AURA DEVELOPMENT – PRECINCT 18 AURA LAKES

Bells Creek Arterial Road, Caloundra South QLD 4551

Road Traffic Noise Assessment

Stockland

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

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1. INTRODUCTION

Trinity Consultants Australia (Trinity) has been commissioned by Stockland Development Pty Ltd to provide a road traffic noise assessment for part of Precinct 18 of the Aura residential development (Aura Lakes), located within the Caloundra South Priority Development Area (PDA).

It is proposed to develop Aura Precincts 17 to 19 on the southern side of the CAMCOS corridor, between the Bruce Highway and the Bells Creek Arterial. This report focuses on Precinct 18 and identifying measures to noise levels generated by the Bell's Creek Arterial Road, sub-arterial road and trunk connector road.

The report addresses a future scenario which examines the impact of the roads using ultimate traffic projections, being horizon of 10 years from the completion of development. The barriers have been designed against these road traffic levels.

The purpose of this report is as follows:

- Outline the relevant project noise criteria.
- Predict and assess the road traffic noise impact onto Precinct 18.
- Describe noise mitigation requirements for Interim and Future scenarios as discussed above.

To aid in the understanding of the terms in this report, a glossary is included in **Appendix A**.

1.1 Information Requests

Economic Development Queensland (EDQ) reviewed report 217401.0141.R02V03, dated 26 July 2024, and subsequently issued PDA decision notice (Ref Number: DEV2023/1458/6, dated 13 February 2025), with additional noise related requirements (specifically, Condition 22).

Table 1.1 presents a copy of the information request items, followed by a summary response and reference to relevant report sections.

Table 1.1: Ministry of Economic Development Queensland Information Request (February 2025) and Summary Response

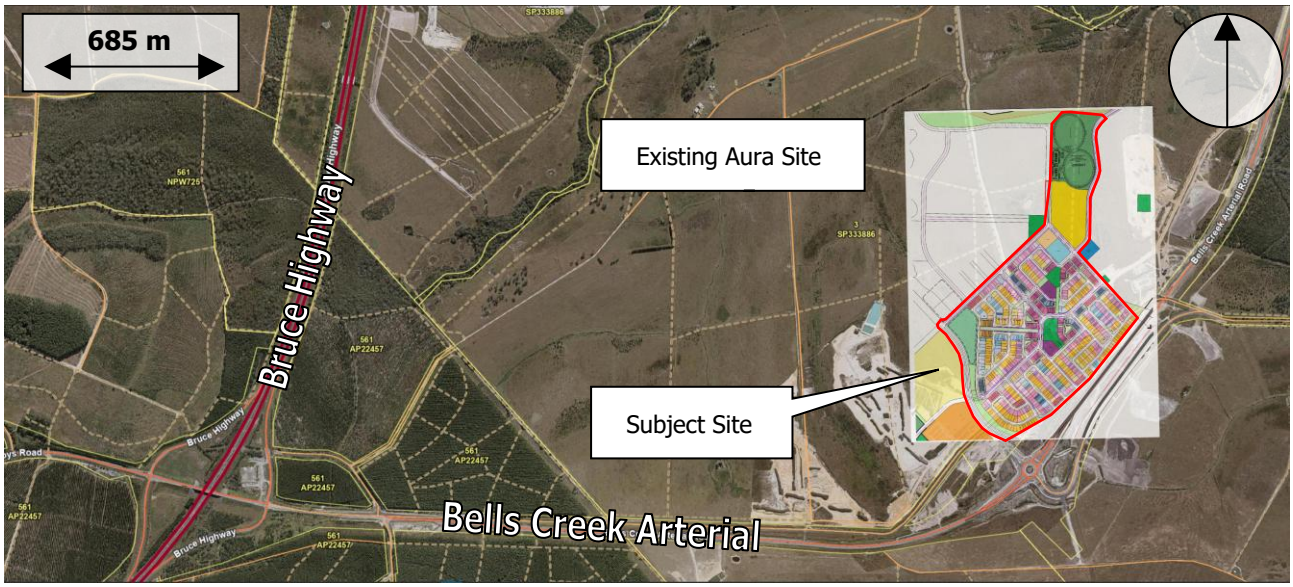
Information Request Item	Summary Response
Condition 22	**Timing:** Prior to commencement of any site works, excluding bulk earthworks not related to this RoL.
Road Traffic Noise Assessment – Compliance Assessment Submit to EDQ DA for Compliance Assessment an amended Road Traffic Noise Assessment, certified by a suitably qualified person,	
a) Noise attenuation measures to achieve the noise criteria set out in State Development Assessment Provisions (SDAP) State Code 1 – PO38.	Road traffic noise assessment was updated. Predicted noise levels with proposed noise barriers comply with the noise criteria set out in State Development Assessment Provisions (SDAP) State Code 1 – PO38
b) Clearly identify the earthworks levels of the proposed subdivision used in the noise modelling and provide a copy of the earthworks plans.	Cut and fill earthworks plan is provided in **Appendix E**.
c) Detail the pad levels for the proposed lots.	Provided in **Appendix B.**
d) Provide an additional scenario in the report which models the interchange of Bells Creek Arterial and Sub-Arterial 3A based on the ultimate interchange design and include traffic volumes on the interchange.	An additional scenario is provided in **Section 5.**

Information Request Item		Summary Response
e)	Apply planning horizon of 10 years on the Bells Creek Arterial from the completion of the development, based on the STIA traffic model.	10 year horizon road traffic volumes are provided in **Section 5.**
f)	Compliance with the free field noise criteria must be based on free field predictions.	Compliance with the free field noise criteria is assessed based on predicted free field noise levels. Receiver height was defined as 1.5 m from pad levels.
g)	Identify all locations that will be impacted by Noise Category 1 or higher, where the QDC MP4.4 will apply. All noise contour plots must be extended to clearly show the full extent of Noise Category 1 and above.	Locations impacted by Noise Category 1 or higher, where the QDC MP4.4, were identified in Appendix C figures. QDC MP4.4 noise category requirement, where applicable, for individual lots are tabulated in **Appendix D**. It is noted that the Appendix D MP4.4 categories take into consideration contribution from both Council and State-controlled roads. This is based on a Council requirement (i.e. where QDC MP4.4 is triggered by a State-controlled road, then calculate the category based on noise contribution from Council and State roads). For QDC MP4.4 categories based solely on State-controlled contribution, refer to **Figures C6** and **C7** for ground and first floor noise contours.
h)	Model the noise barrier opening at Lot 9015.	The noise barrier opening at Lot 9015 is modelled. Proposed noise barrier layout is provided in **Appendix C, Figure C4.1**
i)	Provide an updated Plan of Development that includes the necessary acoustic modifications required by this condition.	Provided in **Appendix B.**

2. STUDY AREA DESCRIPTION

The development is within the existing Aura estate and will form part of Caloundra South on the Sunshine Coast. The site location of Precinct 18 is shown in **Figure 2.1** (source: Queensland Globe).

Figure 2.1: Site Location



The site is currently vacant, and generally consists of cleared land.

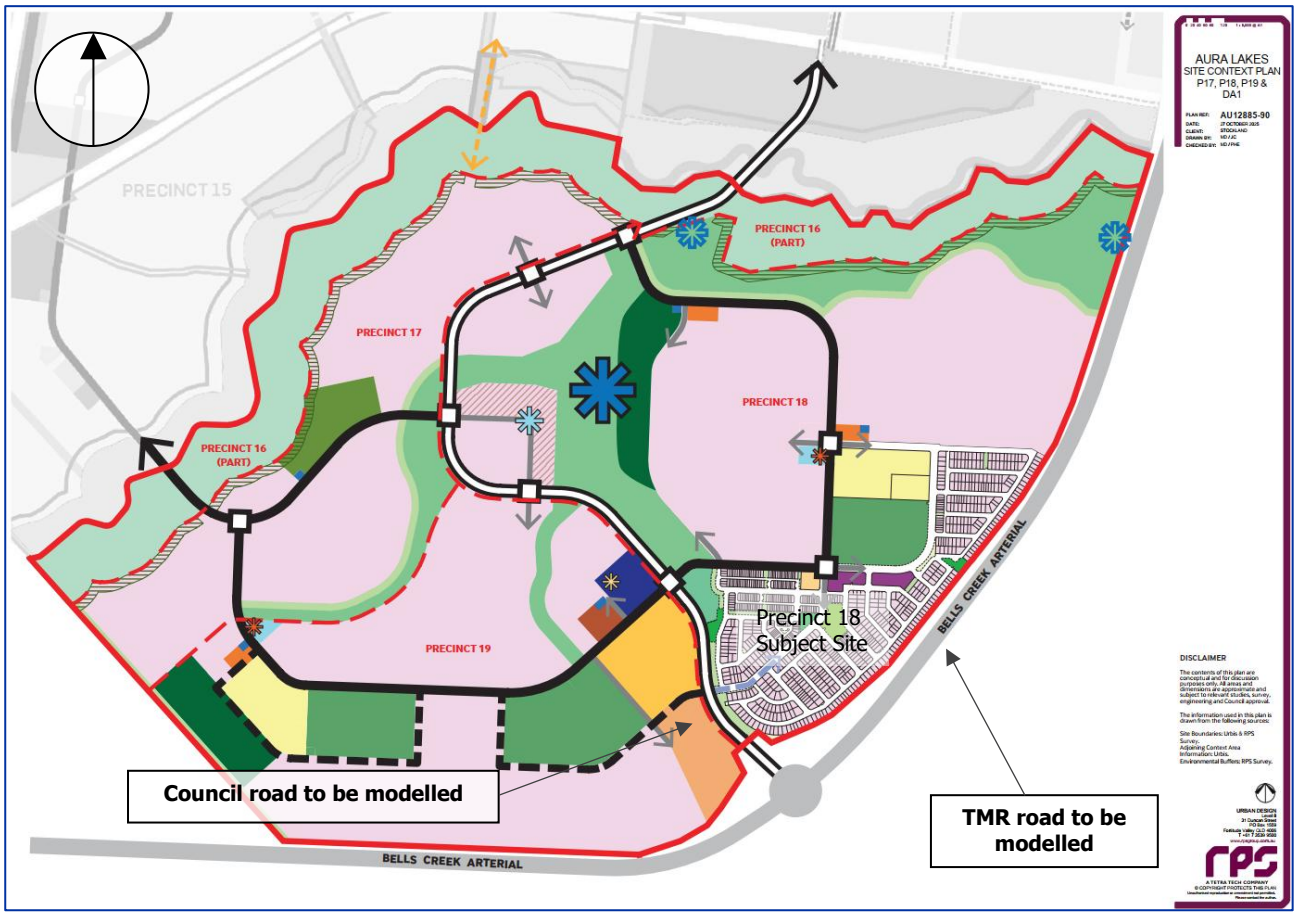
The proposed development is surrounded by the following uses (refer **Figure 2.1**):

- Existing and future development to the west and north.
- Bells Creek Arterial to the east and south.
- Internal major road to the south, between subject Precinct 18 and adjoining future Precinct 19.

The approved site for Precinct 18 is demarcated in solid red in **Figure 2.1** above.

As per the Caloundra South Structure Plan (**Figure 2.2**), Precinct 18 is located east of the other proposed precincts and connects Bells Creek Arterial to the surrounding precincts, i.e. 17 and 19. This assessment will consider the internal sub-arterial road and trunk connector roads (Council controlled), and Bells Creek Arterial (TMR controlled) shown in **Figure 2.2** below.

Figure 2.2: Caloundra South Structure Plan



3. PROPOSED DEVELOPMENT

The proposed Precinct 18 development includes the following components:

- Residential allotments of various sizes;
- Educational lots, including a school and child care;
- Park areas.

A full-size site layout is to be included in **Appendix B**.

4. NOISE CRITERIA

4.1 Overview

Acoustic criteria for the project are required to assess the impact of road traffic noise onto the various lots of the proposed development.

The acoustic assessment will be undertaken in accordance with the following relevant criteria:

- Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) State Assessment and Referral Agency (SARA) – State Development Assessment Provisions (SDAP).
- Department of Transport and Main Roads (TMR) – Road Traffic Noise Management: Code of Practice.
- Department of Housing and Public Works (HPW) – Queensland Development Code (QDC) Mandatory Part 4.4 (MP4.4) 'Buildings in transport noise corridors'.
- Department of Environment and Science (DES) – Environmental Protection Policy (Noise) and Environmental Protection Act.
- Sunshine Coast Council Planning Scheme 2014.
- Australian Standard AS/NZS 2107–2016: Acoustics— Recommended design sound levels and reverberation times for building interiors.

4.2 SARA SDAP: Development in a State-Controlled Road Environment

The development is subject to road traffic noise from the Bells Creek Arterial, which is a State-controlled Road. Acoustic criteria for the project will need to address noise intrusion into the development in accordance with 'Module 1: Community Amenity' of SDAP. The current version of the SDAP is v3.0, effective 18 February 2022.

The relevant performance outcomes and acceptable outcomes for developments in a state-controlled road or type 1 multi modal corridor environment are presented in **Table 4.1** and reference tables **Table 4.2, 4.3** and **4.4.**

Table 4.1: SDAP State Code 1 Performance and Acceptable Outcomes

Performance Outcomes	Acceptable Outcomes
Reconfiguring a lot	
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor	
PO37 Development minimises free field noise intrusion from a state-controlled road.	AO37.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020.

Performance Outcomes	Acceptable Outcomes
	OR AO37.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound. OR AO37.3 Development provides a solid gap-free fence or other solid gap-free structure along the full extent of the boundary closest to the state-controlled road.
Involving the creation of 6 or more new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor	
PO38 Reconfiguring a lot minimises free field noise intrusion from a state-controlled road.	AO38.1 Development provides noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.
Material change of use (accommodation activity)	
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor	
PO39 Development minimises noise intrusion from a state-controlled road in private open space.	AO39.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for private open space at the ground floor level; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013

Performance Outcomes	Acceptable Outcomes
	b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO39.2 Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for private open space by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.
PO40 Development (excluding a relevant residential building or relocated building) minimises noise intrusion from a state-controlled road in habitable rooms at the facade.	AO40.1 Development (excluding a relevant residential building or relocated building) provides a noise barrier or earth mound which is designed, sited and constructed: 1. to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms; 2. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO40.2 Development (excluding a relevant residential building or relocated building) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.
PO41 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.
Above ground floor level requirements (accommodation activity) adjacent to a state-controlled road or type 1 multi-modal corridor	
PO42 Balconies, podiums, and roof decks include: 1. a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia);	No acceptable outcome is provided.

Performance Outcomes	Acceptable Outcomes
2. highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.	
PO43 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.
Material change of use (other uses)	
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor	
PO44 Development: 1. provides a noise barrier or earth mound that is designed, sited and constructed: a. to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas; b. in accordance with: i. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; ii. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; iii. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 2. achieves the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	No acceptable outcome is provided.
PO45 Development involving a childcare centre or educational establishment: 1. provides a noise barrier or earth mound that is designed, sited and constructed: 2. to achieve the maximum building facade acoustic level in reference table 1 (item 1.2); 3. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013;	No acceptable outcome is provided.

Performance Outcomes	Acceptable Outcomes
b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 4. achieves the maximum building facade acoustic level in reference table 1 (item 1.2) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
PO46 Development involving: 1. indoor education areas and indoor play areas; or 2. sleeping rooms in a childcare centre; or 3. patient care areas in a hospital achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4)	No acceptable outcome is provided.
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor	
PO47 Development involving a childcare centre or educational establishment which have balconies, podiums or elevated outdoor play areas predicted to exceed the maximum free field acoustic level in reference table 2 (item 2.3) due to noise from a state-controlled road are provided with: 1. a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies or elevated outdoor play areas.	No acceptable outcome is provided.

Table 4.2: Reference Table 1 - Maximum Building Façade Acoustic Levels

Applicable use	Acoustic levels
1.1: Accommodation activity	a. ≤60 dB(A) L10 (18 hour) façade corrected (measured L90 (8 hour) free field between 10pm and 6am ≤40 dB(A)) OR b. ≤63 dB(A) L10 (18 hour) façade corrected (measured L90 (8 hour) free field between 10pm and 6am > 40 dB(A))
1.2: Childcare centre or educational establishment	≤58 dB(A) L10 (1 hour) façade corrected (maximum hour during normal opening hours)

Table 4.3: Reference Table 2 - Maximum free field acoustic levels

Applicable use	Acoustic levels
2.1: Private open space for residential lots 2.2: Private open space for an accommodation activity (including lots created for a future accommodation activity)	a. ≤57 dB(A) L10 (18 hour) free field (measured L90 (18 hour) free field between 6am and 12 midnight ≤45 dB(A)) OR b. ≤60 dB(A) L10 (18 hour) free field (measured L90 (18 hour) free field between 6am and 12 midnight >45 dB(A))
2.3: Outdoor education areas and outdoor play areas in a childcare centre or educational establishment	≤63 dB(A) L10 (12 hour) free field (between 6am and 6pm)

Table 4.4: Reference Table 3 - Maximum internal acoustic levels

Applicable use	Acoustic levels
3.1: Habitable rooms in an accommodation activity (excluding uses addressed in QDC MP4.4)	≤35 dB(A) Leq (1 hour) (maximum hour over 24 hours)
3.2: Indoor education areas and indoor play areas in a childcare centre or education establishment	
3.3: Sleeping rooms in a childcare centre	
3.4: Patient care areas in a hospital	

4.3 Queensland Development Code MP4.4

The Queensland Government has a number of mandatory codes that must be complied with at the building application stage for a home. These are referred to as Queensland Development Codes (QDC).

QDC Mandatory Part (MP) 4.4 relates to new buildings in transport noise corridors. This mandatory Code deals with buildings within residential developments close to gazetted roads and railways. MP 4.4 sets mandatory construction standards for new residential development, or additions to existing residential development, within a Transport Noise Corridor.

The noise level categories extend out to 57 dBA $L_{10(18\ hour)}$ for road traffic noise. The road noise categories and corresponding noise levels from Schedule 3, Table 1 of MP4.4 as follows:

- Category 0: ≤ 57 dBA L_{10}(18 hour)
- Category 1: 58 – 62 dBA L_{10}(18 hour)
- Category 2: 63 – 67 dBA L_{10}(18 hour)
- Category 3: 68 – 72 dBA L_{10}(18 hour)
- Category 4: ≥ 73 dBA L_{10}(18 hour)

4.4 Sunshine Coast Council

On 14 April 2014 the Sunshine Coast Council (SCC) adopted the Sunshine Coast Planning Scheme 2014 and the associated planning scheme policies. The planning scheme and the planning scheme policies were gazetted on 2 May 2014 and commenced on 21 May 2014. The Sunshine Coast Planning Scheme 2014 replaces the Caloundra City Plan 2004 and Maroochydore City Plan 2000 planning schemes with one plan for the region.

With regards to the assessment of noise impacts, the relevant sections of the planning scheme are the Nuisance Code (Section 9.4.3) and the Planning Scheme Policy for the Nuisance Code (Section SC6.15). The

Nuisance Code presents Performance Outcomes and Acceptable Outcomes for assessable development for acoustic amenity and noise but does not specifically nominate noise limits or assessment criteria. The Planning Scheme Policy for the Nuisance Code provides guidance for the assessment of road and rail noise, live entertainment, amplified music and voices (patrons). The policy does not specify noise limits but references the following guidelines to achieve the nuisance code outcomes:

- Australian Standard AS/NZS2107–2000: Acoustics— Recommended design sound levels and reverberation times for building interiors. This document is superseded by the 2016 version.
- Department of Housing and Public Works (HPW) – Queensland Development Code (QDC) Mandatory Part 4.4 (MP4.4) 'Buildings in transport noise corridors'.
- Department of Environment and Science (DES) (formerly Department of Environment and Heritage Protection) – Environmental Protection Policy (Noise) and Environmental Protection Act.
- Department of Transport and Main Roads (TMR) – Road Traffic Noise Management: Code of Practice.

On 29th September 2014 Council advised that at the present time, road traffic noise intrusion into buildings should still be assessed against the criteria previously applied by Caloundra City Council and Maroochy Shire Council. Caloundra City Council and Maroochy Shire Council specified an external building facade limit of 63 dBA L_{10}(18 hour) (façade corrected) on residential land. For those instances where this external noise limit was predicted to be exceeded, the internal noise levels within habitable rooms were required to be designed to meet the recommended design sound levels stated in Table 1 of AS/NZS 2107-2016 entitled "Acoustics - Recommended design sound levels and reverberation times for building interiors".

