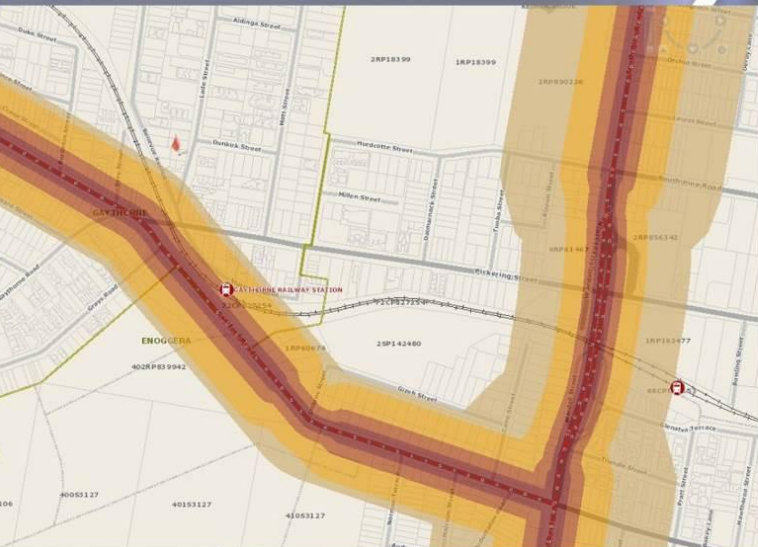


**BCC DS  
RECEIVED  
15/05/2026  
APPLICATION REF  
A006944584**

**PLANS AND DOCUMENTS  
referred to in the  
DEVELOPMENT APPROVAL**

**Issued:            04/01/2001**  
**Minor change: 10/06/2026**



## Executive Summary

This Report is in response to a request from Norris Clarke & Obrien Pty Ltd for a noise impact assessment of a proposed development located at 186 Toombul Road, Northgate QLD 4013 (Lot 1 on RP220052).

The proposal is to construct a single additional unit within an existing hotel accommodation facility. The development site is located within a Low-Density Residential Zone in Brisbane City Council and is adjacent to land zoned SC5 Specialised centre (mixed industry and business), across from Toombul Road to the southwest of the development site.

The development site is located within proximity of industrial activities, and council have requested assessment to the Industrial Amenity Overlay Code. The purpose of this report is to assess industrial noise onto the proposed unit development. The following standards and policy documents are referenced:

- Brisbane City Plan 2014 Industry Amenity Overlay Code
- Environmental Protection (Noise) Policy 2019;
- Environmental Protection Act 1994;
- Australian Standard AS1055:2018 *Acoustics – Description and measurement of environmental noise*
- Australian Standard AS3671:1989 *Acoustics - Road traffic noise intrusion-Building siting and construction*
- Australian Standard AS2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors.*

## Conclusions and Recommendations

It is concluded that-

- Subject to the recommendations set out in this Report, it is the opinion of this consultancy that the proposed development can meet the requirements of Brisbane City Council and be otherwise compliant with relevant regulatory requirements.
- The development site is exposed to low levels of industrial noise and is well screened from nearby industrial uses by buildings and structures within the existing hotel.
- The building can be constructed to achieve the interior noise amenity and minimum indicative  $R_w$  values as set out in Brisbane City Plan 2014 Industry Amenity Overlay Code - Noise Planning Criteria.

It is recommended that-

- The proposed unit development be designed and constructed to achieve the Design  $R_w$  requirements presented in **Table ES1** following and further detailed in **Section 4.1** of this Report.

**Table ES1:** Calculated  $R_w$  requirements for building elements.

Element	Facing	External $L_{eq}$ dB(A)*	BCC Internal criteria $L_{eq}$ dB(A)	TNR	Element Area (Sc)	Floor Area (Sf)	Calc STC/ $R_w$
FG x 2	S	60	30	30	2.6	21.0	<b>33</b>
DH	S	60	30	30	1.3	21.0	<b>30</b>
D-01	S	60	30	30	1.9	21.0	<b>31</b>
Walls	-	60	30	30	14	21.0	<b>40</b>
Ceiling/ Roof	-	60	30	30	1.0	21.0	<b>33</b>

\*façade adjusted external level

## Document Control Page

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Copy No \_\_\_\_\_

Revision No	Issue Date	Revision Description	Author	Review
0	14/05/2026	Report	DY	MT

Copy No(s)	Rev No	Destination
1 pdf	0	Norris Clarke & O'Brien Pty Ltd
	0	Kenlynn Property Group
2	0	Noise Measurement Services

**REPORT FOR** Kenlynn Property Group

**CONTACT** John Creagan RPIA (Norris Clarke & O'Brien) on behalf of Kenlynn

**Signed**



**Max Thorne**  
 (Director)

**DISCLAIMER**

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# 1. Introduction

This Report is in response to a request from Norris Clarke & Obrien Pty Ltd for a noise impact assessment of a proposed development located at 186 Toombul Road, Northgate QLD 4013 (Lot 1 on RP220052).

The proposal is to construct a single additional unit within an existing hotel accommodation facility. The development site is located within a Low-Density Residential Zone in Brisbane City Council and is adjacent to land zoned SC5 Specialised centre (mixed industry and business), across from Toombul Road to the southwest of the development site.

The development site is located within proximity of industrial activities, and council have requested assessment to the Industrial Amenity Overlay Code. The purpose of this report is to assess industrial noise onto the proposed unit development. The following standards and policy documents are referenced:

- Brisbane City Plan 2014 Industry Amenity Overlay Code
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- Australian Standard AS3671:1989 *Acoustics - Road traffic noise intrusion-Building siting and construction*
- Australian Standard AS2107:2016 *Acoustics – Recommended design sound levels and reverberation times for building interiors.*

The locality and development design is presented in the following **Plates, Plans** and **Photos**. Plans for the proposal are presented in **Appendix A**. Terms and definitions used in this Report are found in **Appendix C**.

**Plate 1.1:** Showing the site and locality. (Source: Google).



**Plate 1.2:** The site is zoned low density residential and is across from a SC5 Specialised centre (Mixed industry and business) zone. (Source: Brisbane City Council).

**186 TOOMBUL RD NORTHGATE 4013**  
 Plan Area 1,731 m<sup>2</sup>  
 Lot on Plan Lot 1 on RP220052

Property Specific City Plan Chapters  
 View Full City Plan  
 View Property Lot Report (PDF)  
 View Property Holding Report (PDF)  
 Zoom to selected property  
 Clear selected property

Current Version: v35  
 Effective Date: 05 Dec 2025

The following information applies to this property

Zones  
 Low Density Residential Zone

Map Tools  
 Legend  
 care purposes  
 SC1 Specialised centre (Major education and research facility)  
 SC2 Specialised centre (Entertainment and conference centre)  
 SC3 Specialised centre (Brisbane Markets)  
 SC4 Specialised centre (Large format retail)  
 SC5 Specialised centre (Mixed industry and business)  
 SC6 Specialised centre (Marina)  
 SP1 Special purpose (Defence)  
 SP2 Special purpose (Detention facility)  
 SP3 Special purpose (Transport infrastructure)  
 SP4 Special purpose (Utility services)  
 SP5 Special purpose (Airport)  
 SP6 Special purpose (Port)  
 Local Government Authorities  
 LGA boundary

**Plan 1.1:** Existing Site Plan. (Source: Mercury Design).

**PROPOSED DEVELOPMENT ON SP330708**  
**ADJOINING EXISTING DEVELOPMENT ON SP330709**

EXISTING MOTEL  
 EXISTING MOTEL  
 EXISTING DEVELOPMENT

TOOMBUL ROAD

BOUNDARY LINE AS PER DA

**1 EXISTING SITE PLAN**  
 Scale: 1:500

EXISTING PARKING LOT SP 330708		
Family	Type	Count
MD_Park_Parking Space	5400 x 2400	1
MD_Park_Parking Space	5400 x 2500 PWD	1
MD_Park_Parking Space	5400 x 2600	7
MD_Park_Parking Space	5400 x 2700	16
Grand total:		25

**SITE INFORMATION:**  
 R.P.D.:  
 Lot No.: 1,2,3  
 Plan No.: 189/220052  
 2-3/RP10932  
 Parish: NORTH BRISBANE  
 County: 374637  
 Area: 4465m<sup>2</sup>

**STORMWATER:**  
 Roof water to flow to street to join existing council systems via 90 dia U.P.V.C. stormwater lines at 1:100 minimum fall.

