

Environmental Noise Assessment - Starbucks

Part Lot 2076 Butler Boulevard, Butler

Reference: 23118524-01A

Prepared for:
Shimal Realstar Pty Ltd

Reference: 23118524-01A

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Date	Rev	Description	Author	Verified
6-Dec-23	0	Issued to Client	Terry George	Matt Nolan
22-Mar-24	A	Updated opening hours	Terry George	-

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1. INTRODUCTION

Lloyd George Acoustics was engaged by Shimal Realstar Pty Ltd to undertake an environmental noise assessment for a proposed Starbucks café to be located at Part Lot 2076 Butler Boulevard, Butler (refer *Figure 1-1*) with the site plan shown in *Figure 1-2* and full Development Application (DA) plans provided in *Appendix A*. There are other existing and proposed buildings on the overall lot which are included in the noise model, but not considered as part of this assessment. These have or will be considered separately.

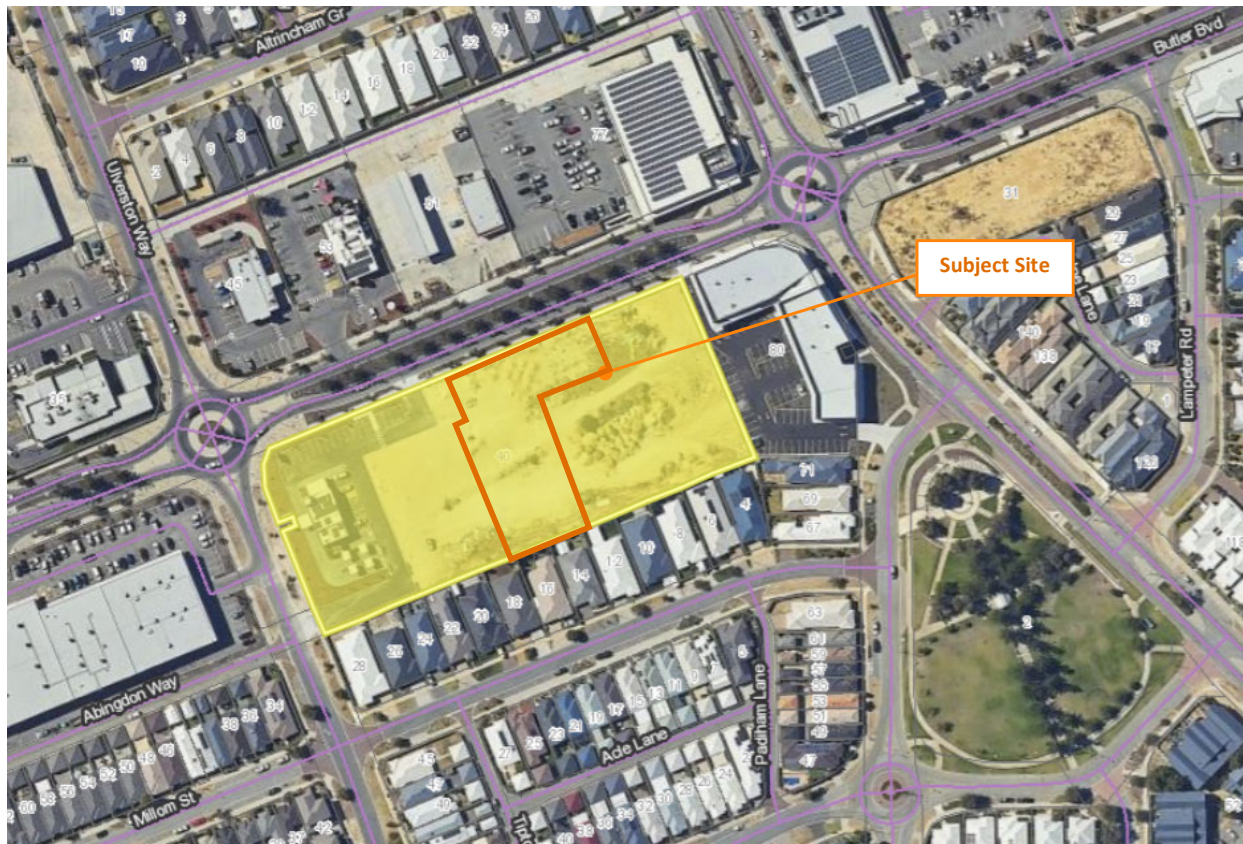


Figure 1-1: Subject Site Location (Source: DPLH PlanWA)

It is understood the operating hours are to be up to 24 hours a day, 7 days a week, such that the most critical time for compliance with the *Environmental Protection (Noise) Regulations 1997* is after 10.00pm and prior to 7.00am Mondays to Saturdays and prior to 9.00am on Sundays and after 10.00pm. Thus, compliance during the night results in compliance at all times. Noise sources considered in this assessment are associated with mechanical plant, delivery vehicles, vehicle noise in the drive-thru and parking areas as well as the speaker associated with the ordering system.