On 10th March 2021 Council provided advice on their recommended approach to assessing allotments or residences affected by transport noise from both State and Council roads. The approach is outlined as follows:

- Where the noise from the State controlled road/s is of a sufficient level to trigger QDC MP4.4 (i.e. 58 dBA L_{10}(18 hour) or higher) at a building façade, then determine the MP4.4 categories for the building facades based on the total noise from all (State and Council) roads;
- Where the noise from the State controlled road/s is not of a sufficient level to trigger QDC MP4.4 (i.e. 57 dBA L_{10}(18 hour) or lower), but the noise from all (State and Council) roads is greater than 63 dBA L_{10}(18 hour) (i.e. the Council traffic noise limit) then determine the building requirements using AS3671 and AS2107 based on the noise from all (State & Council) roads; and
- Where the noise from the State controlled road/s is not of a sufficient level to trigger QDC MP4.4 (i.e. 57 dBA L_{10}(18 hour) or lower), and the noise from all (State and Council) roads is not greater than 63 dBA L_{10}(18 hour) (i.e. the Council traffic noise limit) then no building upgrades are required. Note: If a room has multiple facades and requires AS3671/AS2107 assessment, as per dot point above, then the overall room is assessed per that method.

4.5 Australian Standard AS 2107:2016

For road traffic noise, Council recommends the most applicable assessment methodology would be the application of indoor noise levels specified in AS 2107:2016 "Acoustics - Recommended design sound levels and reverberation times for building interiors" (AS 2107). AS 2107 lists recommended internal noise levels for various building and room types, including residential bedrooms and other areas. For development near major and minor roads, the recommended design levels are as listed in **Table 4.3**.

Table 4.5: Recommended Internal Noise Levels from AS 2107:2106

Road Type	Type of Occupancy / Activity	Design Sound Level L_{eq} dBA
Minor Road	Living areas	30 to 40
	Sleeping areas	30 to 35
	Work areas	35 to 40
Major Road	Living areas	35 to 45
	Sleeping areas	35 to 40
	Work areas	35 to 45

4.6 Summary and Noise Limits

Based on the noise criteria prescribed by SDAP and Sunshine Coast Council, the road traffic noise criteria nominated for the development are as follows:

- Road traffic noise – Bells Creek Arterial (State controlled road):
  - Residential lots:
    - At 1m outside buildings 63 dBA L_{10}(18 hour) including façade reflection.
    - For outdoor recreation areas 60 dBA L_{10}(18 hour) excluding façade reflection.
    - Application of MP4.4 to achieve acceptable internal noise levels.
  - Childcare centres and educational establishments:
    - At 1m outside buildings 58 dBA L_{10}(1 hour) including façade reflection for maximum hour during normal opening hours.
    - For outdoor recreation areas 63 dBA L_{10}(12 hour) excluding façade reflection.
    - L_{eq}(1 hour) 35 dBA for maximum hour during normal opening hours in indoor education areas and indoor play areas.
- Road traffic noise – Internal sub-arterial and collector roads (Council controlled roads):
  - Residential lots:
    - External facade noise limit: 63 dBA L_{10}(18 hour) (facade corrected).
    - Internal noise limit (if external limit exceeded): internal design noise levels from AS/NZS 2107:2016, specifically:
      - 35 dBA L_{eq}(1 hour) for bedrooms in residences.
      - 40 dBA L_{eq}(1 hour) for other habitable rooms in residences.
- Road traffic noise from both State and Council controlled roads – follow the process in **Section 4.4**.

5. ROAD TRAFFIC NOISE ASSESSMENT

5.1 Overview

For the purposes of the assessment, predictions were undertaken in accordance with the methodology described in the United Kingdom, Department of Transport (1988) procedure, Calculation of Road Traffic Noise (CoRTN). CoRTN is commonly adopted in Australia for the assessment of road traffic noise impacts and has been subject to scientific studies to determine its performance in Queensland conditions (see Section 4.3.2.1 of the TMR Code of Practice).

The calculation method considers the influence of various elements of the road design including traffic flows, traffic fleet composition, road gradient, acoustic shielding by other buildings and elevations, and road surface type. The method predicts L_{10}(18hour) noise level which is the arithmetic average of the hourly noise levels exceeded 10% of the time between the hours of 6:00 am and midnight.

The SoundPLAN 8.2 computer model has been used to undertake the noise predictions in accordance with the CoRTN methodology. The following sections discuss the modelling inputs, assumptions and results.

5.2 Model Input Data

5.2.1 Traffic Data

Two different scenarios were modelled, being a future traffic scenario with a roundabout and a future traffic scenario with a conceptual overpass design as an expected ultimate interchange design. Conceptual design geometry for the overpass was provided by Stantec on 20th November 2025.

Modelled traffic volumes are detailed in following sections.

5.2.1.1 Future Traffic Volumes - Roundabout

Traffic volumes were provided by Stockland for 10 year horizon from the completion of the development. The data provided in **Table 5.1** relates to the road segments shown in **Figure 5.1** and **Figure 5.2**.

Table 5.1: Year 2035 Traffic Data

Segment	Road / Section	Year 2035 Traffic Volumes	
		AADT	18 hours (6am to midnight)
A1	Bells Creek (Arterial) Road – northbound, north of roundabout	27,822	26,153
A2	Bells Creek (Arterial) Road – southbound, north of roundabout	33,090	31,105
E1	Bells Creek (Arterial) Road – northbound, south of roundabout	22,626	21,268
E2	Bells Creek (Arterial) Road – southbound, south of roundabout	26,550	24,957
B1	Sub-arterial Road - eastbound	11,478	10,789
B2	Sub-arterial Road - eastbound	10,134	9,526
B3	Sub-arterial Road - eastbound	10,134	9,526
B4	Sub-arterial Road - westbound	12,864	12,092
B5	Sub-arterial Road – westbound	6,882	6,469
B6	Sub-arterial Road – westbound	6,882	6,469

Segment	Road / Section	Year 2035 Traffic Volumes	
		AADT	18 hours (6am to midnight)
C1	Trunk Connector – eastbound	2,940	2,764
C2	Trunk Connector – westbound	3,216	3,023
D1	Trunk Connector – northbound	990	931
D2	Trunk Connector – southbound	1,716	1,613

Figure 5.1: Modelled Road Sections

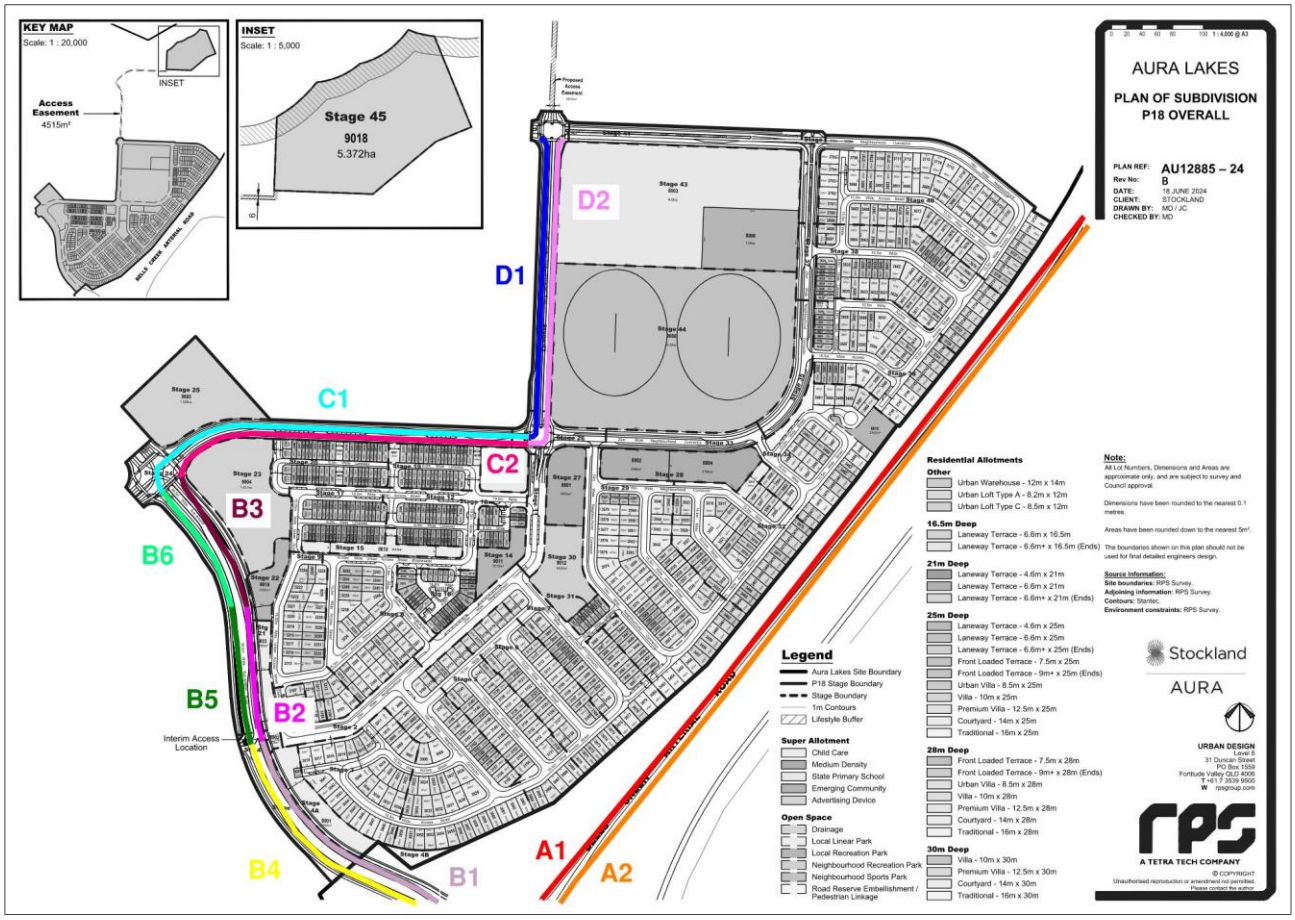
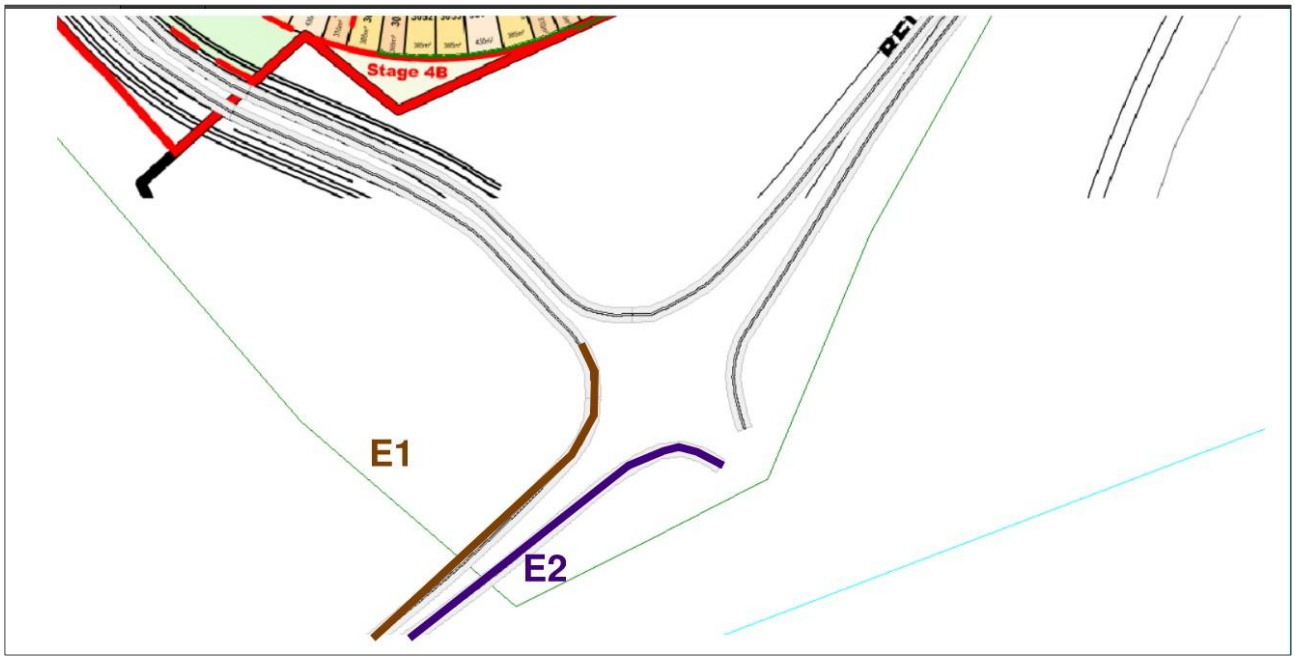


Figure 5.2: Modelled Road Sections (E1 and E2)



The following additional traffic and road assumptions have been applied to the modelling:

- 5% Heavy Vehicle (HV) fleet composition for internal roads and 5% for arterial roads
- 100 km/h along Bells Creek Arterial and 60 km/h along internal (sub-arterial) roads

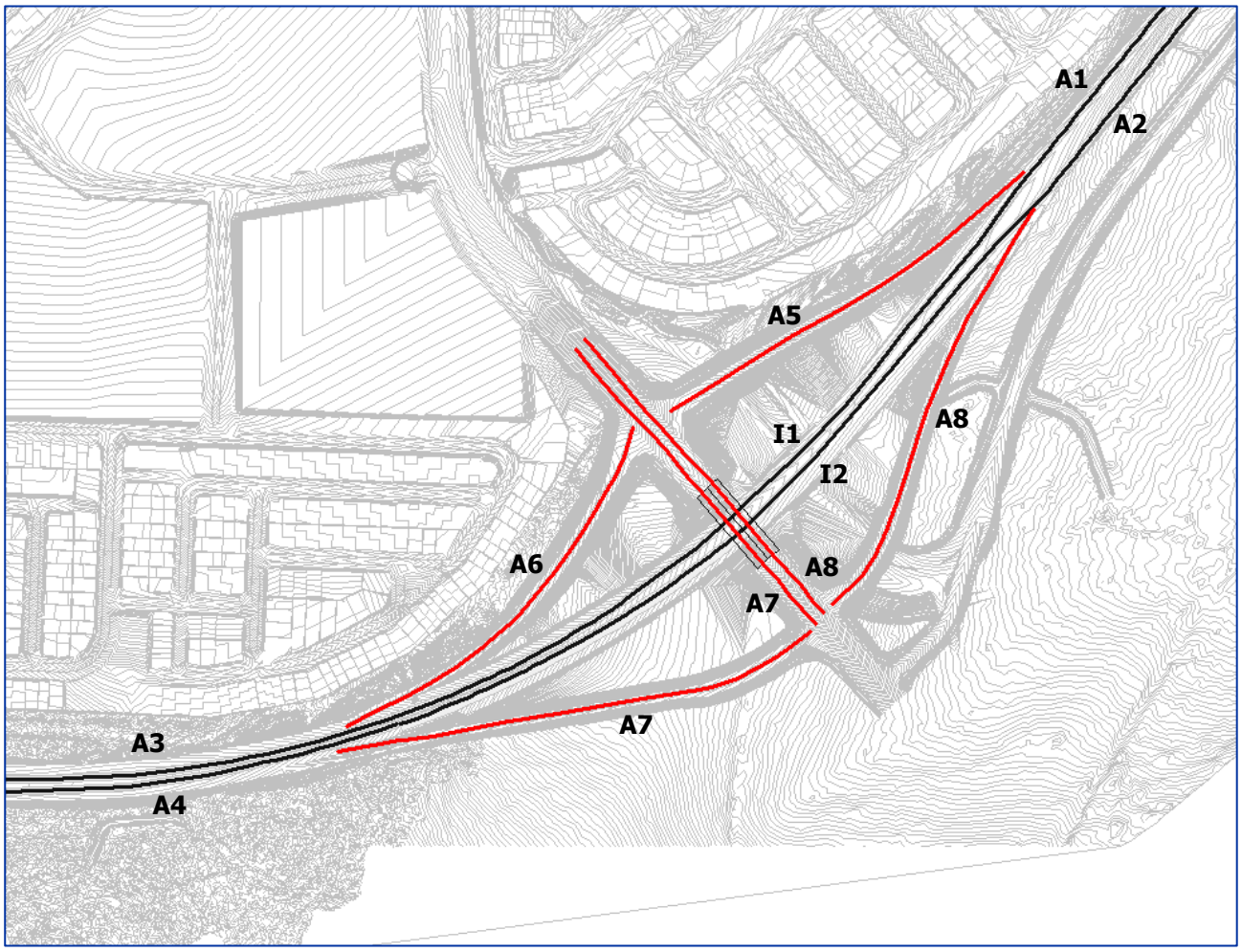
5.2.1.2 Future Traffic Volumes – Ultimate Over Pass

Traffic volumes were provided by Stockland for 10 year horizon from the completion of the development. The data provided in **Table 5.2** relates to the road segments shown in **Figure 5.1**.

Table 5.2: Year 2035 Traffic Data

Segment	Road / Section	Year 2035 Traffic Volumes			
		Direction	%HV	AADT	18 hours (6am to midnight)
A1	BCA (north of interchange)	NB	8.7	23,539	22,127
A2	BCA (north of interchange)	SB	8.2	26,301	24,723
I1	BCA (within interchange)	NB	11.7	16,804	15,796
I2	BCA (withing interchange)	SB	10.5	20,042	18,839
A3	BCA (south of interchange)	EB	9.5	22,147	20,818
A4	BCA (south of interchange)	WB	9.2	24,925	23,430
A5	NB entry ramp	NB	1.0	6,735	6,331
A6	NB exit ramp	NB	2.6	5,343	5,022
A7	SB entry ramp and bridge	SB	3.5	4,882	4,589
A8	SB exit ramp and bridge	SB	0.6	6,258	5,883

Figure 5.3: Modelled Road Sections



5.2.2 Other Model Data

In addition to traffic flow data given above, the following assumptions and inputs were considered:

- Noise source height of 0.5m as per CoRTN methodology.
- Road surface corrections:
  - Bells Creek (Arterial) Road: 0 dBA for Dense Graded Asphalt
  - Internal (Sub-arterial) Road: 0 dBA for Dense Graded Asphalt.
- Ground absorption of 0.6, i.e. moderately absorptive, in model except for roads which are fully reflective.
- Ground contours for the site and the surrounding area were obtained from Stantec on 06/11/2023.
- Receiver heights for the proposed lots were 1.8m above ground for ground floors and 4.6 m for the first floors.
- A +2.5 dBA facade reflection allowance is included in the noise level predictions at a facade.
- A - 1.7 dBA façade and – 0.7 dBA free-field calibration factor regarding CoRTN accuracy for Queensland Conditions (as presented in Section 4.3.2.1 of the TMR Code of Practice).

5.3 Future Scenario Predictions (Existing Roundabout Interchange)

5.3.1 Without Noise Barriers

Predicted noise level contours are shown in **Appendix C**, as summarised below:

- **Figure C.1** – State-controlled road only (outdoor free-field noise levels)
- **Figure C.2** – State-controlled road only (ground level façade noise levels)
- **Figure C.3** – State-controlled road only (first floor façade noise levels)
- **Figure C.8** – All roads (ground level façade noise levels)
- **Figure C.9** – All roads (first floor façade noise levels).

From these contour results it can be seen that a large number of lots are subject to elevated noise levels, particularly along the eastern boundaries of the site, which are closest to the Bells Creek Arterial road. Based on these results, noise barriers are proposed.

5.3.2 With Noise Barriers

Noise barriers ranging from a relative height of 2.0 m up to 3.6 m are proposed as follows (Refer **Figure C.4** and **Figure 4.1** for opening detail at Lot 9015). Predicted noise level contours with are shown in **Appendix C**, as summarised below:

- **Figure C.5** – State-controlled road only (outdoor free-field noise levels)
- **Figure C.6** – State-controlled road only (ground level façade noise levels)
- **Figure C.7** – State-controlled road only (first floor façade noise levels)
- **Figure C.10** – All roads (ground level façade noise levels)
- **Figure C.11** – All roads (first floor façade noise levels).

From these results it can be seen that predicted compliance with the SDAP 60 dBA free-field limit and 63 dBA façade limit is achieved with regards to noise impacts from the Bells Creek Arterial road (State-controlled).

