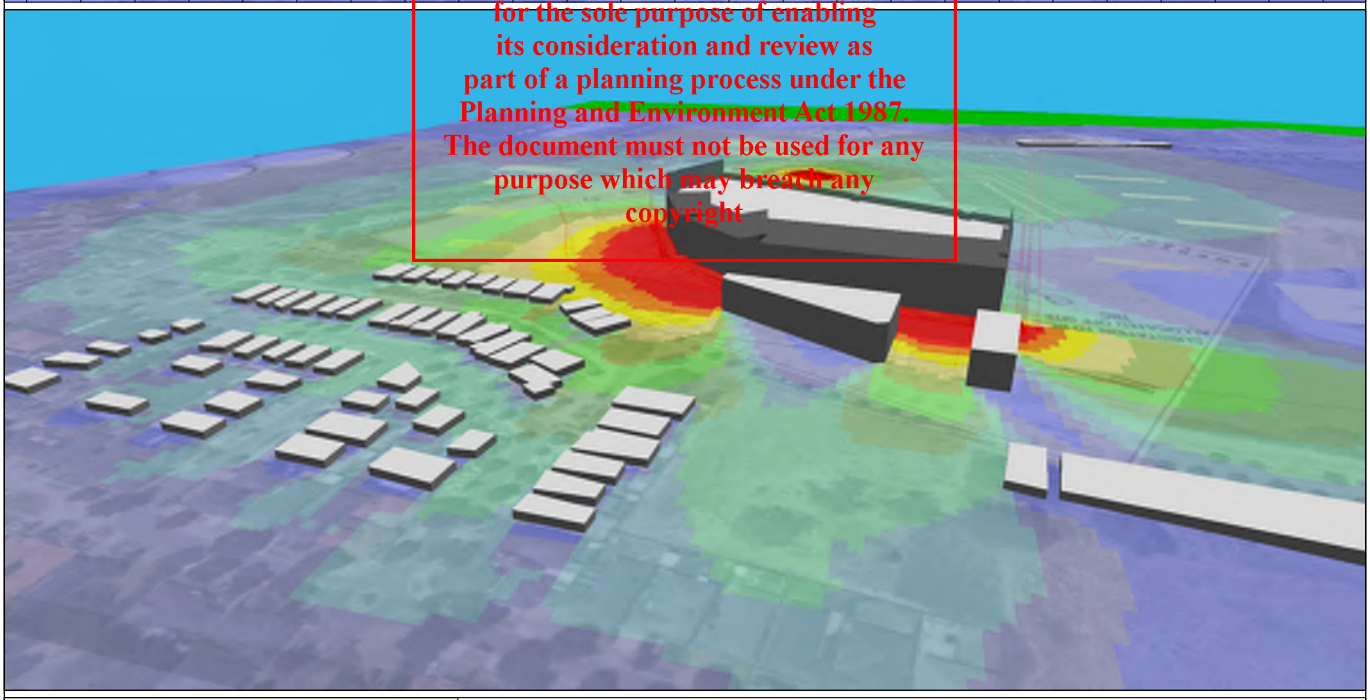
ADVERTISED PLAN

N

Project:	South Morang Data Centre	**Job Number:**	MEL4807
Title:	Maintenance	**Date:**	06/10/2026
Variant:		**Revision:**	



This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright



... < 38
38 <= ... < 40
40 <= ... < 42
42 <= ... < 44
44 <= ... < 46
46 <= ... < 48
48 <= ... < 50
50 <= ... < 52
52 <= ... < 54
54 <= ... < 56
56 <= ...

ADVERTISED PLAN

N

Project:	South Morang Data Centre	**Job Number:**	MEL4807
Title:	Emergency	**Date:**	06/10/2026
Variant:		**Revision:**	

ADP
An ayesa company

Inspire a better world through influence and design.

This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright

ADVERTISED PLAN

Melbourne
Level 13, 55 Collins Street
Melbourne VIC 3000
T. +61 3 9521 1195

Adelaide
Level 4, 22 King William Street
Adelaide SA 5000
T. +61 3 9521 1195

Brisbane
Level 16, 15 Adelaide Street
Brisbane QLD 4000
T. +61 7 3088 4022

Gold Coast
Level 10, 12-14 Marine Parade
Southport, QLD 4215
T. +61 7 3088 4022

Sydney
Level 6, 33 Erskine Street
Sydney NSW 2000
T. +61 2 8203 5447

London
53-64 Chancery Ln
London WC2A 1QS
United Kingdom
T. +44 74 9478 5117

adpconsulting.com