Appendix C contains a description of some of the terminology used throughout this report

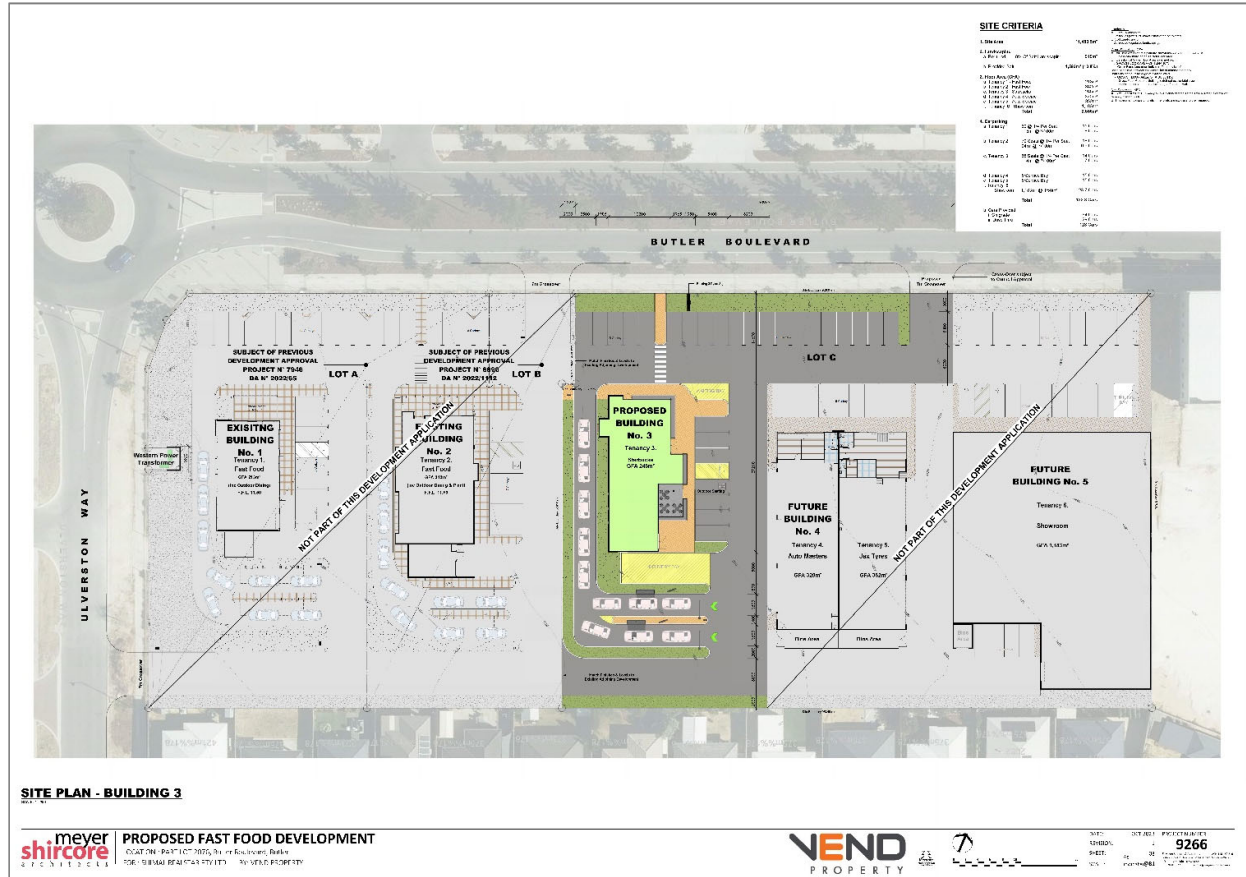


Figure 1-2: Proposed Site Plan

2. CRITERIA

Environmental noise in Western Australia is governed by the *Environmental Protection Act 1986*, through the *Environmental Protection (Noise) Regulations 1997* (the Regulations).

2.1. Regulations 7, 8 & 9

This group of regulations provide the prescribed standard for noise as follows:

“7. Prescribed standard for noise emissions

- (1) Noise emitted from any premises or public place when received at other premises –*
 - (a) must not cause, or significantly contribute to, a level of noise which exceeds the assigned level in respect of noise received at premises of that kind; and*
 - (b) must be free of –*
 - (i) tonality; and*
 - (ii) impulsiveness; and*
 - (iii) modulation,**when assessed under regulation 9.*
- (2) For the purposes of subregulation (1)(a), a noise emission is taken to significantly contribute to a level of noise if the noise emission ... exceeds a value which is 5 dB below the assigned level at the point of reception.”*

Tonality, impulsiveness and modulation are defined in regulation 9 (refer Appendix C). Under regulation 9(3), “Noise is taken to be free of the characteristics of tonality, impulsiveness and modulation if -

- (a) the characteristics cannot be reasonably and practicably removed by techniques other than attenuating the overall level of noise emission; and*
- (b) the noise emission complies with the standard prescribed under regulation 7(1)(a) after the adjustments in the table [Table 2-1] ... are made to the noise emission as measured at the point of reception.”*

Table 2-1 Adjustments Where Characteristics Cannot Be Removed

Where Noise Emission is Not Music*			Where Noise Emission is Music	
Tonality	Modulation	Impulsiveness	No Impulsiveness	Impulsiveness
+ 5 dB	+ 5 dB	+ 10 dB	+ 10 dB	+ 15 dB

* These adjustments are cumulative to a maximum of 15 dB.