It should be noted that private open spaces were assumed to be located at the front of (or north/west side of) houses from Lots 3064 to 3080, 3453 to 3485, 3723 to 3749 and 3767 to 3773. This building and open space siting will need to be designated as a requirement for future owners, as imposed through the relevant planning/development instruments.

The POD states the following:

> [4] Where a lot adjoins the BCA Acoustic Fence and the private open space area is proposed to be at the front or side of the property, the rear setback may be reduced down to 1.5m at ground floor and 3.0m at first floor (see diagrams below).

The siting of the open space at the front of the property will need to be set as a minimum requirement.

Furthermore, Stockland requested that the extent of the noise barriers be increased further east along the southern side of the precinct, from Lot 3051 to Lot 3018 inclusive, to reduce the acoustic construction requirements for residential buildings on these lots (generally from Cat 2 down to Cat 1).

Acoustic-rated construction material requirements are required to meet QDC MP4.4 requirements. These requirements are discussed in **Section 5.6**.

5.3.3 Non-Residential Receivers

Based on the plans, non-residential receivers (such as educational facilities) are located towards the norther-eastern end of the site furthest from the main roads, including:

- Lot 8000 – Child care
- Lot 8003 – State primary school

As per the SDAP Code 1 requirements (see **Section 4.2**), the noise criteria for childcare and educational developments are as follows:

- Façade criteria – $L_{A10,1\text{-hour}}$ 58 dBA
- Free-field criteria for outdoor areas – 63 dBA $L_{A10,12\text{-hour}}$ (6 am to 6 pm)

Table 5.2 presents predicted State-controlled road traffic noise levels at Lots 8000 and 8003.

Table 5.3: Predicted Noise Levels at Childcare and Community Lots

Lot	Predicted $L_{A10,1hr}$ Façade-Corrected Noise Level dBA[a]	Predicted $L_{A10,12hr}$ Free-field Noise Level dBA[b]
8000 – Child care	63	61
8003 – State primary school	62	60
Noise Criteria	**58**	**63**

Note a: + 3 dBA correction to $L_{A10,18\text{-hr}}$ (based on peak 1-hour movements being conservatively up to 10% of AADT)
Note b: $L_{A10,12hr}$ (free-field) = 1.02 x $L_{A10,18\text{-hr}}$ + 0.3 – 0.7 (for QLD calibration)[1]

The results of the modelling show compliance with the outdoor $L_{A10,12\text{-hr}}$ limit, but exceedances of the $L_{A10,1}$-hr façade limit. The modelling is noted to be conservative by locating receptors along the boundary of the lots closest to the Bells Creek Arterial Road and excluding future buildings that would shielded noise from the road.

An exceedance of the façade noise limit is predicted at the boundary by up to 5 dBA and assuming no shielding from future buildings. With potential two-storey buildings providing shielding, at least 5 dBA attenuation would be expected. In any case, boundary acoustic barriers could be located along the affected lot boundaries to mitigate noise impacts. The layouts of the child care and school can also be optimised to mitigation noise impacts from the road. Noise impact study should be revisited once detail designs for the childcare and the school available.

5.4 Future Scenario Predictions (With Ultimate Overpass Design)

A road traffic noise assessment was undertaken for the proposed ultimate overpass at the intersection of the Bell Creek Arterial and the Sub-Arterial Road. The purpose of this assessment was to determine the extent to which the overpass would alter the applicable QDC MP4.4 noise categories following the installation of the noise barriers based on the scenario with the roundabout.

5.4.1 With Noise Barriers

Noise barriers ranging from a relative height of 2.0 m up to 3.6 m are considered as follows (Refer **Figure C.4** and **Figure C4.1** for opening detail at Lot 9015). Predicted noise level contours with are shown in **Appendix C**, as summarised below:

- **Figure C.12** – State-controlled road only (outdoor free-field noise levels)
- **Figure C.13** – State-controlled road only (ground level façade noise levels)
- **Figure C.14** – State-controlled road only (first floor façade noise levels)

[1] Naish, D., Tan, A., & Demirbilek, F., A review of traffic noise indicators and their correlation with the LA10(18hour), Paper Number 6, Proceedings of ACOUSTICS 2011.

From these results it can be seen that predicted compliance with the SDAP 60 dBA free-field limit and 63 dBA façade limit is achieved with regards to noise impacts from the Bells Creek Arterial road (State-controlled).

Assuming the ultimate overpass would be constructed after proposed residential lots occupied, predicted QDC MP4.4 requirements were also compared with predicted construction categories for the scenario with the existing roundabout. Increases in QDC MP4.4 categories at the following residential lots were predicted:

- Lot 3648 F1, from Category 1 to 2
- Lot 3758 F1, from Category 1 to 2
- Lot 3759 F1, from Category 1 to 2
- Lot 3760 F1, from Category 1 to 2
- Lot 3761 F1, from Category 1 to 2

A detailed review of the modelling results indicates that these lots are located in the northern portion of the development (far away from interchange) and only a minor increase in noise levels (0.6-0.9 dBA) pushes the category 1 into the higher category 2. There maybe some small differences in the model closer to these lots, such as imported digital terrain model, which influences the noise levels at this northern end.

The noise category at many other lots (127 lots) are noted to decrease by a category. This appears to be due to differences in traffic projections for the existing roundabout vs interchange scenarios.

Acoustic-rated construction material requirements are required to meet QDC MP4.4 requirements. These requirements are discussed in **Section 5.6**.

5.5 Barrier Construction Requirements

The barrier adjacent to Bells Creek Arterial will need to comply with TMR barrier requirements detailed in the following documents:

- TMR Specification MRTS15 Noise Fences (March 2019)
- TMR Road Traffic Noise Management Code of Practice Volume 1 (2013)

5.6 Building Construction Requirements

5.6.1 Overview

Acoustic requirements for building construction differ for residences adjacent to the State-controlled Bells Creek Arterial versus the Council-controlled Sub-Arterial. The requirements are summarised as follows:

- QDC MP4.4 requirements apply to the **cyan** area outlined in **Figure C11** of **Appendix C**.
- Design and construction to AS2107 and AS3671 to the **blue** area outlined in **Figure C.10** (ground floor) and **Figure C.11** (first floor) of **Appendix C**. As per Council provisions, this area is outside the QDC MP4.4 zone but noise levels exceed the 63 dBA limit, therefore AS 2107/3671 requirements apply.

Appendix D also identifies the required acoustic requirements for each lot. These categories take into consideration the existing roundabout scenario results only (with contribution from both Council and State-controlled roads).

5.6.2 QDC MP4.4 Requirements

Lots requiring treatment under MP4.4 lie within the area bounded by the cyan line and road as seen in **Figure C.10** (ground floor) and **C.11** (first floor) in **Appendix C**. This cyan (blue) line reflects the extent of where MP4.4 criteria is assumed to be applicable.

It is noted that the QDC MP4.4 noise area is not yet defined on the Queensland Government State Planning Policy Interactive Mapping System. However, based on the current mapping, the QDC MP4.4 extends 250

metres from major roads with similar traffic volumes to Bells Creek Arterial Road. Therefore, it is assumed that QDC MP4.4 requirements will only extend 250 metres from the Bells Creek Arterial Road.

From the table in **Appendix D** it can be seen that MP4.4 Categories 0 to 4 will apply to the residences. Further site-specific noise assessments can be conducted for houses in Category 1 to 4 lots with the aim of reducing the requirements taking into account building design and layout.

In accordance with MP4.4, the construction requirements are to be either (i) using construction materials nominated in MP4.4; or (ii) using construction materials and methods that meet the minimum acoustic rating (Rw) requirements in MP4.4, based on the manufacturer's specifications.

Acoustic certification is required to be provided by the window/door supplier. The certification is to be based on acoustic testing of the overall window/door system (i.e. testing of the frame, glass and seals as proposed to be installed).

5.6.3 Council AS2107 Requirements

The residential areas subject to AS2107 criteria requirements by the Sunshine Coast Council are those subject to noise levels in excess of 63 dBA L_{10}(18hour) but outside the QDC MP4.4 area (i.e. **blue** area outlined in **Figures C.10** and **C.11**).

These affected residences are to be designed to AS2107 internal noise levels based on the methods of AS3671.

5.6.4 General

Achieving the target noise reductions across a building façade requires construction details to be of an appropriate acoustic standard and that all exterior openings are to be closed when these habitable rooms are occupied. Therefore, an air-conditioning/mechanical ventilation system that does not degrade the internal acoustic environment or the building envelope's sound isolation and meets the ventilation requirements of the Building Code of Australia may need to be installed.

6. RECOMMENDATIONS AND CONCLUSION

A road noise assessment has been conducted for the Lots within Precinct 18 of the Aura development. The results and recommendations of the assessment are as follows:

- Road traffic noise from the Bells Creek Arterial and local Council roads have been assessed within this report.
- Info request (Condition 22) from the Ministry of Economic Development Queensland (Ref Number: DEV2023/1458/6, dated 13 February 2025) has been addressed in **Section 1.1**.
- Road traffic volumes were provided by Stockland for a 10-year planning horizon from the completion of the development. Two future scenarios were modelled: one with a roundabout and another with an ultimate overpass interchange design. **Table 5.1** and **Table 5.2** present the traffic volumes for each scenario, including AADT and 18-hour counts for all relevant road segments (Bells Creek Arterial, Sub-arterial, and trunk connector roads), while **Figures 5.1** to **5.3** illustrate the modelled road sections.
- In order to achieve compliance with the SDAP 60 dBA free-field and 63 dBA façade-corrected noise levels at ground level, the barriers identified in **Figure C.4** are predicted to be required. These barriers range from 2.0 m at the southern end of the site and up to 3.6 metres at the northern end of the site. It is not proposed to build a barrier to protect first floors as the required height would likely be considered aesthetically unacceptable.
  - Furthermore, private open spaces were assumed to be located behind houses (not between noise barriers and houses) from Lots 3064 to 3080, 3453 to 3485, 3723 to 3749 and 3767 to 3773, the siting of the open space at the front of the property will need to be set as a minimum requirement.
- Assuming the ultimate overpass would be constructed after proposed residential lots occupied, predicted QDC MP4.4 requirements were also compared with ones predicted for the scenario with roundabout. The compliance status with free-field and façade-corrected criteria is similar to the existing roundabout scenario. There are some changes to MP4.4 noise categories (mainly reductions) due to changes in traffic volumes.
- Acoustic requirements for building construction differ for residences adjacent to the State-controlled Bells Creek Arterial versus the Council-controlled Sub-Arterial. The requirements are summarised as follows:
  - QDC MP4.4 construction requirements apply to the cyan area[2] outlined in **Figure C10** and **Figure C11** of **Appendix C**.
  - Design and construction to AS2107 and AS3671 to the **blue** area outlined in **Figure C.10** (ground floor) and **Figure C.11** (first floor) of **Appendix C**. Design according to AS 2107 and AS 3671 will require detailed assessment based on the proposed layout of the house.

[2] It is noted that the State Mapping has not been updated to identify the extent of the QDC MP4.4 noise corridor along Bells Creek Arterial. However, based on other major roads with high traffic volumes, the QDC MP4.4 area applies 250 metres from the outside lane. The identified area in cyan is based on a 250 metre setback. This area should be confirmed once the State Mapping has been updated.

APPENDIX A GLOSSARY

Parameter or Term	Description
dB	The decibel (dB) is the unit measure of sound. Most noises occur in a range of 20 dB (quiet rural area at night) to 120 dB (nightclub dance floor or concert).
dBA	Noise levels are most commonly expressed in terms of the 'A' weighted decibel scale, dBA. This scale closely approximates the response of the human ear, thus providing a measure of the subjective loudness of noise and enabling the intensity of noises with different frequency characteristics (e.g. pitch and tone) to be compared.
Day	The period between 7am and 6pm.
Evening	The period between 6pm and 10pm.
Night	The period between 10pm and 7am.
Free-field	The description of a noise receiver or source location which is away from any significantly reflective objects (e.g. buildings, walls).
L_1	The noise level exceeded for 1% of the measurement period.
L_{10}	The noise level exceeded for 10% of the measurement period. It is sometimes referred to as the average maximum noise level.
L_{90}	The noise level exceeded for 90% of the measurement period. This is commonly referred to as the background noise level.
L_{eq}	The equivalent continuous sound level, which is the constant sound level over a given time period, which is equivalent in total sound energy to the time-varying sound level, measured over the same time period.
$L_{eq,1hour}$	As for Leq except the measurement intervals are defined as 1 hour duration.
L_{max}	Maximum A-weighted sound pressure level.
L_{eq}(24 hour)	The average Leq noise level over the 24-hour period from midnight to midnight.
L_{10}(18 hour)	The arithmetic average of the one-hour L10 values between 6am and midnight. This parameter is used in the assessment of road traffic noise.
R_w	Weighted Sound Reduction Index – is a single number evaluation of the property of a partition to attenuate sounds. For the majority of partitions, the value of Rw will be similar to the value for STC. Partitions with particularly poor performance at 100 Hz may have lower values for Rw than for STC. Conversely, partitions with poor performance at 4000 Hz may have higher Rw than for STC. (As per AS1276.1-1999).
Habitable Rooms	According to the "Building Code of Australia" a Habitable Room is: " a room used for normal domestic activities and Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre, and sunroom, but Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods."

APPENDIX B DRAWINGS

0 20 40 60 80 120 1 : 5,000 @ A1

AURA LAKES
SITE CONTEXT PLAN
P17, P18, P19 & DA1

PLAN REF:	**AU12885-90**
DATE:	27 OCTOBER 2025
CLIENT:	STOCKLAND
DRAWN BY:	MD / JC
CHECKED BY:	MD / PHE

DISCLAIMER

The contents of this plan are conceptual and for discussion purposes only. All areas and dimensions are approximate and subject to relevant studies, survey, engineering and Council approval.

The information used in this plan is drawn from the following sources:

Site Boundaries: Urbis & RPS Survey.
Adjoining Context Area Information: Urbis.
Environmental Buffers: RPS Survey.

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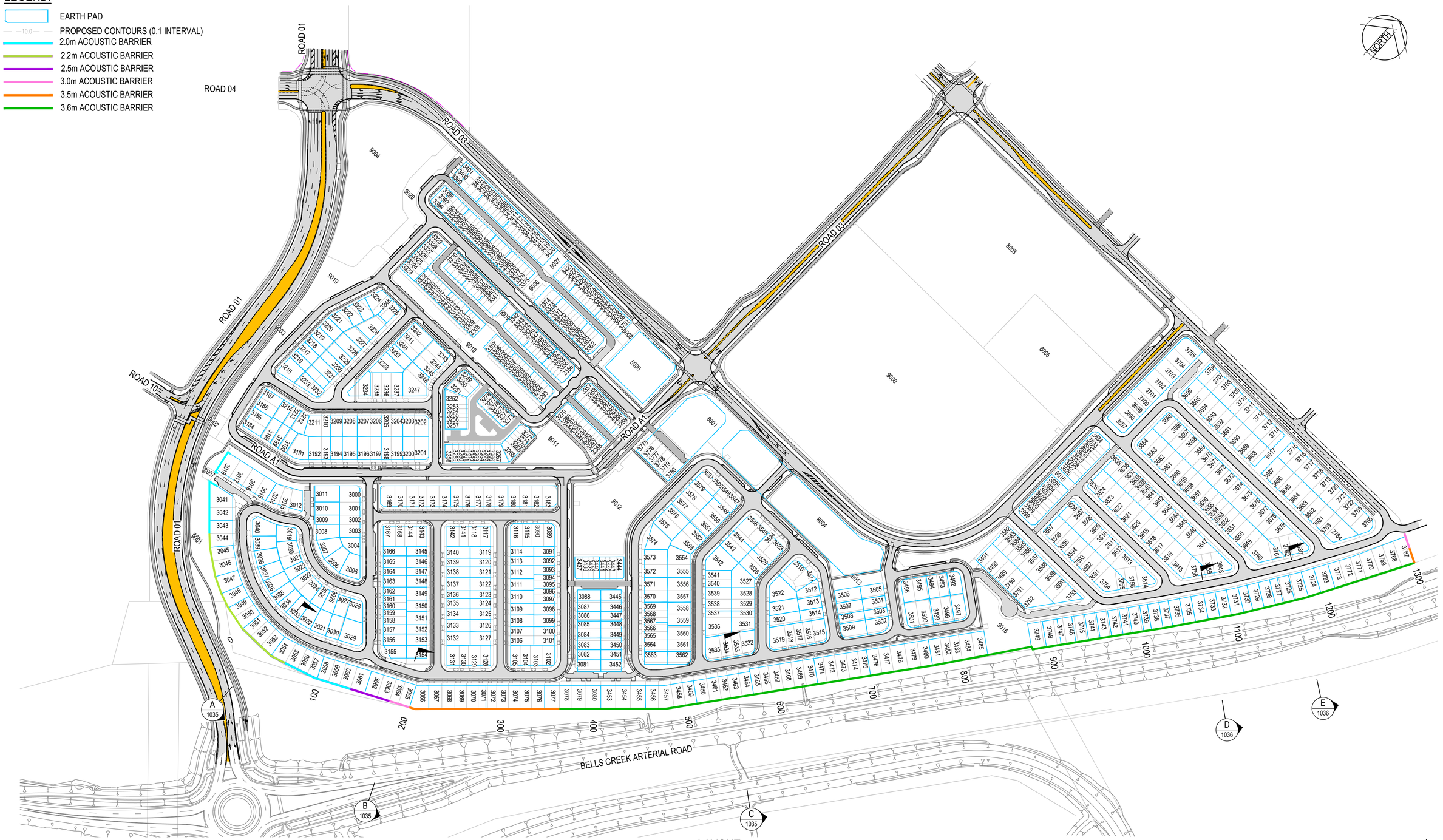
LEGEND:

- EARTH PAD
- PROPOSED CONTOURS (0.1 INTERVAL)
- 2.0m ACOUSTIC BARRIER
- 2.2m ACOUSTIC BARRIER
- 2.5m ACOUSTIC BARRIER
- 3.0m ACOUSTIC BARRIER
- 3.5m ACOUSTIC BARRIER
- 3.6m ACOUSTIC BARRIER



LAYOUT
SCALE 1:2000

10

Notes

0 50 100 150 200m
SCALE 1:2000 @A1

10	ACOUSTIC FENCE INFO UPDATED	RA		13/01/2026
9	RE-ISSUED FOR APPROVAL	SS		04/10/2024
8	MINOR AMENDMENT	SS		20/08/2024
7	RE-ISSUED FOR APPROVAL	SS		12/07/2024
6	RE-ISSUED FOR APPROVAL	SS		12/07/2024
5	RE-ISSUED FOR APPROVAL	SS		20/06/2024
4	WALL INTERESECTION & BASIN AMENDED	SS		09/06/2024
3	DA RESUBMISSION	SS		20/05/2024
2	WALL HEIGHTS AMENDED	SS		16/05/2024
1	ISSUE FOR APPROVAL	SS		15/04/2023
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

FOR CONCEPT APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

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Notes

File Name:
304701171-100-CD-SK1011

Stantec

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AURA
Stockland

Client/Project
STOCKLAND DEVELOPMENT PTY LTD

AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
			SS	SS		28/03/2023

Title
ACOUSTIC WALL

Project No.
304701171-100

Scale
AS SHOWN A1

Revision
10

Drawing No.
304701171-100-CD-SK1012

Plotted: 13/01/2026 6:13:39 PM By: DR.SHANTHO
L:\2023\3P\0001\304701171\100_MASTER\ANNEX\DRAWING
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

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3002	13.978
3003	13.990
3004	13.947
3005	13.733
3006	13.862
3007	13.967
3008	14.154
3009	14.415
3010	14.129
3011	13.955
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3013	14.257
3014	14.356
3015	14.515
3016	14.545
3017	14.273
3018	14.261
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3021	14.053
3022	14.079
3023	14.044
3024	14.095
3025	14.041
3026	14.031
3027	13.955
3028	14.124
3029	15.137
3030	15.231
3031	15.363
3032	15.454
3033	15.570
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3035	15.658
3036	15.464
3037	15.334
3038	15.030
3039	14.931
3040	14.678
3041	14.657
3042	14.657
3043	14.925
3044	15.045
3045	15.109
3046	15.268
3047	15.461
3048	15.601
3049	15.763
3050	15.760
3051	15.794
3052	15.705
3053	15.685
3054	15.551
3055	15.499
3056	15.469
3057	15.460
3058	15.505