**RETAINING WALLS:**  
 If required all retaining walls shall be provided in strict accordance with engineers detailed design and local authority requirements.

**Wind Classification:** N2  
 (Refer Soil Report)

**Soil Classification:** TBA  
 (Refer Soil Report)

**Climate Zone:** 2  
 (Refer Energy Efficiency Report)

**Site Cover:**

**186 TOOMBUL RD, NORTHGATE**  
 PROJ 013  
 ADDITIONS & ALTERATIONS  
 KENLYNN PROPERTY GROUP  
 EXISTING SITE PLAN  
 Scale: 1:500  
 Date: 08/12/2025  
 24005 03 OF 13  
 1 3 0 0 3 3 9 1 7  
 info@mercury-design.com

**PRELIMINARY - NOT FOR CONSTRUCTION**

Plan 1.2: Proposed Site Plan. (Source: Mercury Design).

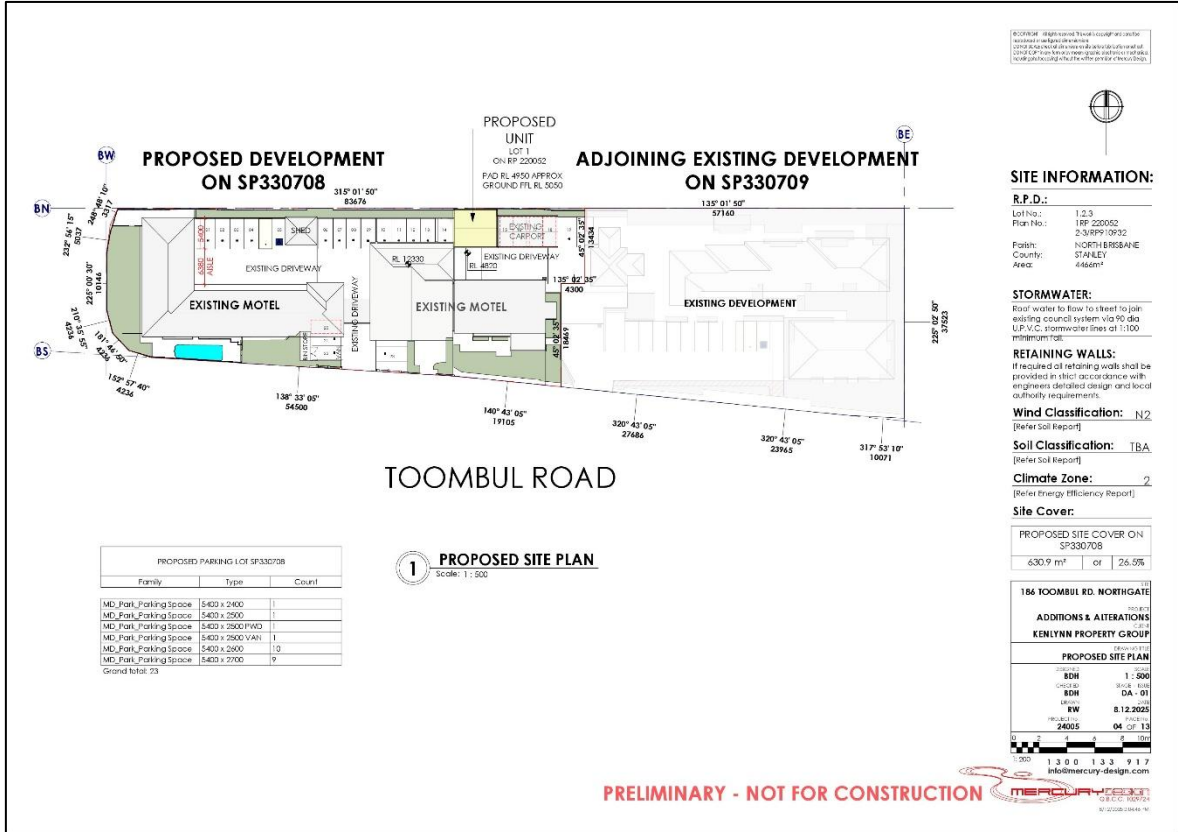


Photo 1.1: View from 186 Toombul Road, looking towards the SC5 Specialised centre (Mixed industry and business) zone. (Source: Google)



**Photo 1.2:** View of the noise logger location onsite.



**Photo 1.3:** Showing approximate location of the proposed single unit extension.



## 2. Measurement of Ambient Noise Levels

### 2.1 Measurement Procedures

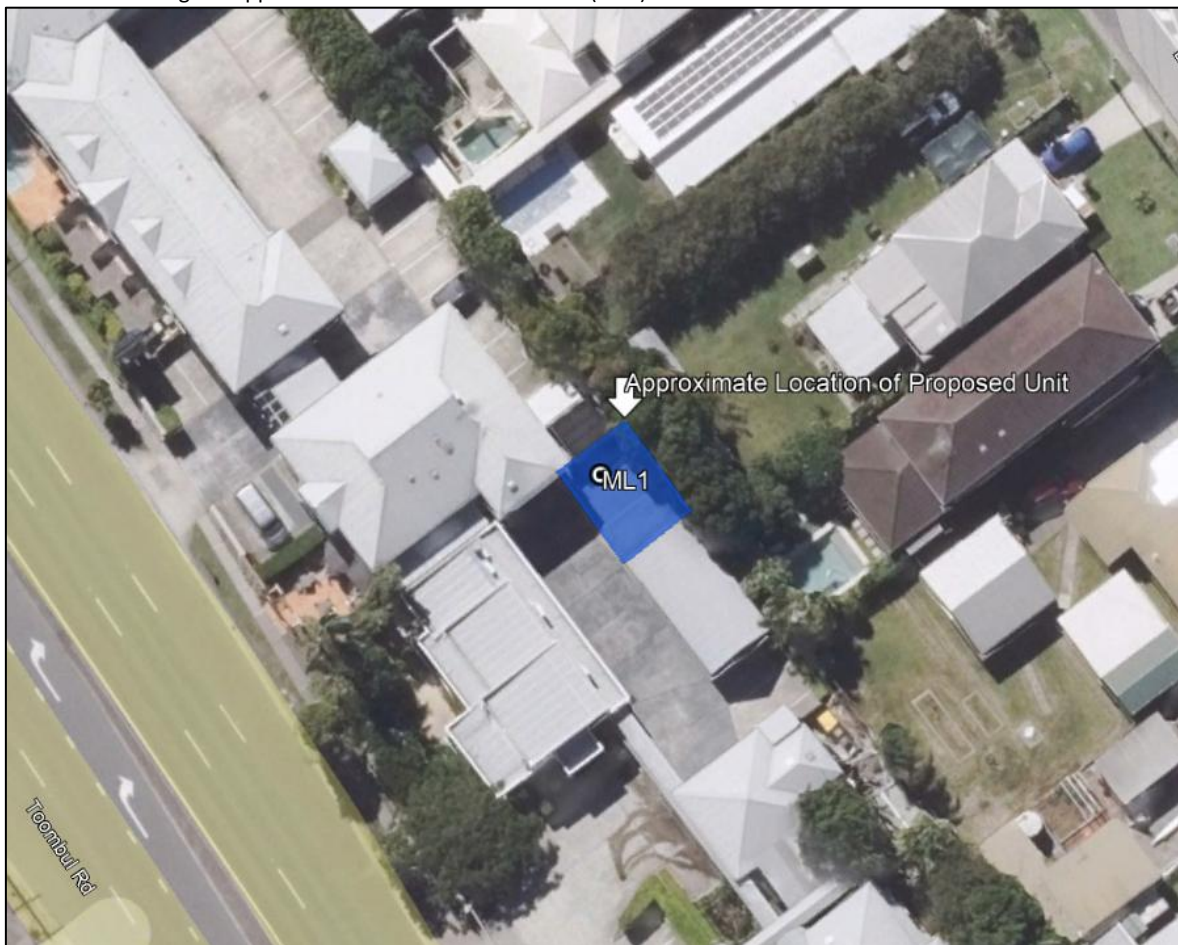
In order to assess the potential impact of noise, an ambient noise survey was conducted on the site. Sound levels were obtained between the 22<sup>nd</sup> and 28<sup>th</sup> April 2026. The location is referred to as measurement location ML1 in this report.