The assigned levels (prescribed standards) for all premises are specified in regulation 8(3) and are shown in *Table 2-2*. The L_{A10} assigned level is applicable to noises present for more than 10% of a representative assessment period, generally applicable to “steady-state” noise sources. The L_{A1} is for short-term noise sources present for less than 10% and more than 1% of the time. The L_{Amax} assigned level is applicable for incidental noise sources, present for less than 1% of the time.

Table 2-2 Baseline Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises: highly sensitive area ¹	0700 to 1900 hours Monday to Saturday (Day)	45 + influencing factor	55 + influencing factor	65 + influencing factor
	0900 to 1900 hours Sunday and public holidays (Sunday)	40 + influencing factor	50 + influencing factor	65 + influencing factor
	1900 to 2200 hours all days (Evening)	40 + influencing factor	50 + influencing factor	55 + influencing factor
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	35 + influencing factor	45 + influencing factor	55 + influencing factor
Noise sensitive premises: any area other than highly sensitive area	All hours	60	75	80
Commercial Premises	All hours	60	75	80
Industrial and Utility Premises	All hours	65	80	90

1. *highly sensitive area* means that area (if any) of noise sensitive premises comprising —

- (a) a building, or a part of a building, on the premises that is used for a noise sensitive purpose; and
- (b) any other part of the premises within 15 metres of that building or that part of the building.

The influencing factor (IF), in relation to noise received at noise sensitive premises, has been calculated as 7 dB, as determined in *Appendix B*. *Table 2-3* shows the assigned levels including the influencing factor and transport factor at the receiving locations.

Table 2-3 Assigned Levels

Premises Receiving Noise	Time Of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
+7 dB IF Noise sensitive premises: highly sensitive area ¹	0700 to 1900 hours Monday to Saturday (Day)	52	62	72
	0900 to 1900 hours Sunday and public holidays (Sunday)	47	57	72
	1900 to 2200 hours all days (Evening)	47	57	62
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and public holidays (Night)	42	52	62

It must be noted the assigned levels above apply outside the receiving premises and at a point at least 3 metres away from any substantial reflecting surfaces.

The assigned levels are statistical levels and therefore the period over which they are determined is important. The Regulations define the Representative Assessment Period (RAP) as *“a period of time of not less than 15 minutes, and not exceeding 4 hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission”*. An inspector or authorised person is a person appointed under Sections 87 & 88 of the *Environmental Protection Act 1986* and include Local Government Environmental Health Officers and Officers from the Department of Water Environmental Regulation. Acoustic consultants or other environmental consultants are not appointed as an inspector or authorised person. Therefore, whilst this assessment is based on a 4-hour RAP, which is assumed to be appropriate given the nature of the operations, this is to be used for guidance only.

2.2. Regulation 3

“3. Regulations do not apply to certain noise emissions

- (1) Nothing in these regulations applies to the following noise emissions –*
- (a) Noise emissions from the propulsion and braking systems of motor vehicles operating on a road;”*

Since the development is open to the public, the car park is considered a road and therefore vehicle noise (propulsion and braking) is not assessed. However, noise from vehicles in the drive-thru area has been considered assessable since these lanes are solely for food ordering purposes. Noise from vehicle car doors are also assessed, since these are not part of the propulsion or braking system.

2.3. Regulation 14A

“14A. Waste Collection and Other Works

- (2) Regulation 7 does not apply to noise emitted in the course of carrying out class 1 works if –*
- (a) The works are carried out in the quietest reasonable and practicable manner; and*
- (b) The equipment used to carry out the works is the quietest reasonably available;*

class 1 works means specified works carried out between -

- (a) 0700 hours and 1900 hours on any day that is not a Sunday or a public holiday; or*
- (b) 0900 hours and 1900 hours on a Sunday or public holiday.*

specified works means -

- (a) The collection of waste; or*
- (b) The cleaning of a road or the drains for a road; or*
- (c) The cleaning of public places, including footpaths, cycle paths, car parks and beaches;”*

In the case where specified works are to be carried out outside of class 1, a noise management plan is to be prepared and approved by the CEO.

3. METHODOLOGY

Computer modelling has been used to predict the noise emissions from the development to all nearby receivers. The software used was *SoundPLAN 8.2* with the ISO 9613 algorithms (ISO 17534-3 improved method) selected, as they include the influence of wind and are considered appropriate given the relatively short source to receiver distances. Input data required in the model are listed below and discussed in *Section 3.1* to *Section 3.4*:

- Meteorological Information;
- Topographical data;
- Ground Absorption; and
- Source sound power levels.