LOT No.	PAD LEVEL
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3061	15.308
3062	15.417
3063	15.458
3064	15.490
3065	15.522
3066	15.727
3067	15.963
3068	15.984
3069	16.004
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3071	16.037
3072	16.234
3073	16.275
3074	16.324
3075	16.378
3076	16.428
3077	16.480
3078	16.485
3079	16.489
3080	16.491
3081	16.055
3082	16.050
3083	15.765
3084	15.516
3085	15.315
3086	15.015
3087	14.978
3088	15.024
3089	13.541
3090	13.544
3091	13.739
3092	13.918
3093	14.189
3094	14.459
3095	14.460
3096	14.762
3097	14.769
3098	15.001
3099	15.249
3100	15.528
3101	15.728
3102	16.029
3103	16.029
3104	16.117
3105	16.354
3106	15.474
3107	15.377
3108	15.128
3109	14.858
3110	14.668
3111	14.447
3112	14.166
3113	14.036
3114	13.908
3115	13.549
3116	13.566
3118	13.790

LOT No.	PAD LEVEL
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3120	14.019
3121	14.130
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3123	14.539
3124	14.670
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3126	15.049
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3131	15.906
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3134	14.999
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3162	14.438
3163	14.285
3164	14.207
3165	14.054
3166	14.007
3167	14.029
3168	13.801
3169	13.630
3169	13.440
3170	13.668
3171	13.610
3172	13.580
3173	13.577
3174	13.540
3175	13.505
3176	13.468
3177	13.440

LOT No.	PAD LEVEL
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3181	13.231
3182	13.206
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3184	12.959
3185	12.794
3186	12.627
3187	12.530
3188	13.023
3189	13.064
3190	13.115
3191	13.170
3192	13.202
3193	13.200
3194	13.279
3195	13.312
3196	13.443
3197	13.465
3198	13.458
3199	13.339
3200	13.130
3201	12.979
3202	12.476
3203	12.927
3204	13.110
3205	13.171
3206	13.158
3207	13.150
3208	13.031
3209	12.995
3210	12.889
3211	12.896
3212	12.938
3213	12.848
3214	12.799
3215	12.302
3216	12.411
3217	12.154
3218	11.898
3219	11.804
3220	11.577
3221	11.335
3222	11.096
3223	10.889
3224	9.929
3225	10.383
3226	11.191
3227	11.530
3228	11.799
3229	11.984
3230	12.167
3231	12.452
3232	12.516
3233	12.621
3234	12.810
3235	12.842
3236	12.744

LOT No.	PAD LEVEL
3237	12.641
3238	11.650
3239	11.348
3240	11.187
3241	10.692
3242	10.455
3243	11.352
3244	11.469
3245	11.546
3246	11.616
3247	12.435
3248	10.043
3249	11.376
3250	11.451
3251	11.576
3252	11.733
3253	11.826
3254	11.880
3255	11.928
3256	11.981
3257	12.049
3258	12.350
3259	12.381
3260	12.385
3261	12.387
3262	12.389
3263	12.428
3264	12.498
3265	12.561
3266	12.617
3267	12.578
3268	12.612
3269	12.530
3270	12.411
3271	12.291
3272	12.203
3273	12.062
3274	11.870
3275	11.850
3276	11.847
3277	11.861
3278	11.676
3279	12.016
3280	12.072
3281	12.118
3282	12.153
3283	12.205
3284	12.258
3285	12.304
3286	12.272
3287	12.270
3288	12.468
3289	12.302
3290	12.155
3291	12.050
3292	12.037
3293	11.887
3294	11.807
3295	11.756

LOT No.	PAD LEVEL
3296	11.714
3297	11.664
3298	11.611
3299	11.559
3300	11.513
3301	11.473
3302	11.433
3303	11.390
3304	11.346
3305	11.305
3306	11.271
3307	11.220
3308	10.946
3309	10.875
3310	10.812
3311	10.776
3312	10.751
3313	10.745
3314	10.724
3315	10.693
3316	10.664
3317	10.634
3318	10.597
3319	10.562
3320	10.533
3321	10.503
3322	10.458
3323	9.880
3324	9.880
3325	9.870
3326	9.927
3327	10.031
3328	10.129
3329	10.073
3330	10.400
3331	10.463
3332	10.495
3333	10.529
3334	10.556
3335	10.580
3336	10.614
3337	10.647
3338	10.678
3339	10.705
3340	10.731
3341	10.761
3342	11.037
3343	11.070
3344	11.095
3345	11.120
3346	11.146
3347	11.277
3348	11.326
3349	11.367
3350	11.401
3351	11.442
3352	11.558
3353	11.608
3354	11.658

LOT No.	PAD LEVEL
3355	11.658
3356	11.705
3357	11.887
3358	11.952
3359	11.971
3360	11.990
3361	12.000
3362	11.832
3363	11.624
3364	11.624
3365	11.626
3366	11.531
3367	11.482
3368	11.429
3369	11.379
3370	11.330
3371	11.285
3372	11.225
3373	11.179
3374	11.160
3375	10.876
3376	10.826
3377	10.779
3378	10.731
3379	10.701
3380	10.662
3381	10.616
3382	10.555
3383	10.500
3384	10.458
3385	10.391
3386	10.316
3387	10.244
3388	10.173
3389	10.124
3390	10.065
3391	10.001
3392	9.932
3393	9.886
3394	9.844
3395	9.806
3396	9.644
3397	9.659
3398	9.675
3399	9.646
3400	9.714
3401	9.717
3402	9.883
3403	9.958
3404	10.021
3405	9.911
3406	9.984
3407	10.046
3408	10.108
3409	10.151
3410	10.212
3411	10.279
3412	10.381
3413	10.423

LOT No.	PAD LEVEL
3414	10.459
3415	10.501
3416	10.548
3417	10.769
3418	10.756
3419	10.747
3420	10.732
3421	11.019
3422	11.099
3423	11.156
3424	11.213
3425	11.356
3426	11.393
3427	11.430
3428	11.456
3429	11.487
3430	11.526
3431	11.550
3432	11.606
3433	11.599
3434	11.601
3435	11.599
3436	11.596
3437	14.143
3438	14.296
3439	14.612
3440	14.727
3441	14.800
3442	14.804
3443	14.915
3444	14.954
3445	15.109
3446	15.210
3447	15.200
3448	15.399
3449	15.400
3450	15.528
3451	15.829
3452	16.048
3453	16.082
3454	15.913
3455	15.745
3456	15.530
3457	15.454
3458	15.353
3459	15.301
3460	15.234
3461	15.147
3462	15.066
3463	15.007
3464	14.933
3465	14.853
3466	14.807
3467	14.721
3468	14.668
3469	14.573
3470	14.481
3471	14.430
3472	14.317

LOT No.	PAD LEVEL
3473	14.264
3474	14.181
3475	14.170
3476	14.160
3477	14.097
3478	13.970
3479	13.945
3480	14.182
3481	13.879
3482	13.887
3483	13.874
3484	13.888
3485	13.916
3491	11.854
3492	12.063
3492	12.039
3493	12.270
3493	12.235
3494	12.445
3494	12.234
3495	12.627
3495	12.525
3496	12.916
3496	12.521
3497	13.200
3498	13.400
3499	13.400
3500	13.500
3501	13.500
3502	14.008
3503	13.932
3504	13.789
3505	13.642
3506	13.723
3507	13.791
3508	13.893
3509	13.956
3510	13.995
3511	13.943
3512	13.898
3513	14.013
3514	14.249
3515	14.359
3516	14.475
3517	14.527
3518	14.589
3519	14.602
3520	14.455
3521	14.277
3522	14.171
3523	13.968
3524	13.991
3525	14.074
3526	14.237
3527	14.263
3528	14.290
3529	14.354
3530	14.433
3531	14.610

LOT No.	PAD LEVEL
3532	14.761
3533	15.007
3534	15.122
3535	15.082
3536	14.910
3537	14.711
3538	14.570
3539	14.497
3540	14.426
3541	14.286
3542	14.062
3543	13.957
3544	13.851
3545	13.741
3546	13.463
3547	13.172
3548	13.228
3549	13.694
3550	13.750
3551	13.919
3552	14.064
3553	14.232
3554	14.370
3555	14.500
3556	14.628
3557	14.659
3558	14.806
3559	14.955
3560	15.055
3561	15.215
3562	15.276
3563	15.481
3564	15.487
3565	15.334
3566	15.281
3567	15.230
3568	15.192
3569	15.141
3570	14.976
3571	14.840
3572	14.762
3573	14.665
3574	14.520
3575	14.394
3576	14.177
3577	14.041
3578	13.952
3579	13.851
3580	13.410
3581	13.635
3582	10.908
3583	11.071
3584	11.228
3585	11.393
3586	11.540
3587	11.757
3588	12.009
3589	12.269
3590	12.532

LOT No.	PAD LEVEL
3591	11.067
3592	10.942
3593	10.806
3594	10.708
3595	10.593
3596	10.453
3597	10.297
3598	10.550
3599	10.482
3600	10.417
3601	10.363
3602	10.307
3603	10.228
3604	10.174
3605	10.075
3606	10.031
3607	10.155
3608	10.258
3609	10.371
3610	10.500
3611	10.564
3612	10.693
3613	10.717
3614	10.368
3615	9.967
3616	10.086
3617	10.199
3618	10.291
3619	10.159
3620	10.023
3621	9.839
3622	9.691
3623	9.478
3624	9.359
3625	9.186
3626	9.384
3627	9.231
3628	9.091
3629	8.941
3630	8.790
3631	8.666
3632	8.570
3633	8.438
3634	8.300
3635	8.683
3636	8.753
3637	8.799
3638	8.847
3639	8.883
3640	8.910
3641	8.948
3642	9.000
3643	9.056
3644	9.117
3645	9.177
3646	9.225
3647	9.286
3648	9.196
3649	8.867

LOT No.	PAD LEVEL
3649	8.867
3650	8.839
3650	8.839
3651	8.794
3651	8.794
3652	8.768
3652	8.768
3653	8.747
3653	8.747
3654	8.729
3654	8.729
3655	8.704
3655	8.704
3656	8.677
3656	8.677
3657	8.646
3657	8.646
3658	8.602
3658	8.602
3659	8.569
3659	8.569
3660	8.531
3660	8.531
3661	8.495
3661	8.495
3662	8.457
3662	8.457
3663	8.421
3663	8.421
3664	8.246
3664	8.246
3665	8.257
3665	8.257
3666	8.407
3666	8.407
3667	8.413
3667	8.413
3668	8.418
3668	8.418
3669	8.424
3669	8.424
3670	8.429
3670	8.429
3671	8.430
3671	8.430
3672	8.436
3672	8.436
3673	8.442
3673	8.442
3674	8.449
3674	8.449
3675	8.455
3675	8.455
3676	8.454
3676	8.454
3677	8.463
3677	8.463
3678	8.472
3678	8.472

LOT No.	PAD LEVEL
3679	8.466
3679	8.466
3680	8.425
3680	8.425
3681	8.301
3682	8.332
3683	8.360
3684	8.391
3685	8.433
3686	8.460
3687	8.490
3688	8.600
3689	8.600
3690	8.600
3691	8.600
3692	8.600
3693	8.600
3694	8.600
3695	8.600
3696	8.600
3697	8.113
3698	8.147
3699	8.179
3700	8.210
3701	8.243
3702	8.271
3703	8.325
3704	8.365
3705	8.415
3722	8.416
3723	8.369
3723	8.746
3724	8.313
3724	8.735
3725	8.239
3725	9.046
3726	8.221
3726	9.023
3727	8.157
3727	9.325
3728	8.067
3728	9.339
3729	8.003
3729	9.619
3730	7.965
3730	9.617
3731	7.877
3731	9.928
3732	7.913
3732	9.935
3733	7.921
3733	9.919
3734	7.955
3734	10.426
3735	7.971
3735	10.637
3736	7.997
3736	10.943
3737	8.012

LOT No.	PAD LEVEL
3737	11.241
3738	8.039
3738	11.537
3739	11.764
3740	12.057
3741	12.367
3742	12.574
3743	12.850
3744	12.838
3745	13.158
3746	13.356
3747	13.378
3748	13.581
3749	13.654
3753	12.681
3754	11.235
3755	10.949
3756	10.693
3758	9.771
3759	9.326
3760	8.872
3761	8.573
3762	8.460
3763	8.269
3764	8.226
3765	8.062
3766	8.092
3767	8.486
3768	8.577
3769	8.664
3770	8.680
3771	8.704
3772	8.691
3773	8.705
3774	12.014
3775	12.769
3776	12.975
3777	13.123
3778	13.398
3779	13.537
3780	13.803
3781	11.596
8000	12.136
8001	13.323
8003	8.135
8004	13.004
8006	8.371
9000	10.396
9006	10.756
9007	10.850
9008	11.757
9009	10.926
9010	10.836
9011	12.061
9012	13.635
9015	13.446
9017	8.566

Notes

1	ISSUE FOR INFORMATION	SS		15/01/2026
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

FOR CONCEPT APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

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Notes

File Name: 304701171-100-CD-SK1011

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Client/Project Logo
AURA
Stockland

Client/Project
STOCKLAND DEVELOPMENT PTY LTD
AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	RPEQ #	YYYY.MM.DD	SS	SS		15/01/2026
			Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
ESTIMATE PAD LEVEL

Project No. 304701171-100
Scale AS SHOWN A1
Revision 1
Drawing No. 304701171-100-CD-SK1139

Plotted: 15/01/2026 at 3:32 PM By: SHAN YAO
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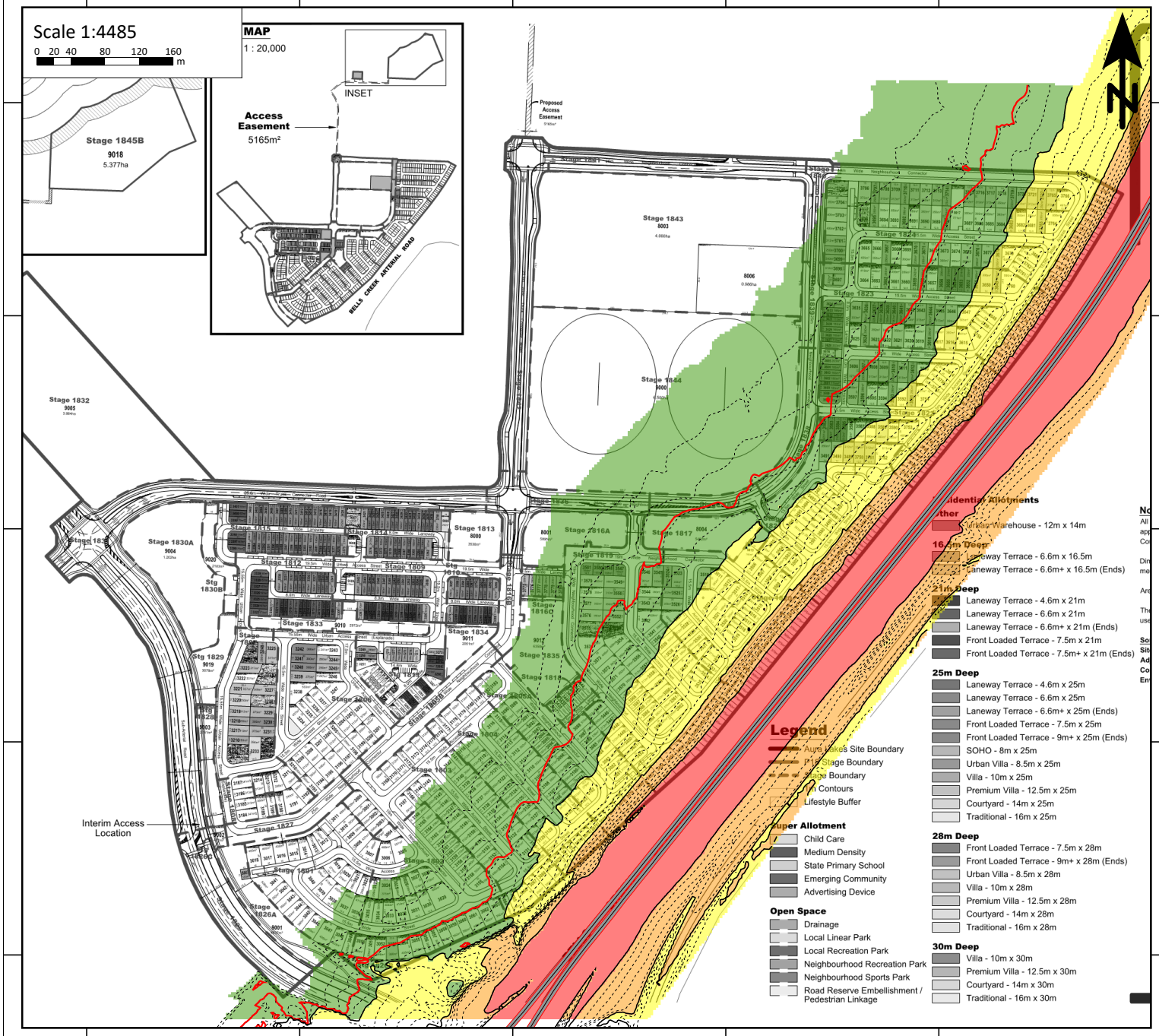
ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

APPENDIX C NOISE CONTOURS AND BARRIER DESIGN – 2031, ALL ROADS

- State-controlled road only model runs:
  - **Figure C.1** – State-controlled road only (outdoor free-field noise levels)
  - **Figure C.2** – State-controlled road only (ground level façade noise levels)
  - **Figure C.3** – State-controlled road only (first floor façade noise levels)
  - **Figure C.4** – Modelled Noise Barriers
  - **Figure C.5 – With barriers** - State-controlled road only (outdoor free-field noise levels)
  - **Figure C.6 – With barriers** - State-controlled road only (ground level façade noise levels)
  - **Figure C.7 – With barriers** - State-controlled road only (first floor façade noise levels)
- All roads model runs:
  - **Figure C.8** – All roads (ground level façade noise levels)
  - **Figure C.9** – All roads (first floor façade noise levels)
  - **Figure C.10 – With barriers** - All roads (ground level façade noise levels)
  - **Figure C.11 – With barriers** - All roads (first floor façade noise levels)
- With Conceptual Overpass
  - **Figure C.12 – With barriers** - State-controlled road only (outdoor free-field noise levels with overpass)
  - **Figure C.13 – With barriers** - State-controlled road only (ground level façade noise levels with overpass)
  - **Figure C.14 – With barriers** - State-controlled road only (first floor façade noise levels with overpass)



TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
Free Field
Calculation Height = 1.5 m
No Barrier

Figure

C.1

Project Number: 257401.0158
Date: 30/10/2025
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Free Field) dB(A)
(-0.7 Free Field Correction)

- 58 - 62
- 63 - 67
- 68 - 72
- = 73

Signs and symbols

- Road
- Noise Limit (60 dBA L10 (18 Hour))