The microphone was located approximately 3m from the northeastern boundary, 1m from the existing shed to the northwest, and 1.5 meters above ground. The monitoring equipment was located within the building footprint of the proposed unit development. Existing noise levels at this location are indicative of levels at the location of the proposed unit. The location of the noise logger is illustrated in **Plate 2.1**.

Noise monitoring equipment was field calibrated before and after the measurement session and was found to be within 0.1 dB the reference signal. All instrumentation used in this assessment holds a current calibration certificate from a certified NATA calibration laboratory. The following instruments were used to measure the ambient noise levels -

- Larson Davis 831 Class 1 sound level meter;
- Larson Davis CAL200 Class 1 calibrator.

**Plate 2.1:** Showing the approximate measurement location (ML1).



## 2.2 Measurement Results

Ambient sound pressure levels were measured generally in accordance with Australian Standard AS1055:2018 *Acoustics-Description and measurement of environmental noise*. Ambient noise levels were recorded at 15-minute intervals between the 22<sup>nd</sup> and 28<sup>th</sup> of April 2026 and are presented graphically in **Figure 2.1** on the following page. Levels are presented in tabular format in **Table 2.1** below.

**Table 2.1:** Average ambient levels measured at ML1 Thursday 23<sup>rd</sup> April 2026. Levels are in dB(A) free-field

Time	LA(01)	LA(10)	LA(90)	LAeq
Day 7am to 6pm	66.0	58.2	51.8	56.7
Evening 6pm to 10pm	64.3	56.8	52.4	56.9
Night 10pm to 7am	64.9	51.8	43.6	51.6
Day max 1-hr				59.3
Night max 1-hr (night to 7am)				56.9
CoRTN 6am to 12pm		57.1	50.8	
24 hour	65.9			55.4

The levels presented above include noise measured from all sources, including any existing industrial activity, Toombul Road, accommodation activity from within the motel, meteorology and other local sources of noise. Extraneous noise from nearby plant within the motel complex was identified by audio on each weekday from approximately 3pm-8pm. Road traffic noise from Toombul Road was the dominant source of noise within the locality.

Rain events were recorded from the 25<sup>th</sup> to the 28<sup>th</sup> of April and data has been excluded from assessment accordingly. Weather data from the Bureau of meteorology is presented in **Table 2.2** below.

**Table 2.2:** Brisbane Weather data April 2026 (Source: Bureau of Meteorology)

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9:00 AM					3:00 PM						
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C				mm	mm	hours	km/h	local	°C	%	g <sup>th</sup>	km/h	hPa	°C	%	g <sup>th</sup>	km/h	hPa
22	We	15	27	0	7.4	8.8	ESE	24	15:40	22	56	1	SSW	4	1023	25.4	49	2	ESE	11	1020
23	Th	16	27	0	5	9.2	ESE	30	15:55	21.9	55	7	S	9	1024	24.9	44	7	SE	11	1022
24	Fr	17	26	0	5	7.3	E	33	12:41	22.3	57	1	SSW	9	1026	20.2	75	7	SSE	7	1025
25	Sa	16	21	6	4.2	1.3	SE	22	16:12	19.4	83	7	SSW	6	1026	19.4	85	7	Calm		1024
26	Su	16	24	11.8	1.8	5.4	SE	30	10:59	17.9	87	7	S	4	1023	24.1	61	2	SE	9	1019
27	Mo	17	24	6.8	3.6	4.5	ESE	31	14:33	21	78	3	SW	7	1022	19	86	8	Calm		1021
28	Tu	15	24	7.4	2	6.1	SSW	24	10:32	19.7	73	6	S	6	1024	22.8	64	3	E	9	1021

The façade adjusted night time noise levels are 59.4dB(A) which may be rounded to 60dB(A). Daytime noise levels are 61.8dB(A) which may be rounded to 62dB(A). These levels include all noise within the vicinity including extraneous noise.

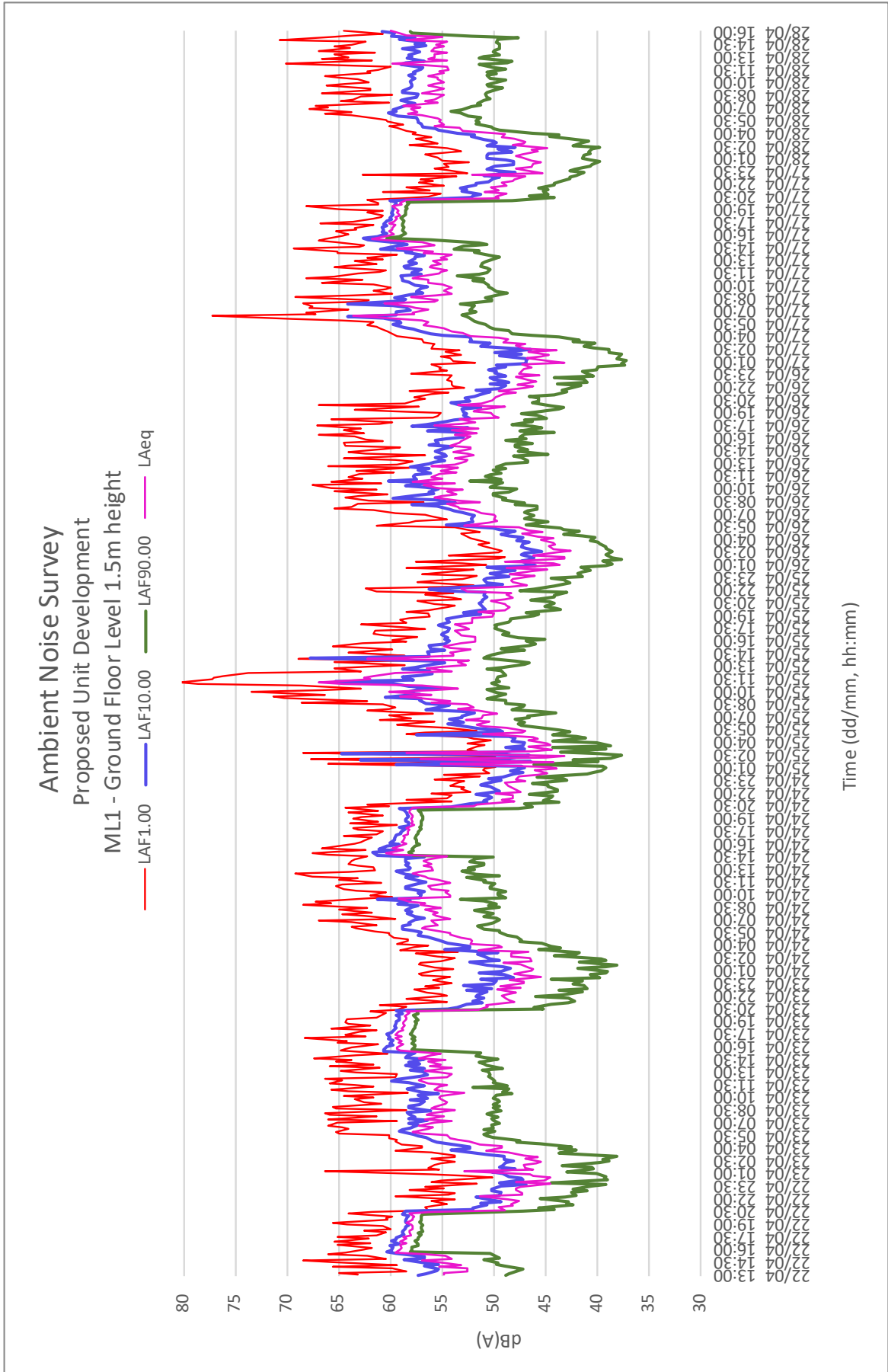


Figure 2.1: Ambient noise levels at ML1, April 2026. Levels are in dB(A) free field.