3.1. Meteorological Conditions

Meteorological information utilised is provided in *Table 3-1* and is considered to represent worst-case conditions for noise propagation. At wind speeds greater than those shown, sound propagation may be further enhanced, however background noise from the wind itself and from local vegetation is likely to be elevated and dominate the ambient noise levels.

Table 3-1: Modelling Meteorological Conditions

Parameter	Day (7.00am to 7.00pm)	Night (7.00pm to 7.00am)
Temperature (°C)	20	15
Humidity (%)	50	50
Wind Speed (m/s)	Up to 5	Up to 5
Wind Direction*	All	All

* The modelling package allows for all wind directions to be modelled simultaneously.

Alternatives to the above default conditions can be used where one year of weather data is available and the analysis considers the worst 2% of the day and night for the month of the year in which the worst-case weather conditions prevail (source: *Draft Guideline on Environmental Noise for Prescribed Premises*, May 2016). In most cases, the default conditions occur for more than 2% of the time and therefore must be satisfied.

3.2. Topographical Data

Topographical data was adapted from publicly available information (e.g. *Google*) in the form of spot heights and combined with the site plan, including existing and future buildings on the subject site. The model includes the fence separating the commercial site from the Millom Street residences. *Figure 3-1* provides a model overview.



Figure 3-1: Overview of Noise Model

3.3. Ground Absorption

The ground absorption has been assumed to be 0.1 (10%) for the roads and 0.5 (50%) elsewhere, noting that 0.0 represents hard reflective surfaces such as water and 1.0 represents absorptive surfaces such as grass.

3.4. Source Sound Levels

The source sound power levels used in the modelling are provided in *Table 3-2*.

Table 3-2: Source Sound Power Levels, dB

Description	Octave Band Centre Frequency (Hz)								Overall dB(A)
	63	125	250	500	1k	2k	4k	8k	
Refrig Condenser Package – L _{A10}	88	87	85	81	76	70	64	59	82
AC-1&2 Actron PCA233U Package Unit High Speed – L _{A10}	-	76	75	74	71	66	65	60	76
Toilet and Kitchen Exhaust Fans – L _{A10}	80	78	74	71	62	64	63	53	73
Refrigerated Truck delivery – L _{A1}	100	91	87	88	83	81	79	75	90
Drive-Through Speaker – L _{A1}	62	64	66	77	80	73	57	42	82
Car Idling – L _{A10}	81	78	74	72	74	74	67	64	79
Car Door Closing – L _{Amax}	71	74	77	81	80	78	72	61	84

The following is noted in relation to *Table 3-2*:

- Mechanical plant sound levels are estimated from previous projects;
- Refrigeration condenser is assumed to be located on the roof, 1.0-metres above and screened by parapet walls;
- Exhaust fans are located 0.5m above roof;
- The Actron Condensers are located in the service yard, 1.0m above ground level;
- Car noises are modelled at 0.5 metres above ground;
- 4 to 9 vehicles are modelled idling in the drive-thru, depending on the modelling scenario.
- Refrigerated truck condenser is modelled in the loading area at 1.8m above ground.

4. RESULTS AND ASSESSMENT

Noise modelling was undertaken for the following scenarios:

- Night-time L_{A10} – Consists of all mechanical plant operating and 4 vehicles idling in the drive-thru areas;
- Night-time L_{A1} – Consists of drive-thru speakers, 9 vehicles idling, mechanical plant and a small delivery truck in the designated bay;
- Sunday Day L_{A10} – Includes all mechanical plant and 9 vehicles idling in the drive-thru areas;
- Night-time L_{Amax} – Considers car door closings.

4.1. Scenario 1 – Night-time L_{A10}

The results for night-time operations are provided in *Table 4-1* with a noise contour plot provided in *Figure 4-1*.

Table 4-1: Scenario 1 Predicted Levels and Assessment, dB L_{A10}

Receiver	Mech Plant	4 Drive-Thru Vehicles	Combined	Assigned Level	Assessment
10 Millom St	31	33	35	42	Complies
12 Millom St	30	34	35	42	Complies
14 Millom St	28	37	37	42	Complies
16 Millom St	31	38	39	42	Complies
18 Millom St	34	38	39	42	Complies
20 Millom St	34	36	38	42	Complies
22 Millom St	30	32	34	42	Complies

The worst-case combined level is 39 dB L_{A10} , which is 3 dB below the night-time assigned level and therefore compliant. No adjustments are applicable for tonality, since the car idling noise is the dominant noise source, which is variable in sound over a representative period.

Summary Scenario 1: Compliance achieved at all receivers by at least 3 dB.

Figure 4-1 Scenario 1 Noise, Night, dB L_{A10}



Predicted Noise level

- = 35
- = 40
- = 45
- = 50
- = 55

Legend

- Receiver
- Car/Mech Source

Scale 1:1200



Project No: 23098358
Consultant: TG
Date: 24/11/2023
Algorithm: ISO 9613
SoundPLAN Version: 8.2



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4.2. Scenario 2 – Night L_{A1}

The results for night-time operations are provided in *Table 4-2* with a noise contour plot provided in *Figure 4-2*. Note, this assumes deliveries will take less than 24 minutes in a 4-hour period, which is considered sufficient time for a small scale store.