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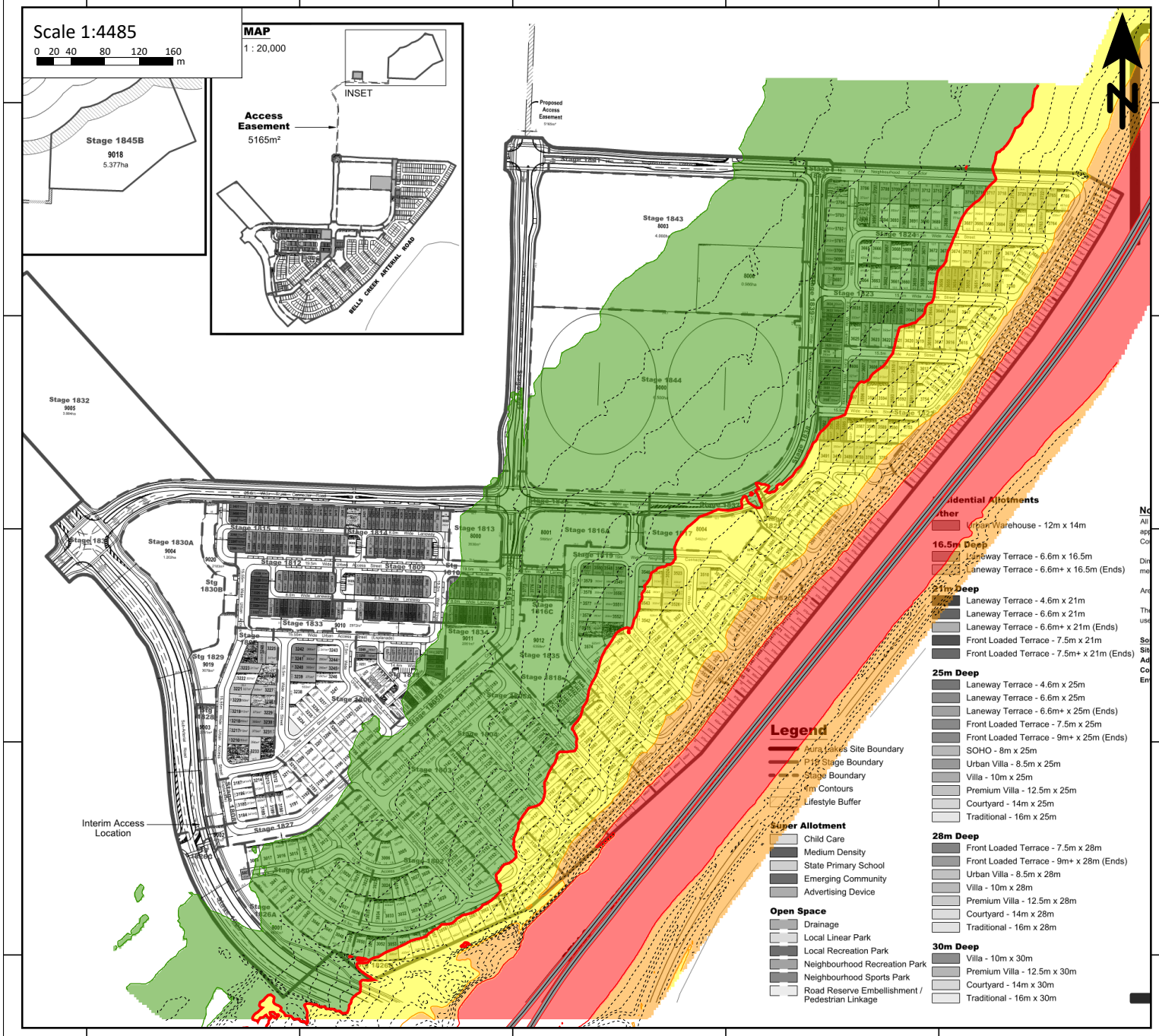

TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
Ground Floor (GF)
Calculation Height = 1.8 m
No Barrier

Figure

C.2

Project Number: 257401.0158
Date: 30/10/2025
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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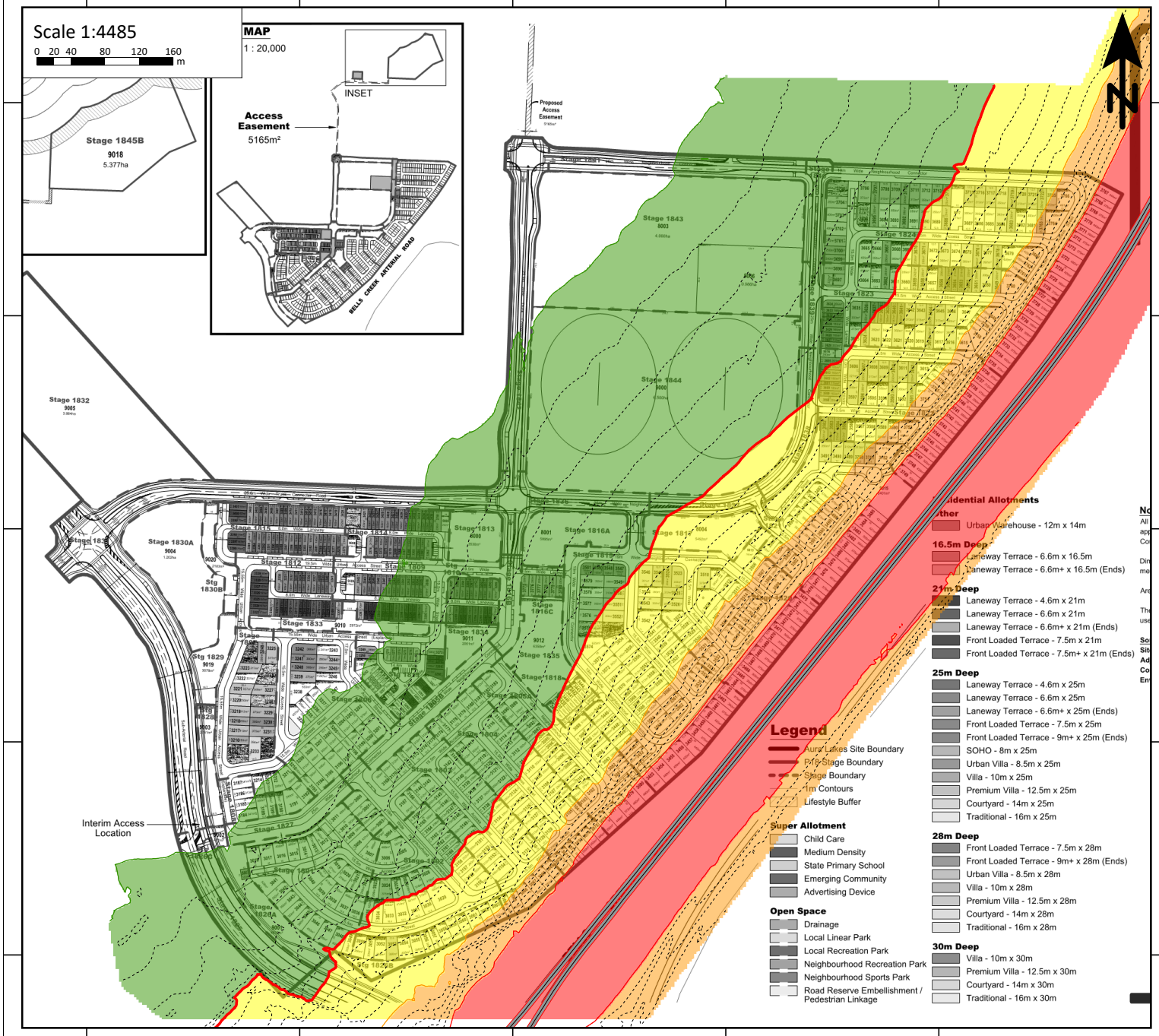

TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
First Floor (F1)
Calculation Height = 4.6 m
No Barrier

Figure

C.3

Project Number: 257401.0158
Date: 30/10/2025
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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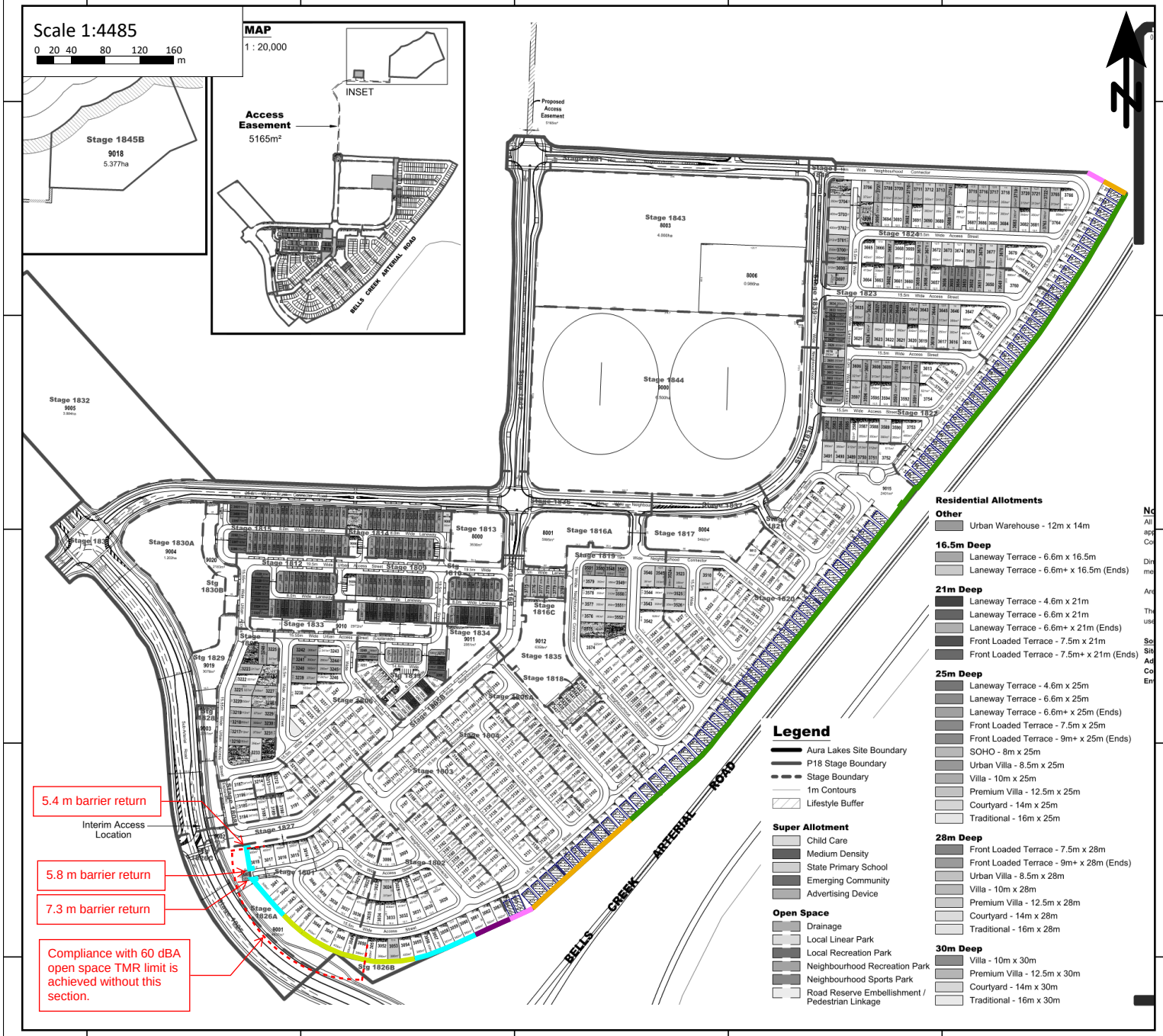
Noise Barrier Locations

Figure

C.4

Project Number: 257401.0158
Date: 4/02/2026
Drawn By: BA
Prepared For: Stockland Development



Signs and symbols

- 2.0m Barrier
- 2.2m Barrier
- 2.5m Barrier
- 3m Barrier
- 3.5m Barrier
- 3.6m Barrier
- Building

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Noise Barrier Locations
Lot 9015 - Noise Barrier Opening Detail

Figure

C.4.1

Project Number: 257401.0158
Date: 28/11/2025
Drawn By: BA
Prepared For: Stockland Development

Signs and symbols

- 3.6m Barrier
- Building

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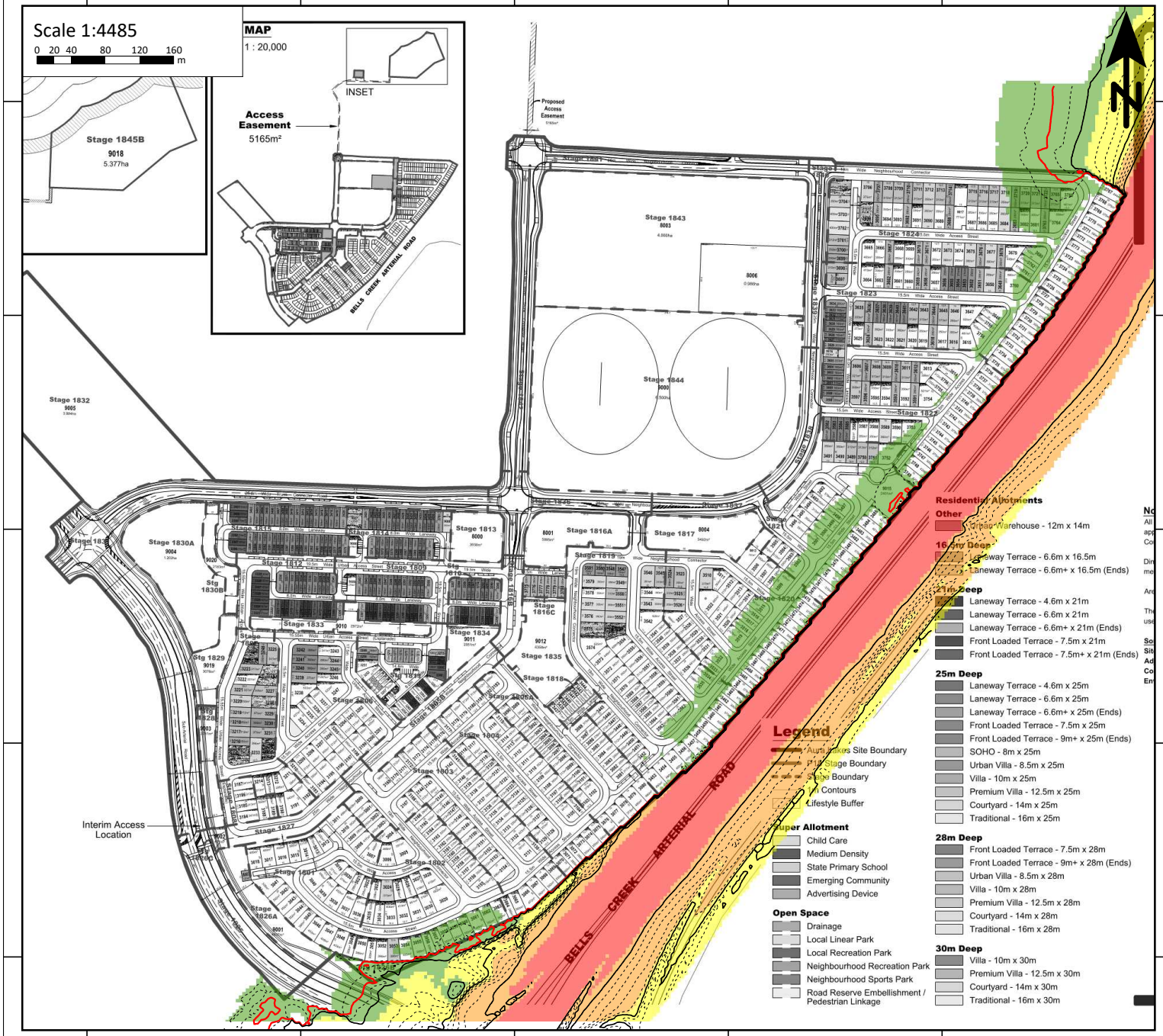
TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
Free Field
Calculation Height = 1.5 m
With Barrier

Figure

C.5

Project Number: 257401.0158
Date: 4/02/2026
Drawn By: BA
Prepared For: Stockland Development



Levels L10 (18 hr)

(Free Field) dB(A)
(-0.7 Free Field Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (60 dBA L10 (18 Hour))

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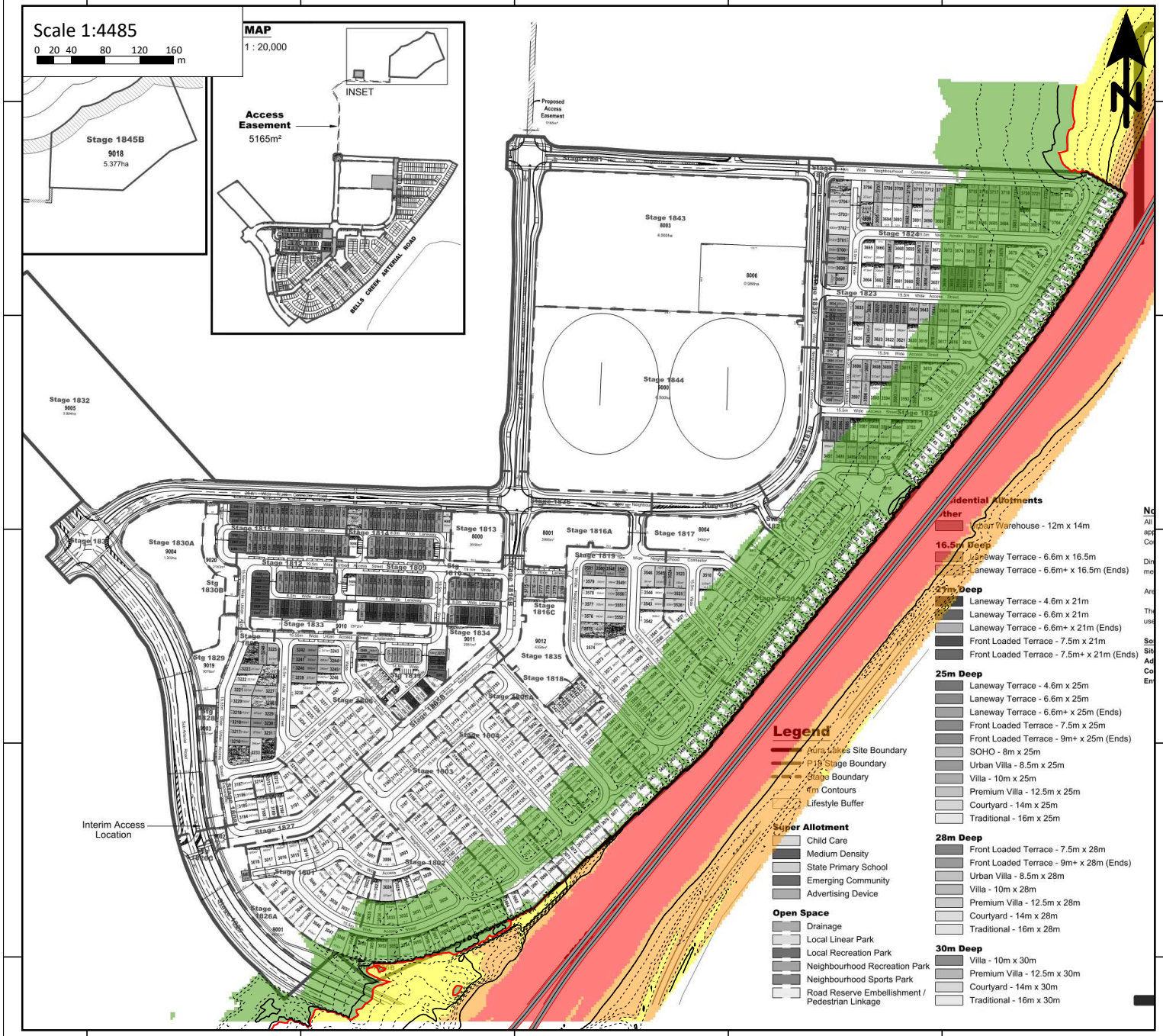
TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
Ground Floor (GF)
Calculation Height = 1.8 m
With Barrier

Figure

C.6

Project Number: 257401.0158
Date: 4/02/2026
Drawn By: BA
Prepared For: Stockland Development



Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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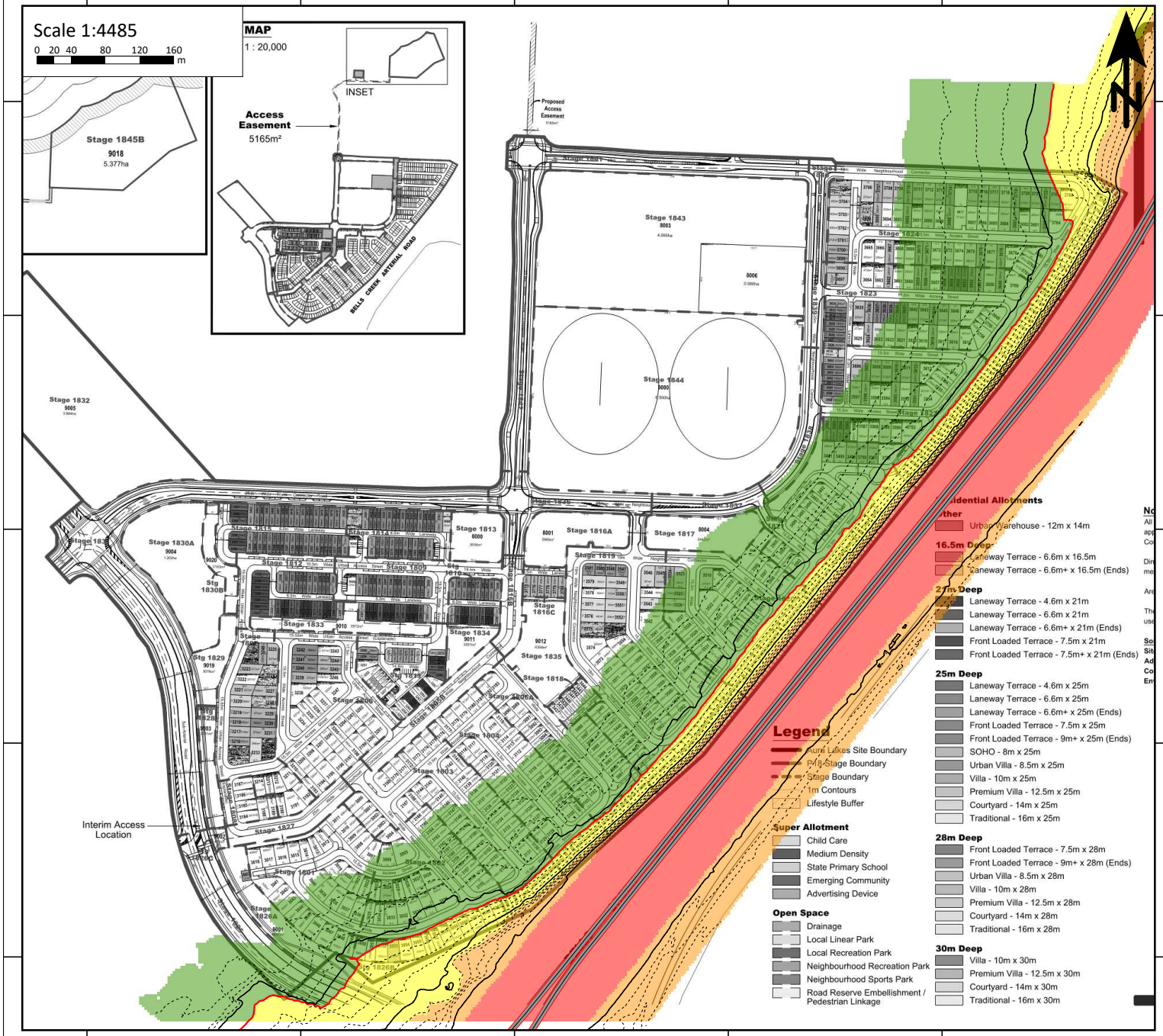
TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic
First Floor (F1)
Calculation Height = 4.6 m
With Barrier

Figure

C.7

Project Number: 257401.0158
Date: 4/02/2026
Drawn By: BA
Prepared For: Stockland Development



Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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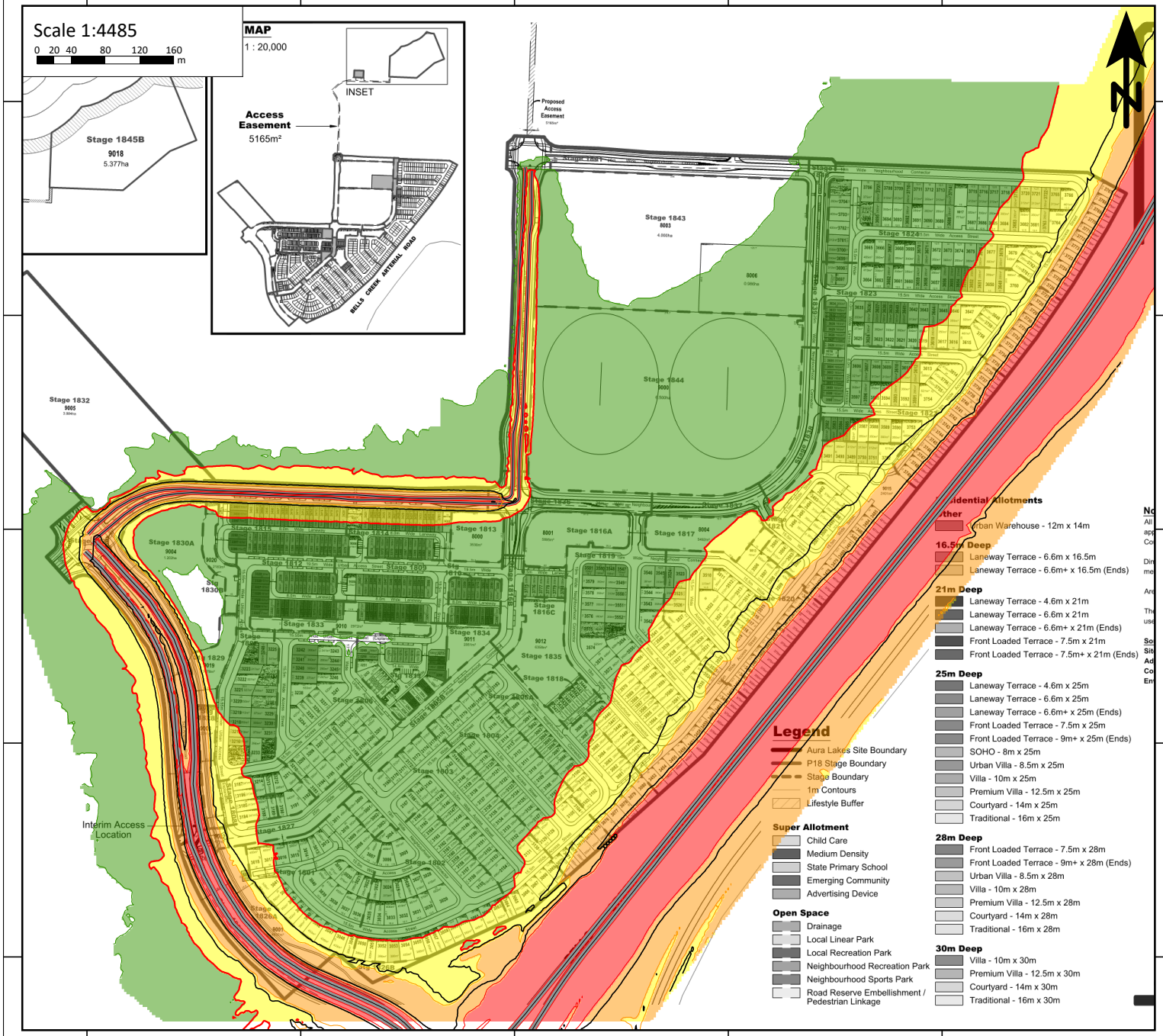

TMR and Council Roads
Ultimate Traffic
Ground Floor (GF)
Calculation Height = 1.8 m
No Barrier

Figure

C.8

Project Number: 257401.0158
Date: 10/11/2025
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- External Noise Limit (63 dBA L10 (18 Hour))

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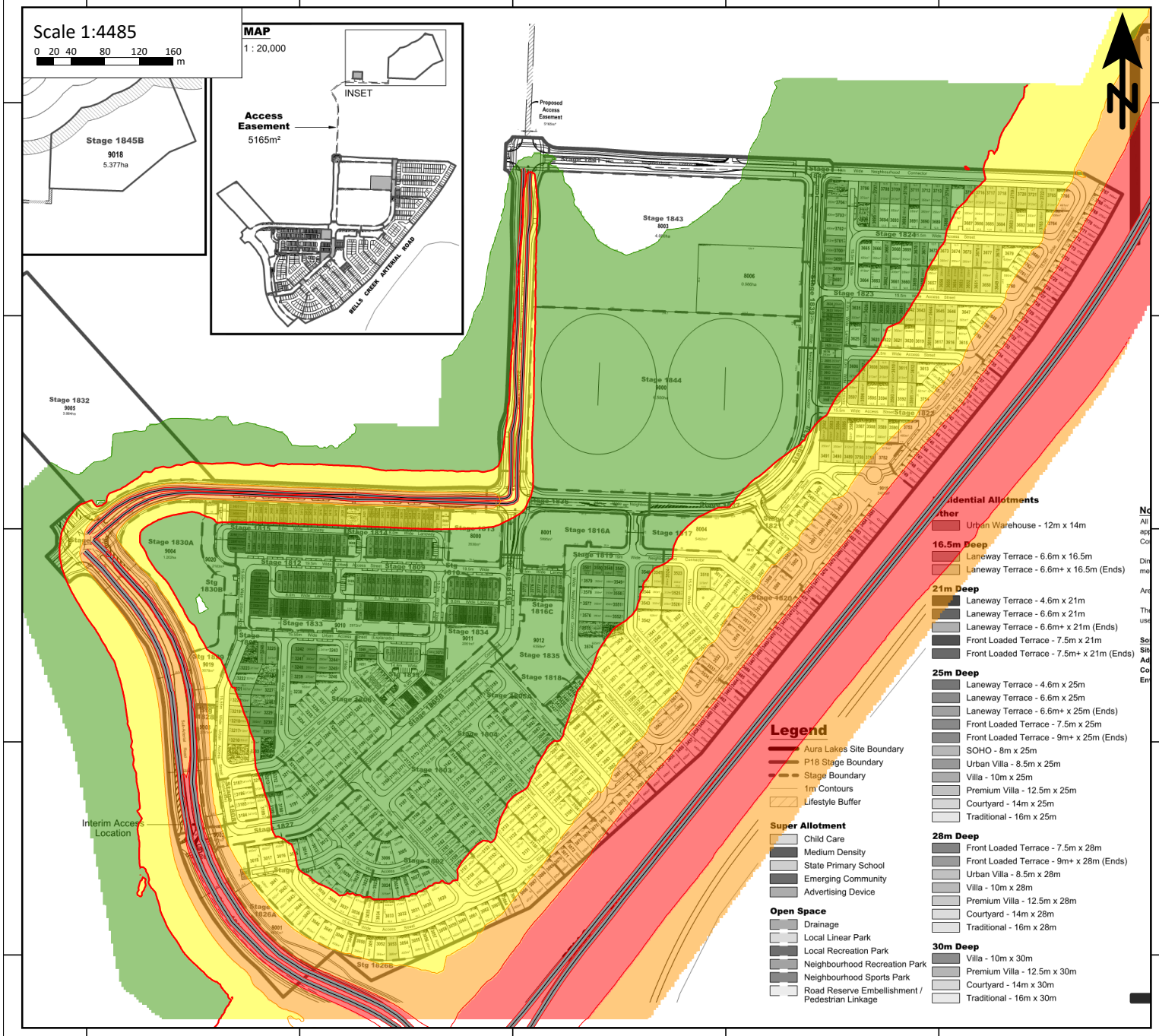

TMR and Council Roads
Ultimate Traffic
First Floor (F1)
Calculation Height = 4.6 m
No Barrier

Figure

C.9

Project Number: 257401.0158
Date: 10/11/2025
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- External Noise Limit (63 dBA L10 (18 Hour))

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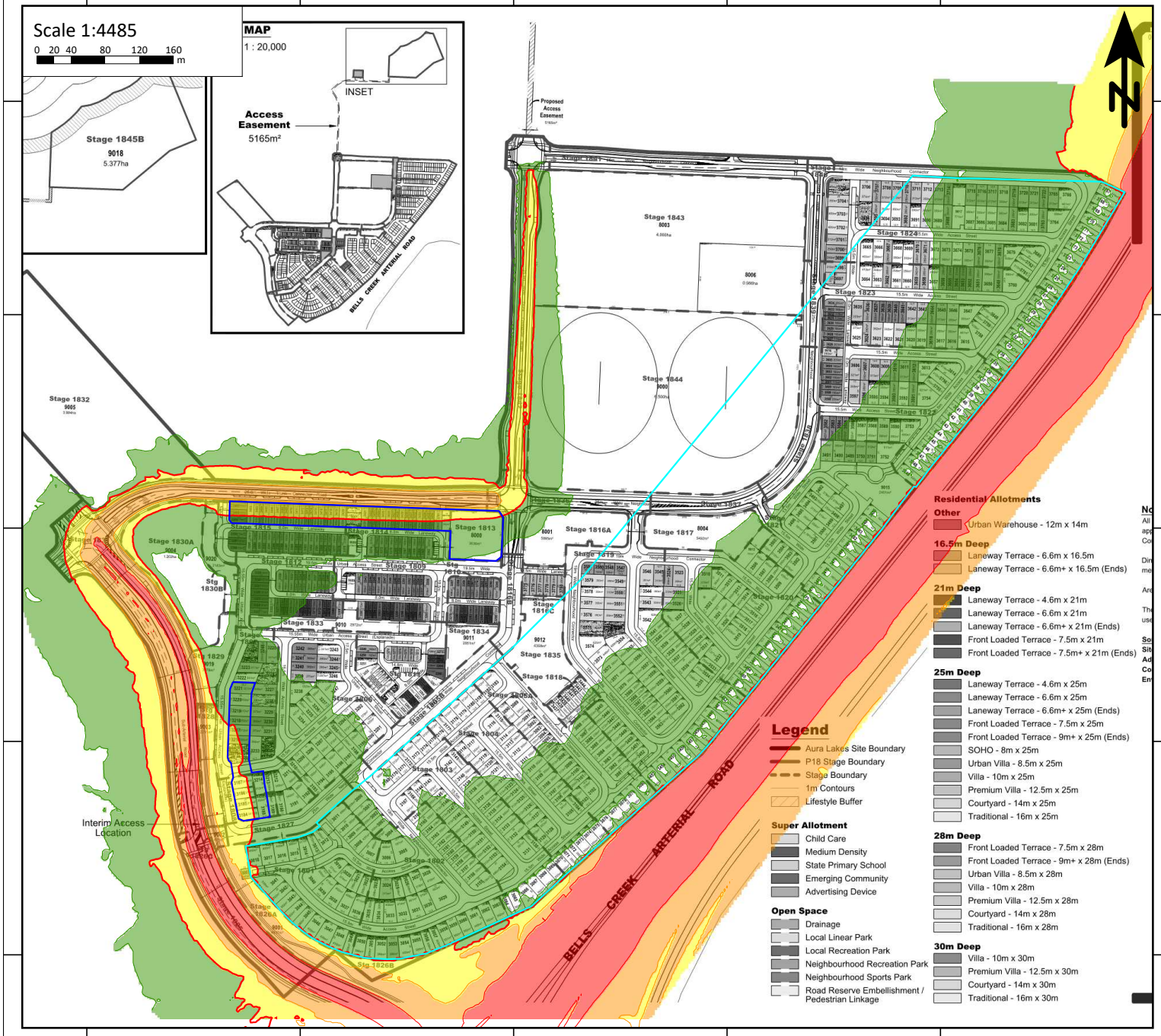

TMR and Council Roads
Ultimate Traffic
Ground Floor (GF)
Calculation Height = 1.8 m
With Barrier

Figure

C.10

Project Number: 257401.0158
Date: 3/02/2026
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- External Noise Limit (63 dBA L10 (18 Hour))
- MP4.4 Overlay
- AS3671 Overlay (Council)

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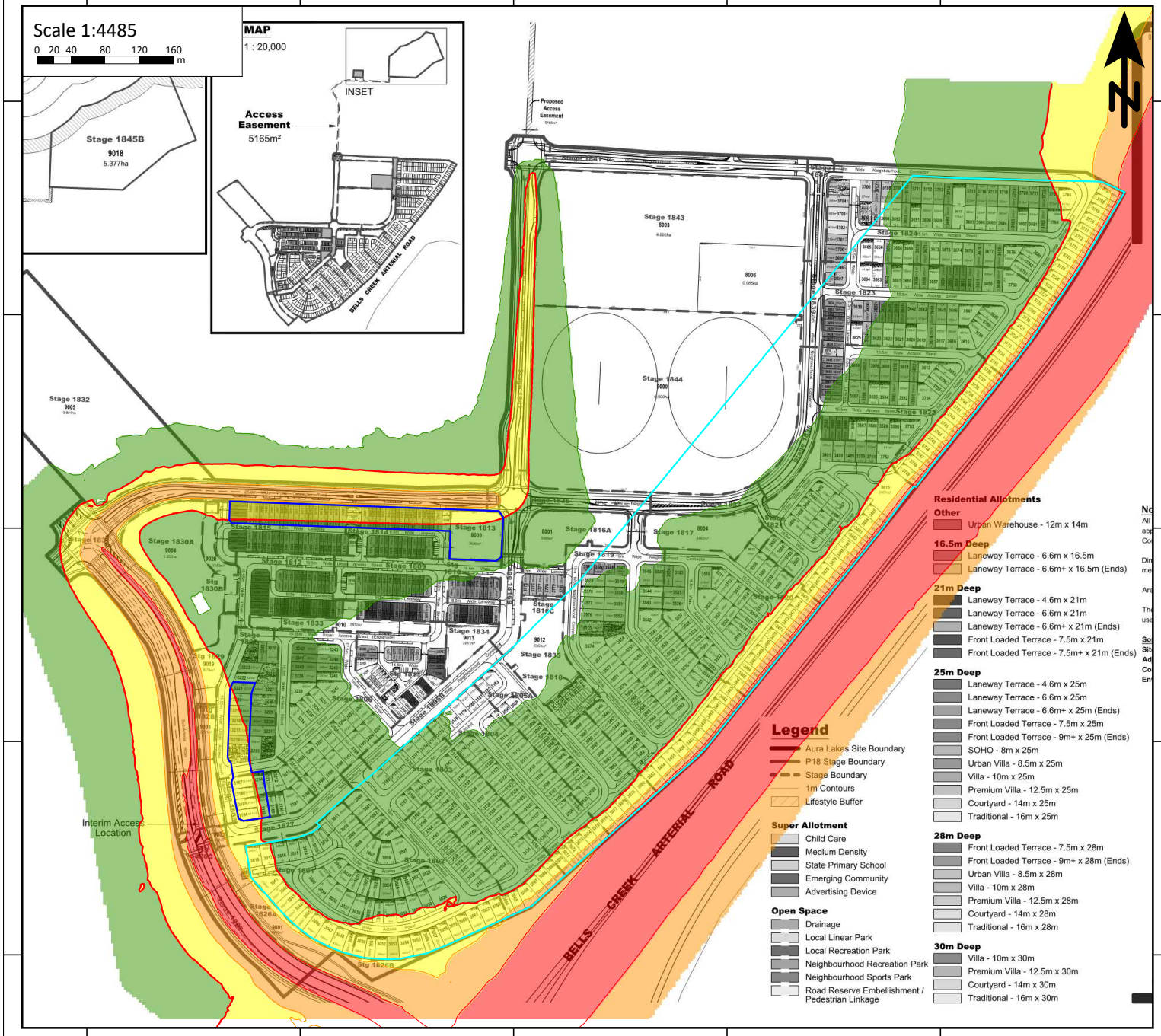

TMR and Council Roads
Ultimate Traffic
First Floor (F1)
Calculation Height = 4.6 m
With Barrier

Figure

C.11

Project Number: 257401.0158
Date: 3/02/2026
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- External Noise Limit (63 dBA L10 (18 Hour))
- MP4.4 Overlay
- AS3671 Overlay (Council)