### 3. Noise Criteria and Limits

#### 3.1 Brisbane City Plan 2014 – Industrial Amenity Overlay Code

The City Plan 2014 Industrial amenity overlay code provides acoustic criteria to assess the suitability of the proposed development, and is summarized (in part) below.

**Table 3.1:** Industrial amenity overlay code (Table 8.2.13.3.A—Performance outcomes and acceptable outcomes, in part).

Performance Outcome	Acceptable Outcome
<p><b>PO3</b></p> <p>Development is located, designed and constructed to achieve the noise (planning) criteria in Table 8.2.13.3.E to protect the development from adverse noise impacts.</p> <p>Note—A noise impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.</p>	<p><b>AO3</b></p> <p>Development for a sensitive use is located no closer than:</p> <p>a) 150m to a medium impact industry A or sewage treatment plant;</p> <p>b) 250m to a medium impact industry B, waste transfer station or landfill;</p> <p>c) 500m to a high impact industry or special industry.</p>

**Table 3.2:** Industrial amenity overlay code (Table 8.2.13.3.E—Noise (planning) criteria, in part).

Table 8.2.13.3.E—Noise (planning) criteria				
Location where the criteria applies inside a sensitive use	Adjusted equivalent continuous sound pressure level ( $L_{Aeq,adj,T}$ ) to be achieved during day, evening and night-time periods			Maximum sound pressure level ( $L_{Amax}$ ) to be achieved during the night-time period
	Day 7am–6pm $L_{Aeq,adj,11hr}$	Evening 6pm–10pm $L_{Aeq,adj,4hr}$	Night 10pm–7am $L_{Aeq,adj,9hr}$	Night 10pm–7am
Sleeping areas	35dB(A)	35dB(A)	30dB(A)	45dB(A)
Other habitable rooms	35dB(A)	35dB(A)	35dB(A)	-
Low frequency noise criteria for specified sources				
Noise intrusion into habitable rooms	60dB(C)	60dB(C)	Sleeping areas: 55dB(C) Other habitable rooms: 60dB(C)	N/A

No specified low frequency noise sources have been identified from nearby industrial activities, and C weighting criteria are therefore not applicable. The most stringent nighttime criteria from sleeping areas of 30dB(A) inside a sensitive use have been adopted and assessed in **Section 4** following.

### 3.2 Environmental Protection Act 1994 (Informative)

---

State requirements are set out under the *Environmental Protection Act 1994*; in that Act noise from air conditioning (and similar plant) must not exceed the following noise levels when measured as the  $L_{A90}$  dB(A) level over a period of 15 minutes at an affected building:

- Between 10pm and 7am: 3 dB(A) above the background level
- From 7am to 10pm: 5 dB(A) above the background level

It is recommended that mechanical plant be appropriately sited and maintained to ensure compliance with EPA criteria at all times. Detailed plant noise assessment can be conducted – if required – at the Building Approval stage once plant specifications can be determined.

## 4. Noise Impact Assessment

### 4.1 Industry Amenity Assessment

The design methodology for achieving internal room levels is sought from Australian Standard *AS3671:1989 Acoustics-Road traffic noise intrusion-Building siting and construction* and Australian Standard *AS2107 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors*. Noise levels encompassing both road traffic noise and any existing industrial activity were recorded at the location of the proposed unit development and a façade adjusted external  $L_{Aeq}$  level of **60dB(A) (nighttime highest 1 hour)** is adopted, as set out in **Section 2** of this Report.

The most stringent nighttime criteria from the Industrial Amenity Overlay Code noise planning criteria of  $L_{Aeq}$  **30dB(A)** within sleeping areas, inside a sensitive use, have been adopted and assessed following. The calculated  $R_w$  requirements for building elements for the proposed unit development are present in **Table 4.1** below.

**Table 4.1:** Calculated  $R_w$  requirements for building elements.

Element	Facing	External $L_{eq}$ dB(A)*	BCC Internal criteria $L_{eq}$ dB(A)	TNR	Element Area (Sc)	Floor Area (Sf)	Calc STC/ $R_w$
FG x 2	S	60	30	30	2.6	21.0	<b>33</b>
DH	S	60	30	30	1.3	21.0	<b>30</b>
D-01	S	60	30	30	1.9	21.0	<b>31</b>
Walls	-	60	30	30	14	21.0	<b>40</b>
Ceiling/ Roof	-	60	30	30	1.0	21.0	<b>33</b>

\*façade adjusted external level

Notes to Table ES1:

- $STC = TNAc + 6$  (allowance for road traffic noise)
- $TNAc = TNR + 10\log_{10}[(Sc/Sf) \times (3/H) \times 2RT60 \times C]$
- TNR is the façade corrected outdoor vs indoor criteria
- TNAc is the noise attenuation required of the component
- $RT60 = 0.6$  seconds is set as a nominal reverb time for bedrooms.
- $H = 2.8m$  (room height)
- $C = 3$

It is noted that levels during the day are 2dB(A) higher than the highest night time hour, but the criteria is 5dB(A) more lenient, so assessment to daytime noise levels and criteria would yield a design  $\sim R_w3$  lower than the night-time noise.

The building construction methods in this Report are referenced to the traffic noise standard, AS3671 and are considered an appropriate application for mitigating any potential existing industrial noise from the nearby SC5 zone. Further design guidance is presented in **Appendix B** for reference. The development site is located across from Toombul Road, a six-lane arterial road located directly adjacent to the proposed development site, though the proposed unit location is well screened from Toombul Road and the industrial zone by existing buildings and structures from the existing hotel at the front of the development site.

During attended measurements and post processing of audio files, industrial noise did not appear to be audible. Instead, local sources of noise were dominant, including but not limited to, road traffic noise from Toombul Road and plant and mechanical from the existing hotel. The additional noise sources within the locality are not understood to be assessable and not within the scope of this Report; nevertheless, they will be mitigated through the resulting design recommendations, as presented above.