Table 4-2: Scenario 2 Predicted Levels and Assessment, dB L_{A1}

Receiver	Truck Delivery	Drive-Thru Speaker	9 Drive-Thru Vehicles	Combined*	Assigned Level	Assessment
10 Millom St	39	35	36	42	52	Complies
12 Millom St	41	37	37	44	52	Complies
14 Millom St	42	39	39	45	52	Complies
16 Millom St	42	40	41	46	52	Complies
18 Millom St	42	39	40	46	52	Complies
20 Millom St	40	36	38	43	52	Complies
22 Millom St	38	33	35	41	52	Complies

* Combined noise level also includes mechanical plant.

The worst-case combined level is 46 dB L_{A1} , which is 6 dB below the night-time assigned level and therefore compliant. No adjustments are applicable for tonality, since the combined noise level is a combination of all sources. The calculations also assume the delivery is occurring during a full drive-thru, which is a conservative worst-case scenario.

Summary Scenario 2: Compliance achieved at all receivers by at least 6 dB.

Figure 4-2 Scenario 2 Noise, Night, dB L_{A1}



Predicted Noise level

- = 45
- = 50
- = 55
- = 60
- = 65

Legend

- Receiver
- Car/Mech Source
- Delivery Truck

Scale 1:1200



Project No: 23098358
Consultant: TG
Date: 24/11/2023
Algorithm: ISO 9613
SoundPLAN Version: 8.2



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4.3. Scenario 3 – Sunday Day L_{A10}

The results for Sunday daytime operations are provided in *Table 4-3* with a noise contour plot provided in *Figure 4-3*.

Table 4-3: Scenario 3 Predicted Levels and Assessment, dB L_{A10}

Receiver	Mech Plant	9 Drive-Thru Vehicles	Combined	Assigned Level	Assessment
10 Millom St	31	36	37	47	<i>Complies</i>
12 Millom St	30	37	38	47	<i>Complies</i>
14 Millom St	27	40	40	47	<i>Complies</i>
16 Millom St	30	41	41	47	<i>Complies</i>
18 Millom St	34	40	41	47	<i>Complies</i>
20 Millom St	32	38	39	47	<i>Complies</i>
22 Millom St	30	35	37	47	<i>Complies</i>

The worst-case combined level is 41 dB L_{A10} , which is 6 dB below the night-time assigned level and therefore compliant. No adjustments are applicable for tonality, since the car idling noise is the dominant noise source, which is variable in sound over a representative period.

Summary Scenario 3: Compliance achieved at all receivers by at least 6 dB.

Figure 4-3 Scenario 3 Noise, Sunday dB L_{A10}



Predicted Noise level

- = 45
- = 50
- = 55
- = 60
- = 65

Legend

- Receiver
- Car/Mech Source

Scale 1:1200



Project No: 23098358
Consultant: TG
Date: 24/11/2023
Algorithm: ISO 9613
SoundPLAN Version: 8.2



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4.4. Scenario 4 – Night L_{Amax}

The results for night-time maximum noise levels are provided in *Table 4-4* with a noise contour plot provided in *Figure 4-4*.

Table 4-4: Scenario 4 Predicted Levels and Assessment, dB L_{Amax}

Receiver	Car Doors	Combined*	Assigned Level	Assessment
10 Millom St	21	31	57	<i>Complies</i>
12 Millom St	33	43	57	<i>Complies</i>
14 Millom St	35	45	57	<i>Complies</i>
16 Millom St	35	45	57	<i>Complies</i>
18 Millom St	34	44	57	<i>Complies</i>
20 Millom St	32	42	57	<i>Complies</i>
22 Millom St	30	40	57	<i>Complies</i>

* Adjusted by + 10 dB for impulsiveness.

The worst-case level from car doors is 45 dB L_{Amax} , including the + 10 dB adjustment for impulsiveness, which may be applicable.

Summary Scenario 4: Compliance achieved at all receivers by at least 12 dB.

Figure 4-4 Scenario 4 Noise, Night dB L_{Amax}



Predicted Noise level

- = 45
- = 50
- = 55
- = 60
- = 65

Legend

- Receiver
- Car Door Source

Scale 1:1200



Project No: 23098358
Consultant: TG
Date: 24/11/2023
Algorithm: ISO 9613
SoundPLAN Version: 8.2