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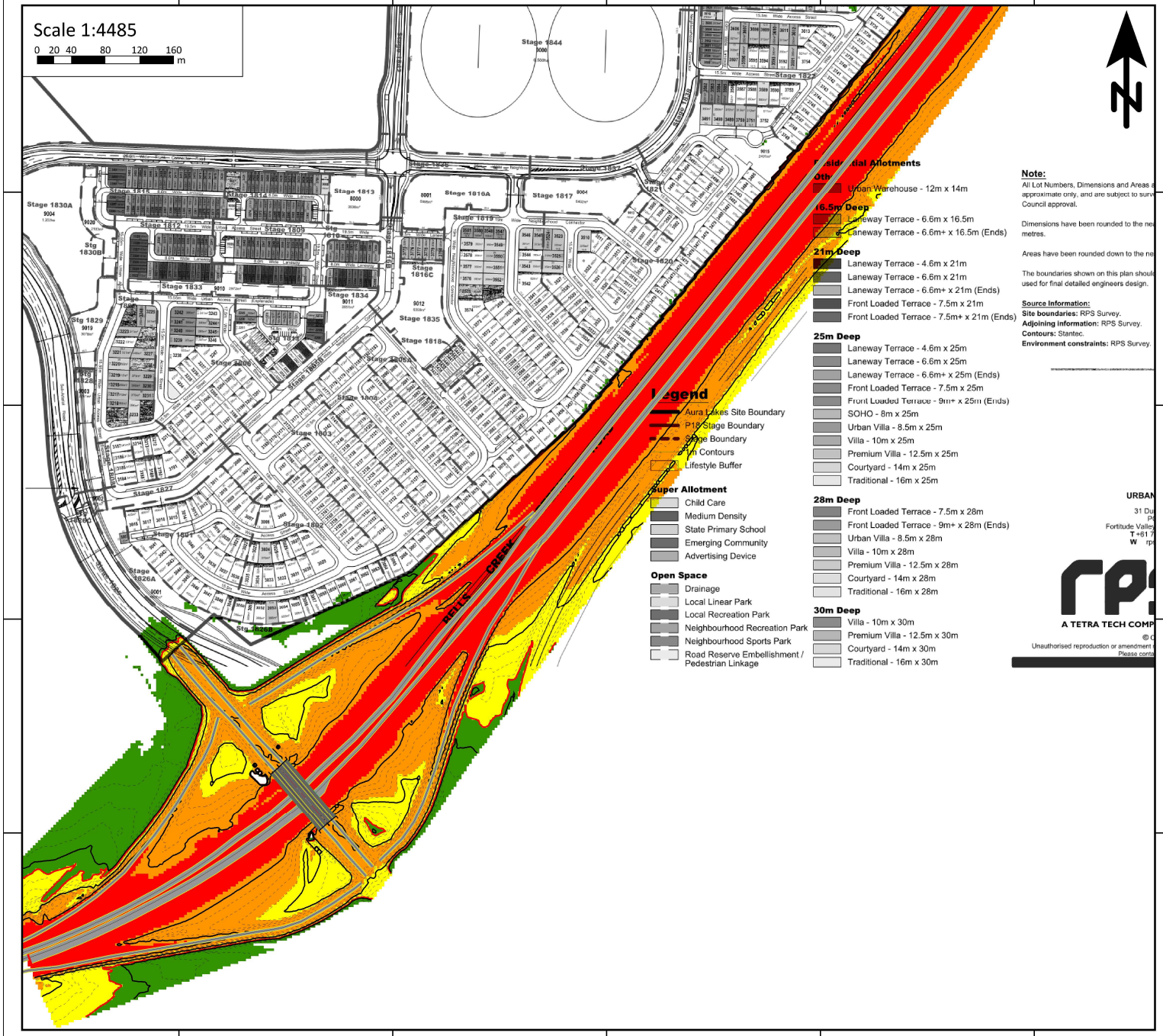
TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic - TMR Overpass Bridge
Free Field
Calculation Height = 1.5 m
With Barrier

Figure

C.12



Project Number: 257401.0158
Date: 9/01/2026
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)
(Free Field) dB(A)
(-0.7 Free Filed Correction)

- 58 - 62
- 63 - 67
- 68 - 72
- = 73

Signs and symbols
- Road
- Noise Limit (63 dBA L10 (18 Hour))

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TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic - TMR Overpass Bridge
Ground Floor (GF)
Calculation Height = 1.8 m
With Barrier

Figure

C.13

Project Number: 257401.0158
Date: 9/01/2026
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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TMR (Bell's Creek Arterial) Road Only
Ultimate Traffic - TMR Overpass Bridge
First Floor (F1)
Calculation Height = 4.6 m
With Barrier

Figure

C.14

Project Number: 257401.0158
Date: 9/01/2026
Drawn By: BA
Prepared For: Stockland Development

Levels L10 (18 hr)

(Facade Corrected) dB(A)
(+2.5 Facade Correction)
(-1.7 TMR Correction)

- 58 - 62 [Cat 1]
- 63 - 67 [Cat 2]
- 68 - 72 [Cat 3]
- = 73 [Cat 4]

Signs and symbols

- Road
- Noise Limit (63 dBA L10 (18 Hour))

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APPENDIX D TABULATED RESULTS AND ACOUSTIC REQUIREMENTS

Table D1 Acoustic Construction Requirements

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
Lot	Pad Level (m)	Ground Floor	First Floor	Ground Floor	First Floor
3000	13.67	59	60	1	1
3001	13.81	59	60	1	1
3002	13.85	59	60	1	1
3003	13.94	59	60	1	1
3004	13.97	59	60	1	1
3005	13.64	59	60	1	1
3006	13.74	59	60	1	1
3007	13.84	59	60	1	1
3008	14.00	59	60	1	1
3009	14.29	59	61	1	1
3010	14.03	59	61	1	1
3011	13.79	60	60	1	1
3012	14.09	60	61	1	1
3013	14.13	60	61	1	1
3014	14.23	60	62	1	1
3015	14.42	61	62	1	1
3016	14.43	61	62	1	1
3017	14.17	62	64	1	2
3018	14.14	62	66	1	2
3019	14.35	60	61	1	1
3020	14.14	59	61	1	1
3021	14.02	59	61	1	1
3022	14.04	59	61	1	1
3023	14.00	59	61	1	1
3024	14.03	59	61	1	1
3025	13.98	60	61	1	1
3026	13.95	60	61	1	1
3027	13.90	59	61	1	1
3028	14.09	60	62	1	1
3029	15.05	61	63	1	2
3030	15.16	61	63	1	2
3031	15.27	61	63	1	2
3032	15.35	61	63	1	2

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3033	15.46	61	63	1	2
3034	15.52	61	63	1	2
3035	15.53	61	63	1	2
3036	15.33	61	63	1	2
3037	15.22	61	62	1	1
3038	14.92	60	62	1	1
3039	14.79	60	62	1	1
3040	14.55	60	62	1	1
3041	14.63	62	67	1	2
3042	14.65	62	67	1	2
3043	14.85	62	67	1	2
3044	14.99	62	67	1	2
3045	15.08	62	67	1	2
3046	15.19	62	67	1	2
3047	15.39	62	67	1	2
3048	15.54	62	67	1	2
3049	15.69	62	67	1	2
3050	15.69	62	67	1	2
3051	15.75	62	67	1	2
3052	15.68	62	67	1	2
3053	15.65	62	67	1	2
3054	15.53	62	67	1	2
3055	15.45	62	67	1	2
3056	15.44	62	66	1	2
3057	15.42	62	66	1	2
3058	15.45	62	66	1	2
3059	15.39	62.5	67	1	2
3060	15.32	62.4	67	1	2
3061	15.25	61.9	67	1	2
3062	15.31	62	67	1	2
3063	15.37	61	68	1	3
3064	15.47	60	70	1	3
3065	15.49	60	70	1	3
3066	15.69	59	71	1	3
3067	15.89	59	72	1	3
3068	15.97	59	72	1	3
3069	15.99	59	72	1	3
3070	15.99	59	72	1	3

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3071	16.00	59	72	1	3
3072	16.19	59	72	1	3
3073	16.25	59	72	1	3
3074	16.29	59	73	1	4
3075	16.29	59	74	1	4
3076	16.39	59	74	1	4
3077	16.47	59	74	1	4
3078	16.47	59	74	1	4
3079	16.47	59	75	1	4
3080	16.48	60	75	1	4
3081	15.89	60	62	1	1
3082	15.89	60	62	1	1
3083	15.62	60	61	1	1
3084	15.42	59	61	1	1
3085	15.22	59	60	1	1
3086	14.92	59	60	1	1
3087	14.72	59	60	1	1
3088	14.73	59	60	1	1
3089	13.41	58	59	1	1
3090	13.43	58	59	1	1
3091	13.67	58	59	1	1
3092	13.83	58	59	1	1
3093	14.13	58	59	1	1
3094	14.39	58	59	1	1
3095	14.40	58	59	1	1
3096	14.66	59	60	1	1
3097	14.73	59	60	1	1
3098	14.93	59	60	1	1
3099	15.19	59	60	1	1
3100	15.43	59	61	1	1
3101	15.59	60	61	1	1
3102	15.93	60	62	1	1
3103	15.92	60	62	1	1
3104	16.03	60	62	1	1
3105	16.24	60	62	1	1
3106	15.25	59	61	1	1
3107	15.12	59	61	1	1
3108	14.92	59	60	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3109	14.63	59	60	1	1
3110	14.45	59	60	1	1
3111	14.22	58	59	1	1
3112	13.95	58	59	1	1
3113	13.83	58	59	1	1
3114	13.70	58	59	1	1
3115	13.45	58	59	1	1
3116	13.48	58	59	1	1
3117	13.74	58	59	1	1
3118	13.72	58	59	1	1
3119	13.95	58	59	1	1
3120	14.03	58	59	1	1
3121	14.30	59	60	1	1
3122	14.47	59	60	1	1
3123	14.63	59	60	1	1
3124	14.74	59	60	1	1
3125	14.99	59	60	1	1
3126	15.13	59	61	1	1
3127	15.27	60	61	1	1
3128	16.08	60	62	1	1
3129	15.97	60	62	1	1
3130	15.84	60	62	1	1
3131	15.66	60	62	1	1
3132	14.91	60	61	1	1
3133	14.73	59	61	1	1
3134	14.62	59	61	1	1
3135	14.51	59	60	1	1
3136	14.44	59	60	1	1
3137	14.36	59	60	1	1
3138	14.23	59	60	1	1
3139	14.02	59	60	1	1
3140	13.95	58	59	1	1
3141	13.70	58	59	1	1
3142	13.66	58	59	1	1
3143	13.79	58	59	1	1
3144	13.85	59	60	1	1
3145	13.96	59	60	1	1
3146	14.19	59	60	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3147	14.24	59	60	1	1
3148	14.39	59	60	1	1
3149	14.49	59	61	1	1
3150	14.62	59	61	1	1
3151	14.73	60	61	1	1
3152	14.82	60	62	1	1
3153	14.89	60	62	1	1
3154	14.89	60	62	1	1
3155	14.77	61	62	1	1
3156	14.52	60	62	1	1
3157	14.47	60	62	1	1
3158	14.35	60	61	1	1
3159	14.18	59	61	1	1
3160	14.03	59	61	1	1
3161	14.01	59	61	1	1
3162	13.85	59	60	1	1
3163	13.92	59	60	1	1
3164	13.75	59	60	1	1
3165	13.72	59	60	1	1
3166	13.61	58	60	1	1
3167	13.52	58	60	1	1
3168	13.72	58	60	1	1
3169	13.44	58	59	1	1
3170	13.56	58	59	1	1
3171	13.59	58	59	1	1
3172	13.55	58	59	1	1
3173	13.49	58	59	1	1
3174	13.45	58	59	1	1
3175	13.41	58	59	1	1
3176	13.35	58	59	1	1
3177	13.31	58	59	1	1
3178	13.25	58	58	1	1
3179	13.21	58	58	1	1
3180	13.14	58	58	1	1
3181	13.13	58	58	1	1
3182	13.11	58	58	1	1
3183	13.11	57	58	-	1
3184	12.72	64	64	AS3671 Needed	AS3671 Needed

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3185	12.60	63	64	AS3671 Needed	AS3671 Needed
3186	12.53	63	64	AS3671 Needed	AS3671 Needed
3187	12.41	63	64	AS3671 Needed	AS3671 Needed
3188	12.89	61	62	-	AS3671 Needed
3189	12.96	60	61	-	-
3190	13.01	59	60	-	-
3191	13.09	59	59	-	-
3192	13.11	58	58	-	-
3193	13.12	57	58	-	-
3194	13.19	57	57	-	-
3195	13.22	56	57	-	-
3196	13.31	56	57	-	-
3197	13.36	56	56	-	-
3198	13.39	55	56	-	-
3199	13.32	55	56	-	-
3200	13.07	55	55	-	-
3201	12.95	54	55	-	-
3202	12.35	54	55	-	-
3203	12.64	55	56	-	-
3204	12.92	56	56	-	-
3205	12.94	56	57	-	-
3206	12.93	56	57	-	-
3207	12.90	57	57	-	-
3208	12.88	57	58	-	-
3209	12.80	58	58	-	-
3210	12.74	58	59	-	-
3211	12.74	59	60	-	-
3212	12.72	60	60	-	-
3213	12.64	60	61	-	-
3214	12.60	61	62	-	-
3215	12.03	63	64	AS3671 Needed	AS3671 Needed
3216	12.13	63	64	AS3671 Needed	AS3671 Needed
3217	11.91	63	63	AS3671 Needed	AS3671 Needed
3218	11.64	62	63	-	AS3671 Needed
3219	11.61	61	63	-	AS3671 Needed
3220	11.41	61	62	-	AS3671 Needed
3221	11.05	60	62	-	AS3671 Needed
3222	10.86	59	61	-	-

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3223	10.70	59	60	-	-
3224	9.85	57	59	-	-
3225	10.27	56	58	-	-
3226	11.13	58	59	-	-
3227	11.50	59	60	-	-
3228	11.80	60	61	-	-
3229	11.99	60	61	-	-
3230	12.10	60	61	-	-
3231	12.39	61	61	-	-
3232	12.42	60	60	-	-
3233	12.49	61	62	-	-
3234	12.74	57	58	-	-
3235	12.75	57	58	-	-
3236	12.66	57	57	-	-
3237	12.60	56	57	-	-
3238	11.51	56	58	-	-
3239	11.03	56	57	-	-
3240	10.84	56	57	-	-
3241	10.41	55	57	-	-
3242	10.23	55	56	-	-
3243	11.30	56	56	-	-
3244	11.46	55	56	-	-
3245	11.56	55	56	-	-
3246	11.60	55	56	-	-
3247	12.36	56	56	-	-
3248	9.99	57	58	-	-
3249	11.32	54	55	-	-
3250	11.42	54	55	-	-
3251	11.53	54	55	-	-
3252	11.68	54	55	-	-
3253	11.80	54	55	-	-
3254	11.85	54	55	-	-
3255	11.90	54	54	-	-
3256	11.93	53	54	-	-
3257	12.04	53	54	-	-
3258	12.30	53	54	-	-
3259	12.34	53	54	-	-
3260	12.35	53	53	-	-

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3261	12.35	53	54	-	-
3262	12.35	53	53	-	-
3263	12.39	52	53	-	-
3264	12.46	52	53	-	-
3265	12.53	52	53	-	-
3266	12.57	52	53	-	-
3267	12.53	52	53	-	-
3268	12.49	53	53	-	-
3269	12.43	53	53	-	-
3270	12.34	53	53	-	-
3271	12.13	53	53	-	-
3272	12.10	53	53	-	-
3273	12.10	53	54	-	-
3274	11.91	53	54	-	-
3275	11.90	53	54	-	-
3276	11.90	53	54	-	-
3277	11.90	53	54	-	-
3278	11.70	54	54	-	-
3279	11.96	53	54	-	-
3280	12.03	53	53	-	-
3281	12.07	53	53	-	-
3282	12.10	53	53	-	-
3283	12.15	53	53	-	-
3284	12.22	53	53	-	-
3285	12.27	53	53	-	-
3286	12.30	52	53	-	-
3287	12.30	52	53	-	-
3288	12.58	52	53	-	-
3289	12.30	53	54	-	-
3290	12.14	53	54	-	-
3291	12.07	53	54	-	-
3292	12.04	54	54	-	-
3293	11.79	54	54	-	-
3294	11.74	54	54	-	-
3295	11.70	54	54	-	-
3296	11.67	54	54	-	-
3297	11.64	54	55	-	-
3298	11.60	54	55	-	-

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3299	11.54	54	55	-	-
3300	11.49	54	55	-	-
3301	11.45	54	55	-	-
3302	11.41	54	55	-	-
3303	11.36	54	55	-	-
3304	11.32	54	55	-	-
3305	11.28	54	55	-	-
3306	11.24	55	55	-	-
3307	11.19	55	55	-	-
3308	10.91	55	56	-	-
3309	10.84	55	56	-	-
3310	10.79	55	56	-	-
3311	10.78	55	56	-	-
3312	10.74	55	56	-	-
3313	10.70	56	56	-	-
3314	10.70	56	57	-	-
3315	10.68	56	57	-	-
3316	10.65	56	57	-	-
3317	10.60	56	57	-	-
3318	10.57	56	57	-	-
3319	10.54	56	57	-	-
3320	10.51	57	57	-	-
3321	10.47	57	58	-	-
3322	10.42	57	58	-	-
3323	9.70	57	58	-	-
3324	9.66	57	58	-	-
3325	9.69	57	58	-	-
3326	9.71	57	58	-	-
3327	9.80	57	58	-	-
3328	9.94	58	58	-	-
3329	9.77	58	59	-	-
3330	10.40	57	58	-	-
3331	10.40	57	58	-	-
3332	10.47	57	58	-	-
3333	10.52	57	58	-	-
3334	10.52	57	58	-	-
3335	10.52	57	57	-	-
3336	10.60	57	57	-	-

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3337	10.62	57	57	-	-
3338	10.66	56	57	-	-
3339	10.71	56	57	-	-
3340	10.74	56	57	-	-
3341	10.75	56	57	-	-
3342	11.00	56	57	-	-
3343	11.03	56	57	-	-
3344	11.08	56	56	-	-
3345	11.12	56	56	-	-
3346	11.17	55	56	-	-
3347	11.25	55	56	-	-
3348	11.31	55	56	-	-
3349	11.33	55	56	-	-
3350	11.39	55	56	-	-
3351	11.45	55	56	-	-
3352	11.53	55	56	-	-
3353	11.61	55	56	-	-
3354	11.64	55	56	-	-
3355	11.68	55	56	-	-
3356	11.70	55	56	-	-
3357	11.84	54	55	-	-
3358	11.90	54	55	-	-
3359	11.93	54	55	-	-
3360	11.94	54	55	-	-
3361	12.00	54	55	-	-
3362	11.70	59	59	-	-
3363	11.70	59	60	-	-
3364	11.70	59	60	-	-
3365	11.70	59	60	-	-
3366	11.60	59	60	-	-
3367	11.54	59	60	-	-
3368	11.49	59	60	-	-
3369	11.43	59	60	-	-
3370	11.39	59	60	-	-
3371	11.33	59	60	-	-
3372	11.28	59	60	-	-
3373	11.21	59	60	-	-
3374	11.14	59	60	-	-

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3375	10.90	59	60	-	-
3376	10.88	59	60	-	-
3377	10.80	59	60	-	-
3378	10.76	59	60	-	-
3379	10.71	59	60	-	-
3380	10.66	59	60	-	-
3381	10.61	59	60	-	-
3382	10.55	60	60	-	-
3383	10.47	59	60	-	-
3384	10.42	60	60	-	-
3385	10.37	60	60	-	-
3386	10.31	60	60	-	-
3387	10.21	60	60	-	-
3388	10.20	60	60	-	-
3389	10.11	60	60	-	-
3390	10.06	60	60	-	-
3391	10.03	60	60	-	-
3392	9.97	60	60	-	-
3393	9.89	60	60	-	-
3394	9.83	60	61	-	-
3395	9.73	60	61	-	-
3396	9.31	59	60	-	-
3397	9.44	59	60	-	-
3398	9.51	60	61	-	-
3399	9.47	62	62	-	AS3671 Needed
3400	9.55	63	64	AS3671 Needed	AS3671 Needed
3401	9.49	65	65	AS3671 Needed	AS3671 Needed
3402	9.85	65	65	AS3671 Needed	AS3671 Needed
3403	9.80	64	65	AS3671 Needed	AS3671 Needed
3404	10.00	64	65	AS3671 Needed	AS3671 Needed
3405	9.90	65	65	AS3671 Needed	AS3671 Needed
3406	9.86	65	65	AS3671 Needed	AS3671 Needed
3407	10.03	65	65	AS3671 Needed	AS3671 Needed
3408	10.06	65	65	AS3671 Needed	AS3671 Needed
3409	10.14	65	65	AS3671 Needed	AS3671 Needed
3410	10.21	64	65	AS3671 Needed	AS3671 Needed
3411	10.28	64	65	AS3671 Needed	AS3671 Needed
3412	10.34	64	65	AS3671 Needed	AS3671 Needed