## 5. Conclusions and Recommendations

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It is concluded that-

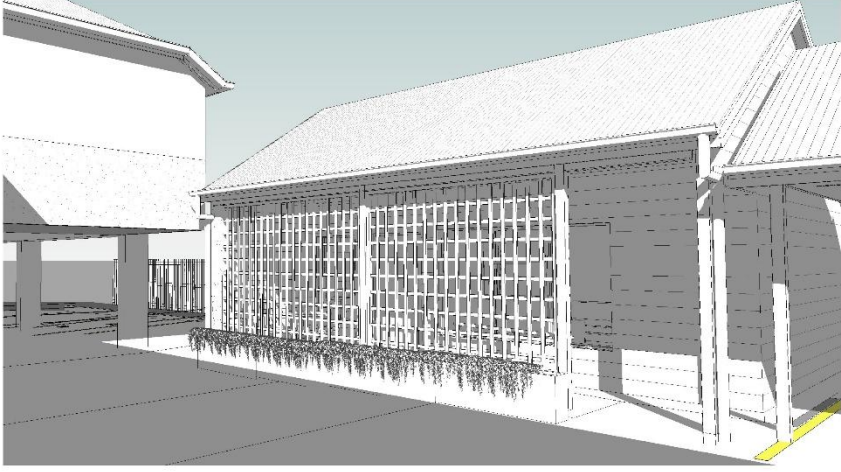
- Subject to the recommendations set out in this Report, it is the opinion of this consultancy that the proposed development can meet the requirements of Brisbane City Council and be otherwise compliant with relevant regulatory requirements.
- The development site is exposed to low levels of industrial noise and is well screened from nearby industrial uses by buildings and structures within the existing hotel.
- The building can be constructed to achieve the interior noise amenity and minimum indicative STC / Rw values as set out in Brisbane City Plan 2014 Industry Amenity Overlay Code - Noise Planning Criteria.

It is recommended that-

- The proposed single unit development be designed and constructed to achieve the Design Rw requirements presented in **Table 4.1** and **Section 4.1** of this Report.

# Appendix A: Development Plans


## ADDITIONS & ALTERATIONS KENLYNN PROPERTY GROUP



### DESIGN DRAWINGS 186 TOOMBUL RD. NORTHGATE

PRELIMINARY - NOT FOR CONSTRUCTION

1300 133 917  
info@mercury-design.com



**All new work to be carried out in accordance with workplace health & safety act, regulations, advisory standards and with the relevant Australian standards as a minimum level of amenity - these will include but are not limited to:**

- PLUMBING - AS 3500 (2005)
- WATER PROOFING - AS 3740 (2010)
- ELECTRICAL - AS 3000 (2007)
- TIMBER - AS 1684 (2006), AS 1720 (2010) & AS 4440 (2004)
- TERMITE MANAGEMENT - AS 3663 (2014)
- STEEL STRUCTURES - AS 4100 (1998) & AS 4600 (2005)
- CONCRETE & MASONRY - AS 3600 (2009) & AS 3700 (2007)
- DEMOLITION - AS 2601 (2001) & AS 2870 (1996)
- STRUCTURAL DESIGN - AS 1750 (2007)
- ACCESS & MOBILITY - AS 1428 (2009) & AS 1735 (2003)
- WINDOWS & GLASS - AS 2047 (1999) & AS 1288 (2006)
- AIR CONDITIONING - AS 1469 (2005)
- FIRE DETECTION - AS 1670 (2004)
- ROOF SAFETY - AS 4994 (2009)
- PARKING - AS 2890 (2009)
- BUILDING INSPECTIONS - AS 4349 (2007)
- QUALITY MANAGEMENT - AS 18 90.3 (2006)

**DESIGNER**  
**MERCURY DESIGN**  
Benjamin Hennig  
PHONE: 1300 133 917  
EMAIL: info@mercury-design.com  
ADDRESS: 7 Chermida Street, Tenneville, QLD 4005

**STRUCTURAL ENGINEER**

PHONE:  
EMAIL:  
ADDRESS:

**HYDRAULIC ENGINEER**

PHONE:  
EMAIL:  
ADDRESS:

**CIVIL ENGINEER**

PHONE:  
EMAIL:  
ADDRESS:

**LANDSCAPE ARCHITECT**

PHONE:  
EMAIL:  
ADDRESS:

**CHEMIST**

PHONE:  
EMAIL:  
ADDRESS:

**BUILDER**


PHONE:  
EMAIL:  
ADDRESS:

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NO.	DATE	DESCRIPTION	BY
01	20/02/2024	Project Design	JH
02	08/03/2024	Revision 1	JH
03	15/04/2024	Revision 2	JH
04	20/04/2024	Revision 3	JH
05	10/05/2024	Revision 4	JH
06	14/06/2024	Revision 5	JH
07	14/10/2025	Revision 6	JH
08	14/10/2025	Revision 7	JH
09	14/10/2025	Revision 8	JH
10	14/10/2025	Revision 9	JH
11	14/10/2025	Revision 10	JH
12	05/12/2025	Revision 11	JH
13	05/12/2025	Revision 12	JH


**DRAWING LIST**

01	COVER SHEET
02	PROJECT INFORMATION
03	EXISTING SITE PLAN
04	PROPOSED SITE PLAN
05	CIRCULATED FLOOR PLAN
06	ROOF PLAN
07	ELEVATIONS
08	ELEVATIONS
09	SECTIONS
10	Unnamed
11	Unnamed
12	GENERAL NOTES
13	WORKPLACE HEALTH & SAFETY
14	SUSTAINABILITY NOTES

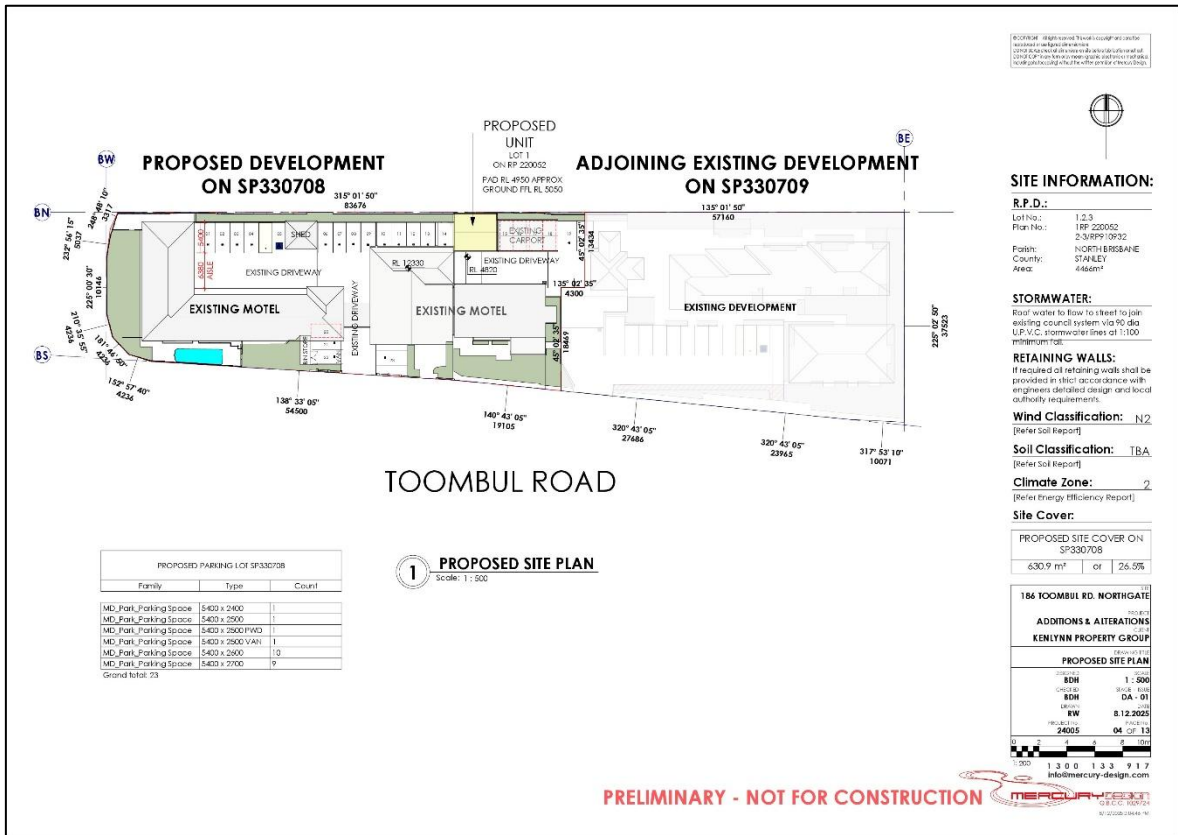
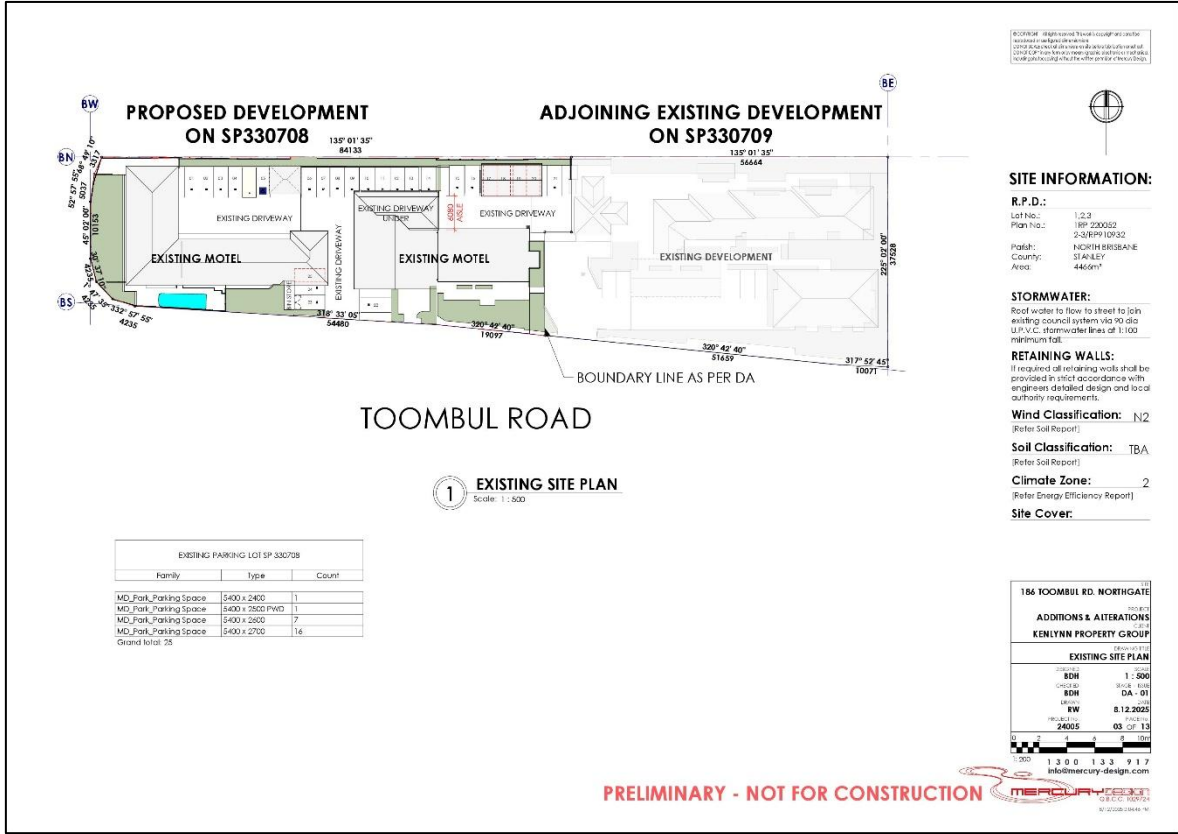