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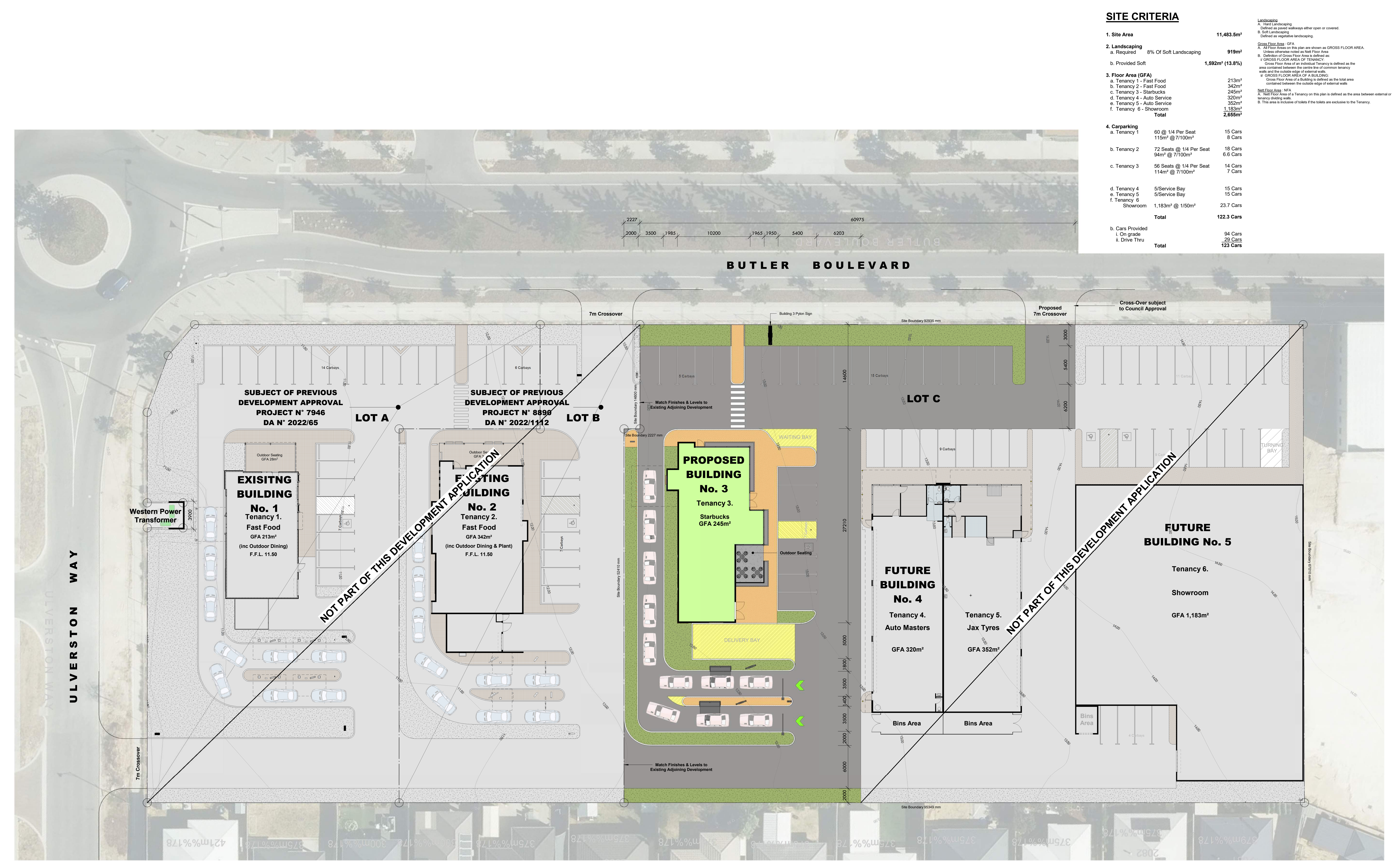
5. RECOMMENDATIONS

The assessment has demonstrated that noise from the proposed Starbucks complies with the assigned levels, determined in accordance with the *Environmental Protection (Noise) Regulations 1997*, at all times.

To further minimise noise impacts, the following are provided for best practice:

- Deliveries:
 - All delivery vehicles are to be encouraged to have broadband type reversing alarms rather than standard tonal alarms;
 - Engines shall be turned off during delivery;
 - Deliveries are to be encouraged during the daytime rather than night-time;
- Any external music or the like shall be at low level and inaudible at noise sensitive premises;
- Mechanical plant:
 - Once the mechanical plant has been designed and selected, the noise levels shall be reviewed prior to Building Permit;
 - All exhaust fans shall be located inside the ceiling void and shall be axial fan type, allowing the incorporation of an attenuator if required;
 - All fans shall be variable speed drive so that maximum speed is only occurring when necessary with demand;
 - Air-conditioning shall have a 'night' / 'quiet' mode option, in case required for prior to 7.00am operation, subject to final detailed analysis;
 - All plant shall be selected for quiet operation;
 - All plant is to be appropriately vibration isolated to 95% isolation efficiency.
- Waste collection to be during the day, Mondays to Saturdays;
- Car park drainage grates or similar to be plastic or metal with rubber gasket and secured to avoid excess banging.