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3413	10.42	65	65	AS3671 Needed	AS3671 Needed
3414	10.29	64	65	AS3671 Needed	AS3671 Needed
3415	10.49	64	65	AS3671 Needed	AS3671 Needed
3416	10.56	64	65	AS3671 Needed	AS3671 Needed
3417	10.67	64	65	AS3671 Needed	AS3671 Needed
3418	10.60	65	65	AS3671 Needed	AS3671 Needed
3419	10.54	65	65	AS3671 Needed	AS3671 Needed
3420	10.57	64	65	AS3671 Needed	AS3671 Needed
3421	11.00	65	65	AS3671 Needed	AS3671 Needed
3422	11.04	64	65	AS3671 Needed	AS3671 Needed
3423	11.01	65	65	AS3671 Needed	AS3671 Needed
3424	11.16	64	65	AS3671 Needed	AS3671 Needed
3425	11.32	65	65	AS3671 Needed	AS3671 Needed
3426	11.38	64	65	AS3671 Needed	AS3671 Needed
3427	11.42	64	65	AS3671 Needed	AS3671 Needed
3428	11.45	64	65	AS3671 Needed	AS3671 Needed
3429	11.43	64	65	AS3671 Needed	AS3671 Needed
3430	11.52	64	65	AS3671 Needed	AS3671 Needed
3431	11.56	64	65	AS3671 Needed	AS3671 Needed
3432	11.60	64	65	AS3671 Needed	AS3671 Needed
3433	11.60	64	65	AS3671 Needed	AS3671 Needed
3434	11.60	65	65	AS3671 Needed	AS3671 Needed
3435	11.61	64	65	AS3671 Needed	AS3671 Needed
3436	11.61	64	65	AS3671 Needed	AS3671 Needed
3437	14.26	58	59	1	1
3438	14.39	58	59	1	1
3439	14.44	58	59	1	1
3440	14.54	58	59	1	1
3441	14.61	58	59	1	1
3442	14.67	58	59	1	1
3443	14.74	59	59	1	1
3444	14.79	59	59	1	1
3445	15.04	59	60	1	1
3446	15.12	59	60	1	1
3447	15.15	59	60	1	1
3448	15.29	59	61	1	1
3449	15.30	60	61	1	1
3450	15.43	60	61	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3451	15.73	60	62	1	1
3452	15.95	61	62	1	1
3453	15.99	60	75	1	4
3454	15.89	61	75	1	4
3455	15.69	61	76	1	4
3456	15.46	61	76	1	4
3457	15.39	61	76	1	4
3458	15.34	62	76	1	4
3459	15.29	61	77	1	4
3460	15.19	61	76	1	4
3461	15.09	61	76	1	4
3462	14.99	61	76	1	4
3463	14.99	61	76	1	4
3464	14.97	61	76	1	4
3465	14.80	61	76	1	4
3466	14.76	61	76	1	4
3467	14.68	61	77	1	4
3468	14.60	62	76	1	4
3469	14.49	61	76	1	4
3470	14.39	61	76	1	4
3471	14.39	61	77	1	4
3472	14.29	61	76	1	4
3473	14.24	61	76	1	4
3474	14.20	61	76	1	4
3475	14.19	61	76	1	4
3476	14.18	61	76	1	4
3477	14.14	61	77	1	4
3478	14.08	61	76	1	4
3479	14.01	61	76	1	4
3480	14.19	61	77	1	4
3481	13.89	61	77	1	4
3482	13.89	61	77	1	4
3483	13.89	61	77	1	4
3484	13.89	60	77	1	4
3485	13.89	61	76	1	4
3489	12.32	60	61	1	1
3490	12.07	59	60	1	1
3491	11.77	59	60	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3492	11.97	59	61	1	1
3493	12.18	60	61	1	1
3494	12.17	59	61	1	1
3495	12.44	60	61	1	1
3496	12.46	60	61	1	1
3497	13.25	61	62	1	1
3498	13.41	61	62	1	1
3499	13.47	61	62	1	1
3500	13.49	61	62	1	1
3501	13.58	61	62	1	1
3502	13.65	61	62	1	1
3503	13.36	60	62	1	1
3504	13.12	60	61	1	1
3505	12.78	59	60	1	1
3506	13.55	60	61	1	1
3507	13.69	60	61	1	1
3508	13.83	60	62	1	1
3509	13.89	61	62	1	1
3510	13.79	59	60	1	1
3511	13.53	59	60	1	1
3512	13.49	59	60	1	1
3513	13.58	60	61	1	1
3514	13.79	60	61	1	1
3515	14.32	61	62	1	1
3516	14.33	61	62	1	1
3517	14.44	61	62	1	1
3518	14.49	61	62	1	1
3519	14.52	61	62	1	1
3520	14.37	60	62	1	1
3521	14.27	60	61	1	1
3522	14.19	59	60	1	1
3523	14.12	58	59	1	1
3524	14.30	58	59	1	1
3525	14.11	59	60	1	1
3526	14.11	59	60	1	1
3527	14.14	59	60	1	1
3528	14.20	59	60	1	1
3529	14.35	59	61	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3530	14.32	60	61	1	1
3531	14.45	60	61	1	1
3532	14.72	61	62	1	1
3533	14.83	61	62	1	1
3534	14.92	61	62	1	1
3535	14.89	61	62	1	1
3536	14.79	60	61	1	1
3537	14.65	59	61	1	1
3538	14.59	59	60	1	1
3539	14.50	59	60	1	1
3540	14.49	59	60	1	1
3541	14.39	59	60	1	1
3542	14.30	58	59	1	1
3543	14.15	58	59	1	1
3544	14.09	58	59	1	1
3545	14.30	58	59	1	1
3546	14.21	58	59	1	1
3547	14.06	58	59	1	1
3548	14.07	58	59	1	1
3549	14.17	58	59	1	1
3550	14.22	58	59	1	1
3551	14.39	58	59	1	1
3552	14.49	58	59	1	1
3553	14.55	58	59	1	1
3554	14.62	58	59	1	1
3555	14.61	59	59	1	1
3556	14.66	59	60	1	1
3557	14.78	59	60	1	1
3558	14.83	59	60	1	1
3559	14.89	59	61	1	1
3560	14.97	60	61	1	1
3561	15.05	60	62	1	1
3562	15.11	61	62	1	1
3563	15.45	60	62	1	1
3564	15.33	60	62	1	1
3565	15.29	60	61	1	1
3566	15.23	60	61	1	1
3567	15.20	59	61	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3568	15.12	59	60	1	1
3569	15.19	59	60	1	1
3570	15.00	59	60	1	1
3571	15.00	59	60	1	1
3572	14.90	59	59	1	1
3573	14.80	58	59	1	1
3574	14.69	58	59	1	1
3575	14.53	58	59	1	1
3576	14.41	58	59	1	1
3577	14.40	58	59	1	1
3578	14.27	58	58	1	1
3579	14.19	58	59	1	1
3580	14.04	58	58	1	1
3581	13.94	58	58	1	1
3582	10.67	58	59	1	1
3583	10.82	58	59	1	1
3584	10.94	58	59	1	1
3585	11.08	59	59	1	1
3586	11.25	59	60	1	1
3587	11.40	59	60	1	1
3588	11.64	59	60	1	1
3589	11.90	60	61	1	1
3590	12.15	60	61	1	1
3591	11.56	60	61	1	1
3592	11.39	60	61	1	1
3593	11.27	59	60	1	1
3594	11.15	59	60	1	1
3595	11.03	59	60	1	1
3596	10.88	59	59	1	1
3597	10.60	58	59	1	1
3598	10.49	58	59	1	1
3599	10.40	58	58	1	1
3600	10.40	58	58	1	1
3601	10.30	58	58	1	1
3602	10.24	58	58	1	1
3603	10.20	58	58	1	1
3604	10.10	58	58	1	1
3605	10.04	58	58	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3606	9.82	58	59	1	1
3607	9.91	58	59	1	1
3608	10.00	58	59	1	1
3609	10.09	58	59	1	1
3610	10.17	59	60	1	1
3611	10.28	59	60	1	1
3612	10.35	59	60	1	1
3613	10.45	59	60	1	1
3614	10.61	60	62	1	1
3615	10.09	60	61	1	1
3616	10.18	60	61	1	1
3617	10.20	59	61	1	1
3618	10.20	59	60	1	1
3619	10.16	59	60	1	1
3620	10.06	59	60	1	1
3621	9.93	58	59	1	1
3622	9.80	58	59	1	1
3623	9.68	58	59	1	1
3624	9.53	58	59	1	1
3625	9.35	58	58	1	1
3626	9.32	57	58	-	1
3627	9.18	57	58	-	1
3628	9.06	57	58	-	1
3629	8.93	57	58	-	1
3630	8.78	57	58	-	1
3631	8.65	57	58	-	1
3632	8.55	57	58	-	1
3633	8.43	57	58	-	1
3634	8.25	57	58	-	1
3635	8.62	57	58	-	1
3636	8.69	58	58	1	1
3637	8.73	58	58	1	1
3638	8.77	58	59	1	1
3639	8.80	58	59	1	1
3640	8.84	58	59	1	1
3641	8.88	58	59	1	1
3642	8.91	58	59	1	1
3643	8.98	59	59	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3644	9.04	59	60	1	1
3645	9.10	59	60	1	1
3646	9.16	59	60	1	1
3647	9.23	60	61	1	1
3648	9.26	60	62	1	1
3649	8.80	60	61	1	1
3650	8.80	60	61	1	1
3651	8.80	60	61	1	1
3652	8.80	59	60	1	1
3653	8.80	59	60	1	1
3654	8.79	59	60	1	1
3655	8.78	59	60	1	1
3656	8.76	59	60	1	1
3657	8.70	59	59	1	1
3658	8.63	58	59	1	1
3659	8.60	58	59	1	1
3660	8.54	58	59	1	1
3661	8.50	58	59	1	1
3662	8.46	58	59	1	1
3663	8.41	58	58	1	1
3664	8.24	57	58	-	1
3665	8.25	57	58	-	1
3666	8.40	58	58	1	1
3667	8.42	58	59	1	1
3668	8.45	58	59	1	1
3669	8.46	58	59	1	1
3670	8.45	58	59	1	1
3671	8.46	58	59	1	1
3672	8.46	59	59	1	1
3673	8.46	59	60	1	1
3674	8.46	59	60	1	1
3675	8.46	59	60	1	1
3676	8.46	59	60	1	1
3677	8.46	60	61	1	1
3678	8.46	60	61	1	1
3679	8.42	60	61	1	1
3680	8.40	61	62	1	1
3681	8.25	61	62	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3682	8.30	60	62	1	1
3683	8.32	60	62	1	1
3684	8.32	60	61	1	1
3685	8.40	60	61	1	1
3686	8.40	60	61	1	1
3687	8.46	59	60	1	1
3688	8.60	59	60	1	1
3689	8.60	59	60	1	1
3690	8.60	59	59	1	1
3691	8.60	58	59	1	1
3692	8.60	58	59	1	1
3693	8.60	58	59	1	1
3694	8.60	58	58	1	1
3695	8.60	42	43	-	-
3696	8.60	43	43	-	-
3697	8.12	57	58	-	1
3698	8.15	57	58	-	1
3699	8.20	43	44	-	-
3700	8.28	43	44	-	-
3701	8.30	43	44	-	-
3702	8.35	43	44	-	-
3703	8.40	43	44	-	-
3704	8.45	43	44	-	-
3705	8.50	43	44	-	-
3706	8.30	42	43	-	-
3707	8.28	42	43	-	-
3708	8.24	42	43	-	-
3709	8.19	58	59	1	1
3710	8.12	58	59	1	1
3711	8.06	58	59	1	1
3712	7.98	58	59	1	1
3713	7.93	59	59	1	1
3714	7.87	59	60	1	1
3715	7.79	59	60	1	1
3716	7.82	60	61	1	1
3717	7.85	60	61	1	1
3718	7.89	60	61	1	1
3719	7.93	60	62	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3720	7.95	61	62	1	1
3721	7.98	61	62	1	1
3722	8.03	61	63	1	2
3723	8.80	61	76	1	4
3724	8.80	61	76	1	4
3725	9.10	61	76	1	4
3726	9.10	61	76	1	4
3727	9.40	62	76	1	4
3728	9.40	61	76	1	4
3729	9.70	61	76	1	4
3730	9.70	61	76	1	4
3731	10.00	61	76	1	4
3732	10.00	60	76	1	4
3733	10.00	60	75	1	4
3734	10.50	61	76	1	4
3735	10.70	61	76	1	4
3736	11.00	60	76	1	4
3737	11.30	61	76	1	4
3738	11.60	61	76	1	4
3739	11.80	60	76	1	4
3740	12.11	60	77	1	4
3741	12.40	61	77	1	4
3742	12.59	60	76	1	4
3743	12.89	61	76	1	4
3744	12.89	60	76	1	4
3745	13.19	61	77	1	4
3746	13.39	61	77	1	4
3747	13.39	61	77	1	4
3748	13.59	61	76	1	4
3749	13.69	61	76	1	4
3750	12.59	60	61	1	1
3751	12.86	60	62	1	1
3752	13.17	61	62	1	1
3753	12.40	60	62	1	1
3754	11.73	60	62	1	1
3755	11.52	60	62	1	1
3756	11.17	60	62	1	1
3758	9.77	60	62	1	1

		$L_{A10,18\text{-}hr}$ Façade Corrected (dBA)		Acoustic Requirement (MP4.4 Cat or AS 3671) – Existing Roundabout Scenario	
3759	9.51	60	62	1	1
3760	8.78	60	62	1	1
3761	8.58	60	62	1	1
3762	8.42	60	62	1	1
3763	8.22	61	62	1	1
3764	8.20	61	63	1	2
3765	8.06	61	63	1	2
3766	8.10	61	64	1	2
3767	8.50	61	76	1	4
3768	8.60	61	76	1	4
3769	8.70	60	76	1	4
3770	8.70	60	76	1	4
3771	8.70	60	76	1	4
3772	8.70	60	76	1	4
3773	8.70	61	76	1	4
3774	12.02	54	55	-	-
3775	12.73	53	54	-	-
3776	12.87	53	54	-	-
3777	13.05	53	53	-	-
3778	13.30	53	53	-	-
3779	13.45	52	53	-	-
3780	13.71	52	53	-	-
3781	11.61	64	65	AS3671 Needed	AS3671 Needed
8000	12.13	64	64	AS3671 Needed	AS3671 Needed
8001	13.30	49	51	-	-
8003	7.72	44	45	-	-
8004	13.30	59	60	1	1
9006	10.88	59	60	-	-
9007	10.84	64	65	AS3671 Needed	AS3671 Needed
9008	11.73	64	65	AS3671 Needed	AS3671 Needed
9009	10.95	56	57	-	-
9013	12.38	59	60	1	1
9016	9.66	57	58	-	1
9017	8.58	59	60	1	1

APPENDIX E BULK EARTHWORKS PLAN

EARTHWORKS VOLUMES

DATE: 16/08/2024

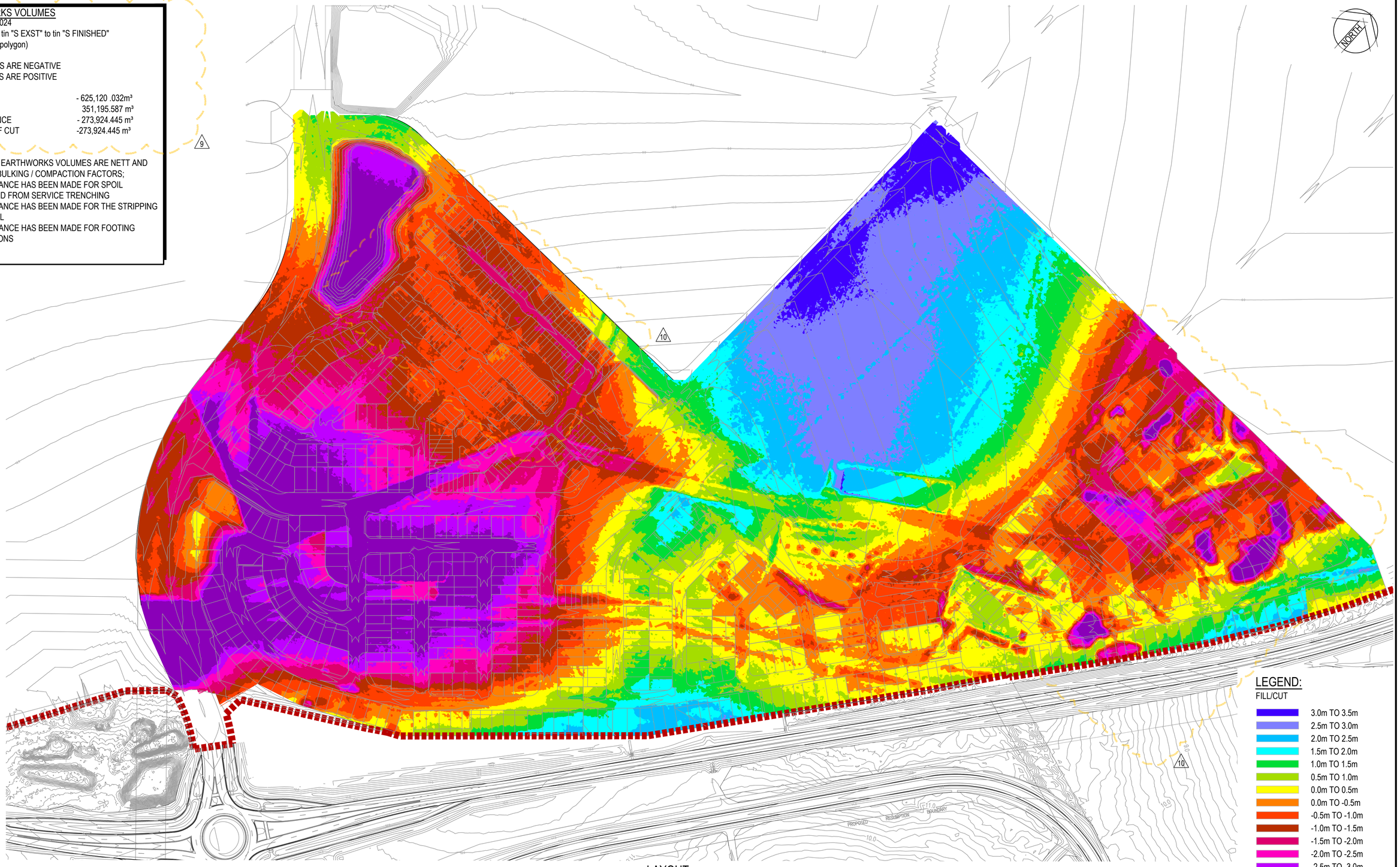
Volumes from tin "S EXST" to tin "S FINISHED"
- (with no plan polygon)

CUT VOLUMES ARE NEGATIVE
FILL VOLUMES ARE POSITIVE

TOTAL CUT	- 625,120 .032m³
TOTAL FILL	351,195.587 m³
TOTAL BALANCE	- 273,924.445 m³
IE EXCESS OF CUT	-273,924.445 m³

NOTE:
1. INDICATED EARTHWORKS VOLUMES ARE NETT AND EXCLUDE BULKING / COMPACTION FACTORS;
2. NO ALLOWANCE HAS BEEN MADE FOR SPOIL GENERATED FROM SERVICE TRENCHING
3. NO ALLOWANCE HAS BEEN MADE FOR THE STRIPPING OF TOPSOIL
4. NO ALLOWANCE HAS BEEN MADE FOR FOOTING FOUNDATIONS

NORTH



LEGEND:

FILL/CUT

- 3.0m TO 3.5m
- 2.5m TO 3.0m
- 2.0m TO 2.5m
- 1.5m TO 2.0m
- 1.0m TO 1.5m
- 0.5m TO 1.0m
- 0.0m TO 0.5m
- 0.0m TO -0.5m
- -0.5m TO -1.0m
- -1.0m TO -1.5m
- -1.5m TO -2.0m
- -2.0m TO -2.5m
- -2.5m TO -3.0m
- -3.0m TO -3.5m

LAYOUT

SCALE 1:2000

Notes

0 50 100 150 200m

SCALE 1:2000 @A1

10	RE-ISSUED FOR APPROVAL	SS		04/10/2024
9	MINOR AMENDMENT	SS		20/08/2024
8	RE-ISSUED FOR APPROVAL	SS		12/07/2024
7	RE-ISSUED FOR APPROVAL	SS		20/06/2024
6	CHANNEL EARTHWORK ADDED	SS		09/06/2024
5	QTY UPDATED	SS		28/05/2024
4	DA RESUBMISSION	SS		20/05/2024
3	RE-ISSUED FOR APPROVAL	SS		11/04/2024
2	ISSUE FOR APPROVAL	SS		28/03/2023
1	ISSUE FOR INFORMATION	SS	-	01/11/2023
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

FOR CONCEPT APPROVAL
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Notes

File Name:
304701171-100-CD-SK1010

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Client/Project Logo

AURA

Stockland

Client/Project

STOCKLAND DEVELOPMENT PTY LTD

AURA PRECINCT 18
PRELIMINARY DESIGN
STAGE 1

Authorised	YYYY.MM.DD	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
		SS	SS		01/11/2023

Title

BULK EARTHWORKS PLAN

Project No. 304701171-100

Scale AS SHOWN A1

Revision 10

Drawing No. 304701171-100-CD-SK1010

Plotted: 4/10/2024 12:25:09 PM, By: GONZALES, AMALIA
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ORIGINAL SHEET - ISO A1 COORD - DATUM - AHD

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