**1 LOCATION PLAN**  
Scale: 1 : 2000

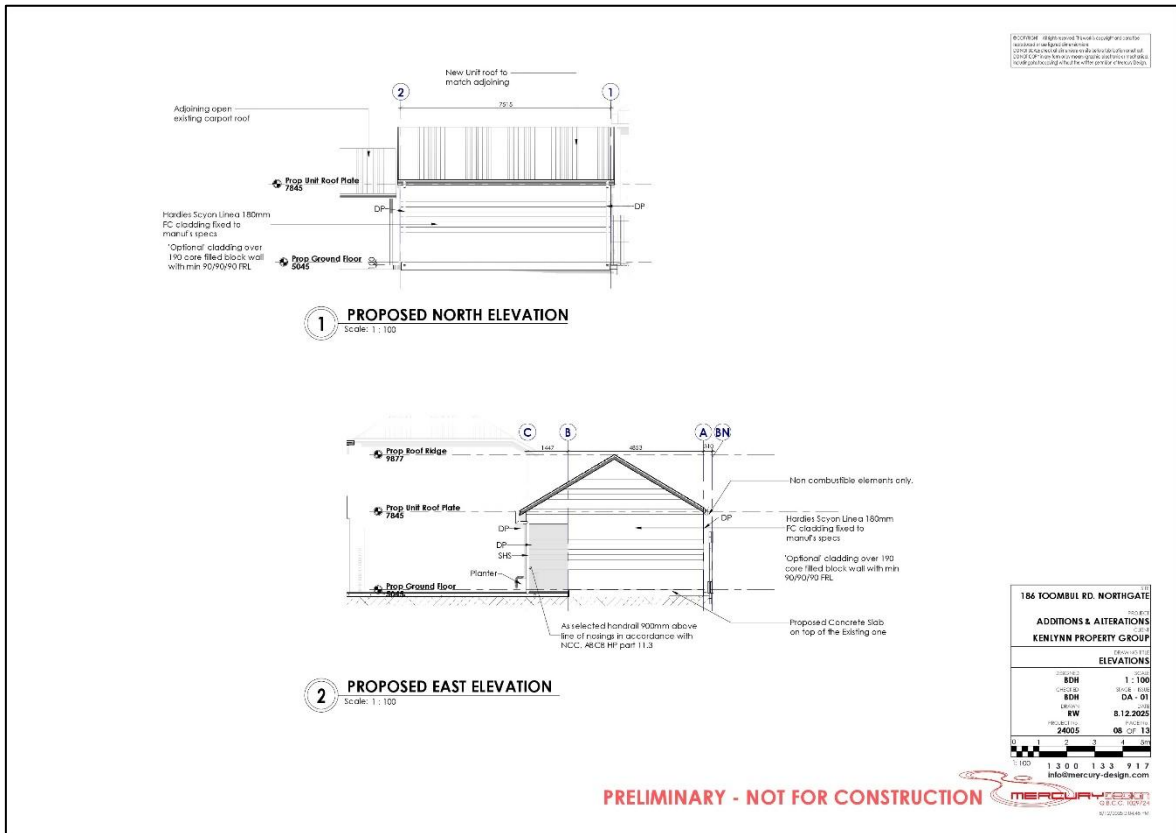
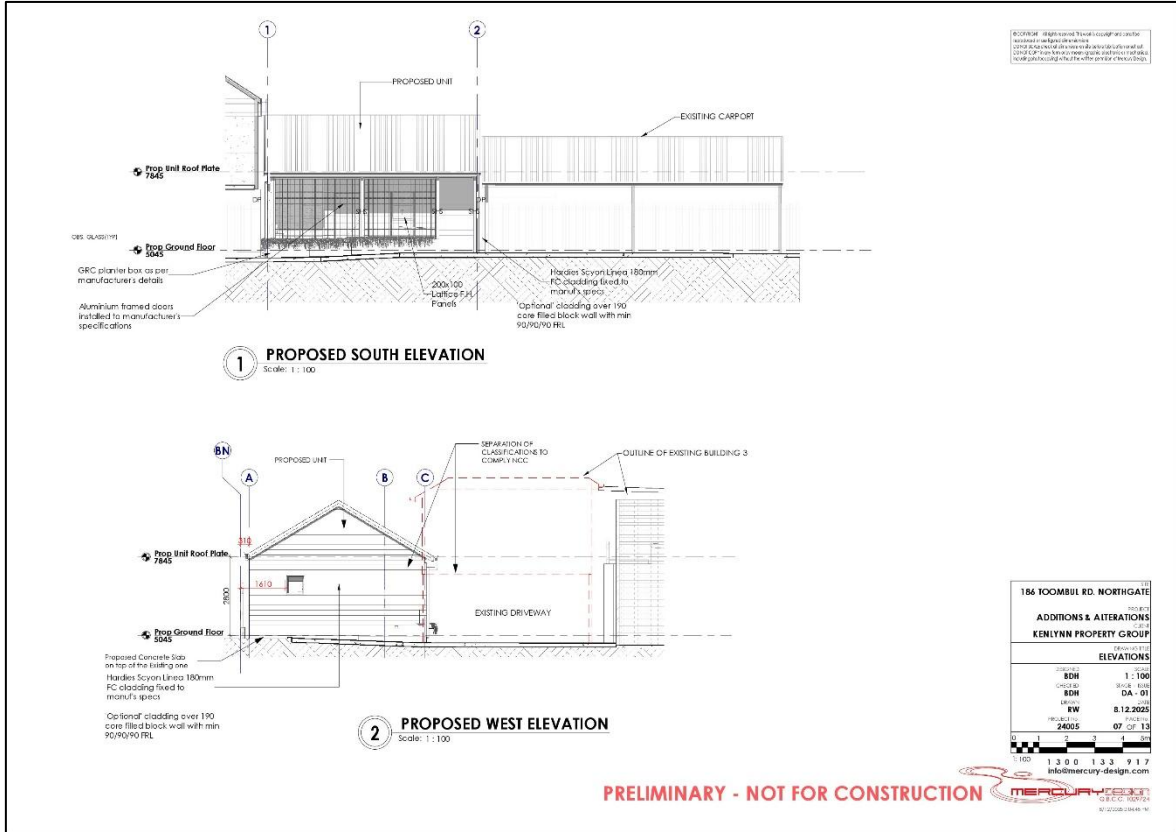
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info@mercury-design.com