Appendix A – Development Plans



SITE CRITERIA

1. Site Area	11,483.5m²
2. Landscaping	919m²
a. Required 8% Of Soft Landscaping	
b. Provided Soft	1,592m² (13.8%)
3. Floor Area (GFA)	
a. Tenancy 1 - Fast Food	213m²
b. Tenancy 2 - Fast Food	342m²
c. Tenancy 3 - Starbucks	245m²
d. Tenancy 4 - Auto Service	320m²
e. Tenancy 5 - Auto Service	352m²
f. Tenancy 6 - Showroom	1,183m²
Total	2,655m²
4. Carparking	
a. Tenancy 1	60 @ 1/4 Per Seat 15 Cars
b. Tenancy 2	115m² @ 7/100m² 8 Cars
c. Tenancy 3	72 Seats @ 1/4 Per Seat 18 Cars
d. Tenancy 4	94m² @ 7/100m² 6.6 Cars
e. Tenancy 5	56 Seats @ 1/4 Per Seat 14 Cars
f. Tenancy 6	114m² @ 7/100m² 7 Cars
Total	122.3 Cars
b. Cars Provided	
i. On grade	94 Cars
ii. Drive Thru	29 Cars
Total	123 Cars

Landscaping
A. Hard Landscaping
Defined as paved pathways either open or covered.
B. Soft Landscaping
Defined as vegetative landscaping.

Gross Floor Area - GFA
A. All Floor Areas on this plan are shown as GROSS FLOOR AREA.
Unless otherwise noted as Net Floor Area
B. Definition of Gross Floor Area is defined as:
i. GROSS FLOOR AREA OF TENANCY
Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside edge of external walls.
ii. GROSS FLOOR AREA OF A BUILDING
Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls.

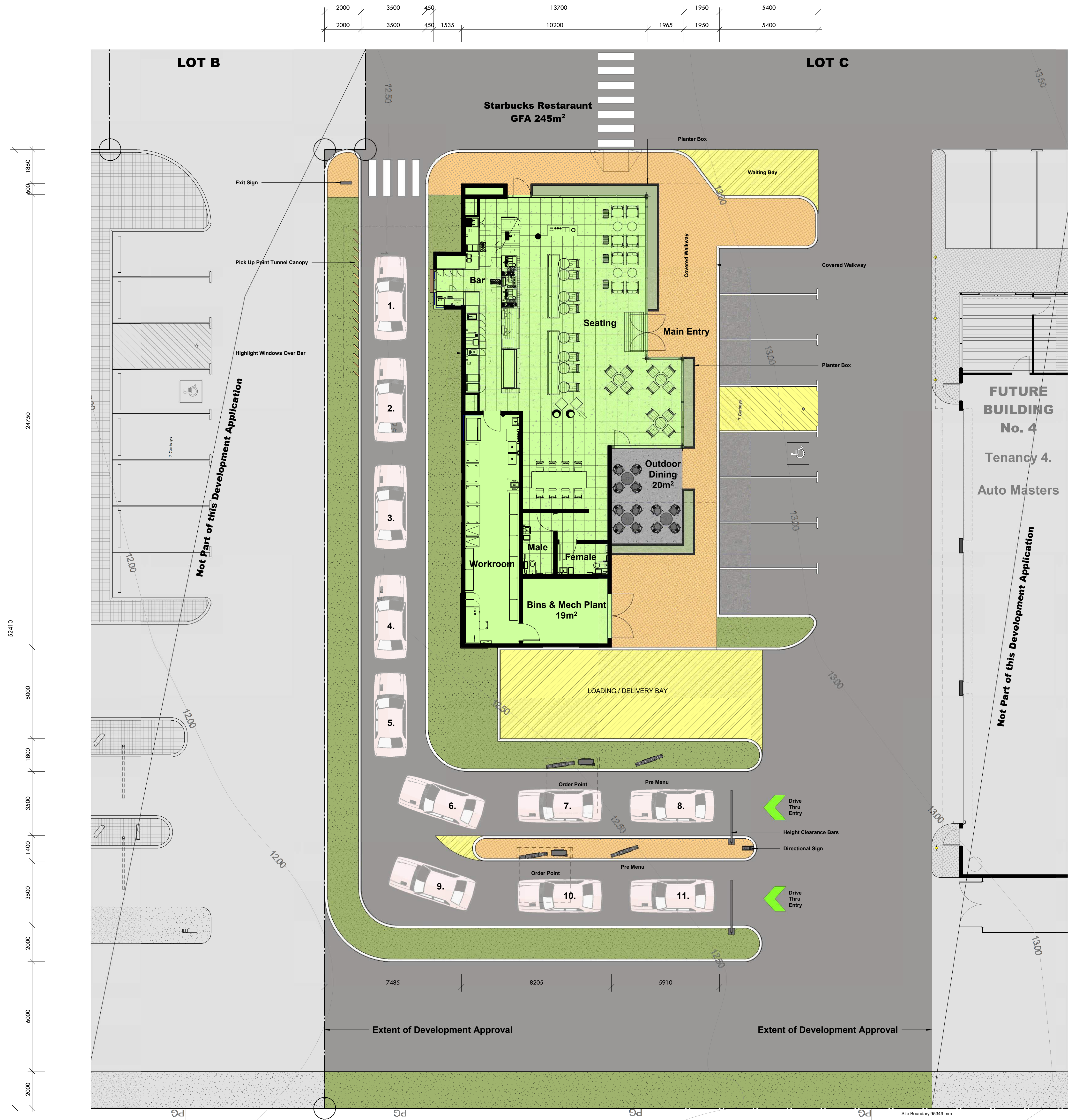
Net Floor Area - NFA
A. Net Floor Area of a Tenancy on this plan is defined as the area between external tenancy dividing walls.
B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.