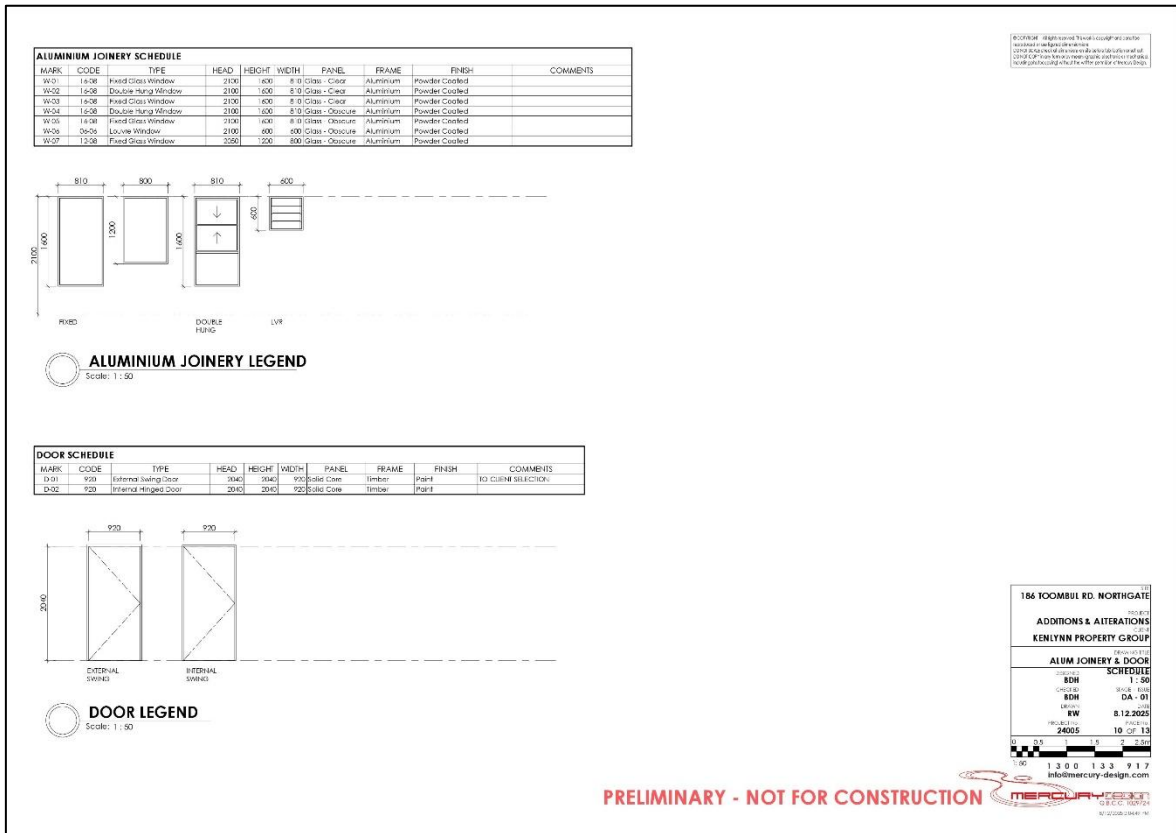
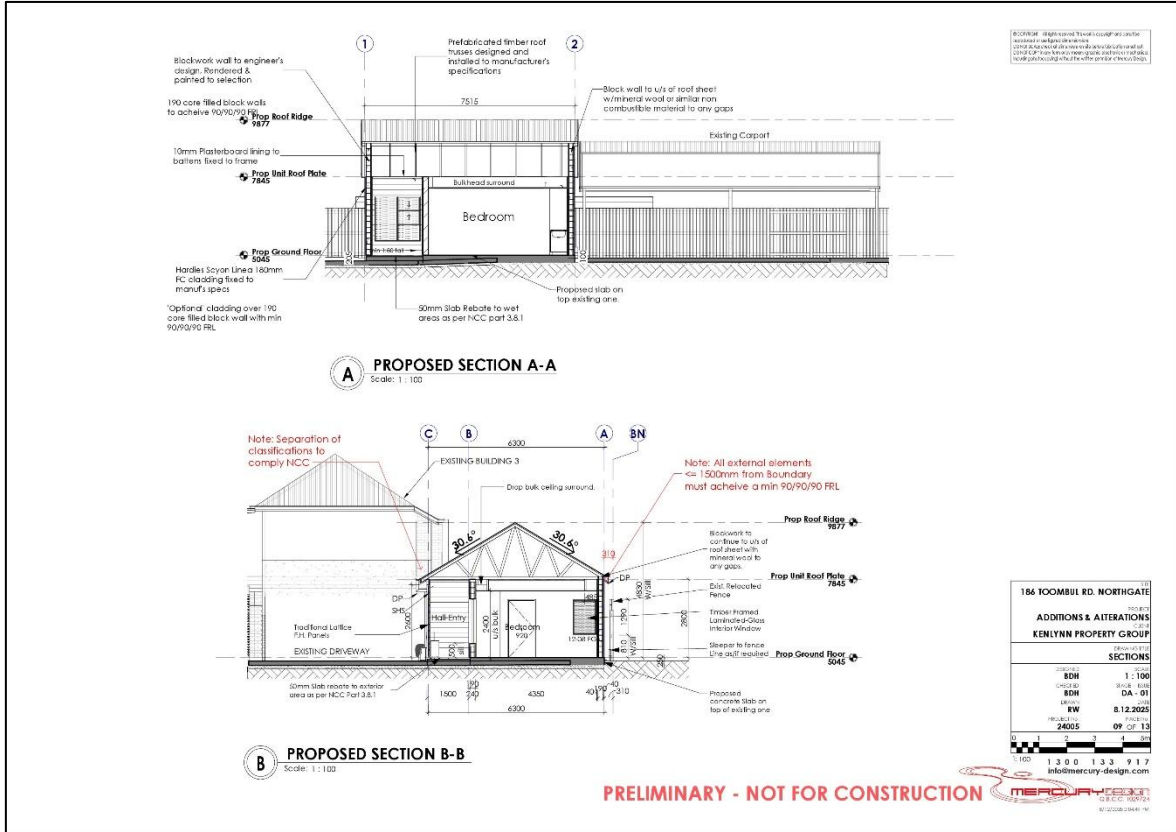


PRELIMINARY - NOT FOR CONSTRUCTION









## Appendix B: Construction Design Guidance

AS3671-1989 *Acoustics-Road traffic noise intrusion-Building siting and construction* provides guidance on the location and construction of new buildings near major roads. The scope of AS3671 states that it concerns the reduction of road traffic noise and provides guidelines for determining the type of building construction necessary to achieve acceptable noise levels indoors, as recommended by AS2107.

The Australian Building Code refers to the weighted sound reduction index (Rw). This is calculated in much the same way as the “older” STC value and for traffic noise reduction is considered to be the same. Both STC and Rw values are based upon laboratory performance of materials and construction. Various research organisations and manufacturers report that the field performance of systems can be lower than laboratory performance. (Loss of performance has been reported as being 2 to 6 Rw STC / Rw units.)

Appropriate building construction elements for ceiling/roof systems, external walls, windows and doors are described in Appendix B of AS3671. Some manufacturers have independent NATA acoustic test reports of their products. **Tables C1 to C4** present some of the more common elements from AS3671. **Table C5** presents some common commercial products.

**Table C1:** Ceiling / Roof Systems.

Item	Rw or STC range	Description of construction
1	33 to 35	Pitched roof clad with tiles, or 0.5 mm corrugated galvanized iron or 6 mm corrugated cellulose-cement over 10 mm gypsum plasterboard.
2	33 to 35	Flat 0.6 mm galvanized steel trough roofing, attached to the same timber framework and about 150 mm above, the same ceilings as in Item 1.
3	36 to 38	As for Items 1 and 2, but with ceiling of 2 layers of gypsum plasterboard
4	36 to 38	Pitched tile roof and ceiling as for Item 1, plus 2-sided aluminium foil over rafters
5	39 to 41	As for Item 1, plus 50 mm thick 12 kg/m <sup>3</sup> glass fibre blanket between ceiling joists
6	39 to 41	As for Item 2, plus 75 mm thick 85 kg/m <sup>3</sup> mineral wool batts, or 100 mm thick 45 kg/m <sup>3</sup> cellulose fibre fluff between ceiling joists
8	42 to 44	Pitched roof clad with tiles, or 0.5 mm corrugated galvanized iron or 6 mm corrugated cellulose-cement over 10 mm gypsum plasterboard plus 75 mm thick 85 kg/m <sup>3</sup> mineral wool batts between ceiling joists
9	45 to 47	Pitched roof clad with tiles, or 0.5 mm corrugated galvanized iron or 6 mm corrugated cellulose-cement over 10 mm gypsum plasterboard plus 100 mm thick 45 kg/m <sup>3</sup> cellulose fibre fluff between ceiling joists

**Table C2:** External walls.

Item	Rw or STC range	Description of construction
1	33 to 35	Conventional timber stud-framed walls, clad externally with 9 mm thick timber or hardboards or flat cellulose-cement sheets, and internally with 10 mm thick plasterboard or 6 mm thick hardboard.
2	36 to 38	As for Item 1, plus cavity filled with mineral wool, or weatherboards backed by 12 mm thick wood fibreboard.
3	36 to 38	Cellulose board on one side and 10 mm plasterboard on the other side of 100 mm x 50 mm timber studs, overall thickness 115 mm, surface density 39 kg/m <sup>3</sup>
4	39 to 41	Conventional brick veneer construction, in which the wall space is ventilated by connection with sub-floor vents; upper part of internal wall sheeting is exposed to and penetrated by upper wall vents leading to the eaves space.
6	45 to 47	Single skin, 150 mm thick masonry of hollow dense concrete blocks, mortar joints laid to prevent moisture bridging

8	48 to 50	Single leaf wall of 230 mm x 110 mm x 76 mm rendered 13 mm both sides, overall thickness 140 mm, surface density 230 kg/m <sup>2</sup>
9	48 to 50	Poured dense concrete 100 mm thick
12	54 to 56	Brick veneer wall of 110 mm bricks, 100 mm x 50 mm studs and 10 mm plasterboard, 50 mm glass fibre insulation, overall thickness 270 mm, surface density 259 kg/m <sup>2</sup>

**Table C3:** Windows.

Item	Rw or STC range	Description of construction
1	24 to 26	6 mm horizontal sliding - openable
2	27 to 29	3 mm single glazed - fixed
3	30 to 32	7.5 mm + 6 mm at 13 mm in horizontally pivoted aluminium sash - openable; 3 mm or 4 mm or 6 mm single glazed - fixed
4	33 to 35	6 mm + 5 mm at 70 mm in horizontally pivoted aluminium sash - openable; 10 mm single glazed - fixed
5	36 to 38	10 mm laminated with metallic film in aluminium frame - fixed
6	39 to 41	5 mm + 6 mm at 44 mm rollover aluminium sash - openable; 5 mm + 10 mm at 25 mm double glazed - fixed

**Table C4:** Doors.

Item	Rw or STC range	Description of construction
1	15	Hollow core plywood door, no gasket
2	20	Hollow core plywood door, rubber gasket around sides and top
3	27 to 29	Solid core 35 mm thick plywood doors, soft plastics gasket around sides and top and drop seal at base.
4	30 to 33	Solid core 42 mm thick plywood doors, soft plastics gasket around sides and top and drop seal at base.

**Table C5:** Examples of doors and windows from various manufacturers.

Item	Rw or STC range	Description of construction
1	19	Hopper window, 3 mm float
2	25	Sliding window, 4 mm float
3	28	Awning window, 4 mm float
4	29	Sliding window, 4 mm float with 'acoustic construction'
5	26	2 Panel sliding door, 6.38 mm laminated glass
6	33	2 Panel sliding door, 10.38 mm laminated glass & 'acoustic construction'
7	41	Secondary glazing 4.5 mm pane with 100 mm air gap

## Appendix C: Glossary

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### ***Event maximum sound pressure level (LA%,adj,T), L01***

The L01 level is calculated as the noise level equalled and exceeded for 1% of the measurement time, for example 9 seconds in any 15 minute interval. L01 is an appropriate level to characterise single events, such as from train bypass.

In this Report, the measured L01 levels for day/evening/night are not averaged but are arranged from low to high in the relevant day/evening/night interval and the value that is found at the 90th percentile (L10 of L01 sample) in the interval is recorded as its "L01" level.

### ***Average maximum sound pressure level (LA%,adj, T), L10***

The "L10" level is an indicator of "steady-state" noise or intrusive noise conditions from traffic, music and other relatively non-impulsive noise sources. The L10 level is calculated as the noise level equalled and exceeded for 10% the measurement time, for example 90 seconds in any 15 minute interval. The measured L10 time-intervals for day/evening/night are arithmetically averaged to present the "average maximum" levels of the environment for day/evening/night. The level can be adjusted for tonality or impulsiveness.

### ***Background sound pressure level (LA90,T), L90***

Commonly called the "L90" or "background" level and is an indicator of the quietest times of day, evening or night. The L90 level is calculated as the noise level equalled and exceeded for 90% the measurement time. The measured L90 time-intervals are arithmetically averaged to present the "average background" levels of the environment for day/evening/night. The level is recorded in the absence of any noise under investigation. The level is not adjusted for tonality or impulsiveness.

### ***Equivalent Continuous or time average sound pressure level (LAeq,T), Leq***

Commonly called the "Leq" level it is the logarithmic average noise level from all sources far and near. The maximum 1-hour levels within the day/evening/night-time intervals are referenced for building design. The level can be adjusted for tonality.

### ***Façade-adjusted level***

A sound level that is measured at a distance of 1.0 metre from a wall or facade. The level is nominally 2.5 dB higher than the free-field level.

### ***Free-field level***

A sound level that is measured at a distance of more than 3.5 metres from a wall or facade.