SITE PLAN - BUILDING 3

SCALE: 1 : 200

PROPOSED FAST FOOD DEVELOPMENT

LOCATION : PART LOT 2076, Butler Boulevard, Butler
FOR : SHIMAL REALSTAR PTY LTD BY: VEND PROPERTY



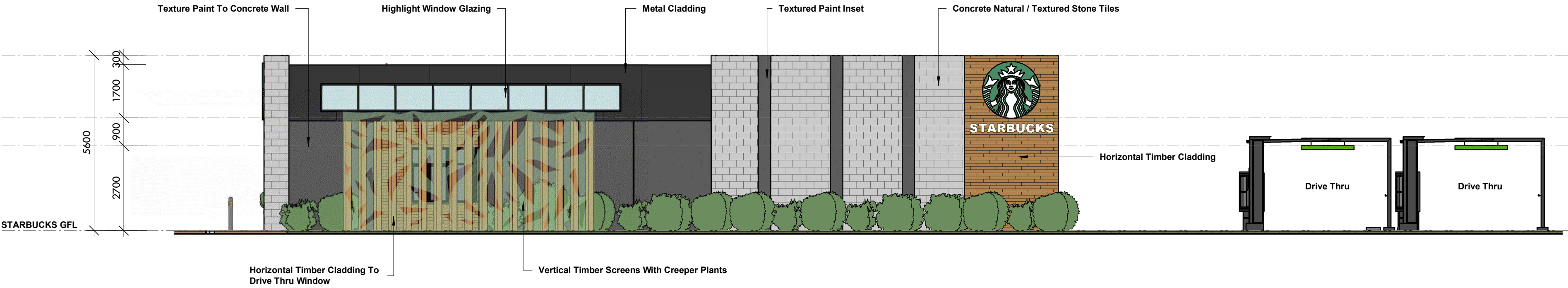
BUILDING 3 - GROUND FLOOR PLAN

SCALE: 1 : 100

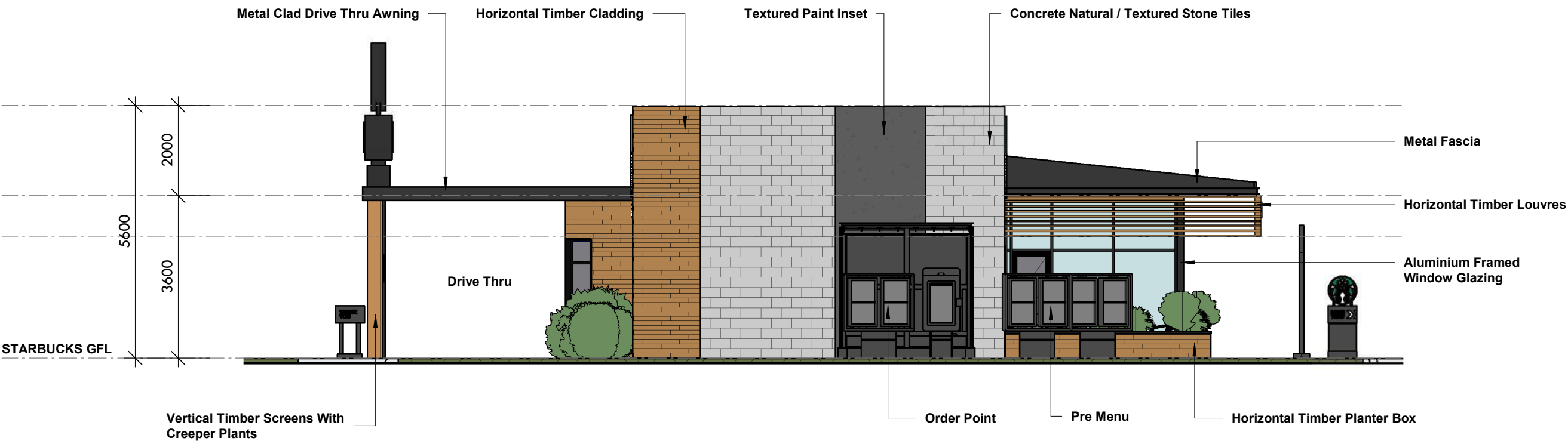
PROPOSED FAST FOOD DEVELOPMENT

LOCATION : PART LOT 2076, Butler Boulevard, Butler
FOR : SHIMAL REALSTAR PTY LTD BY: VEND PROPERTY

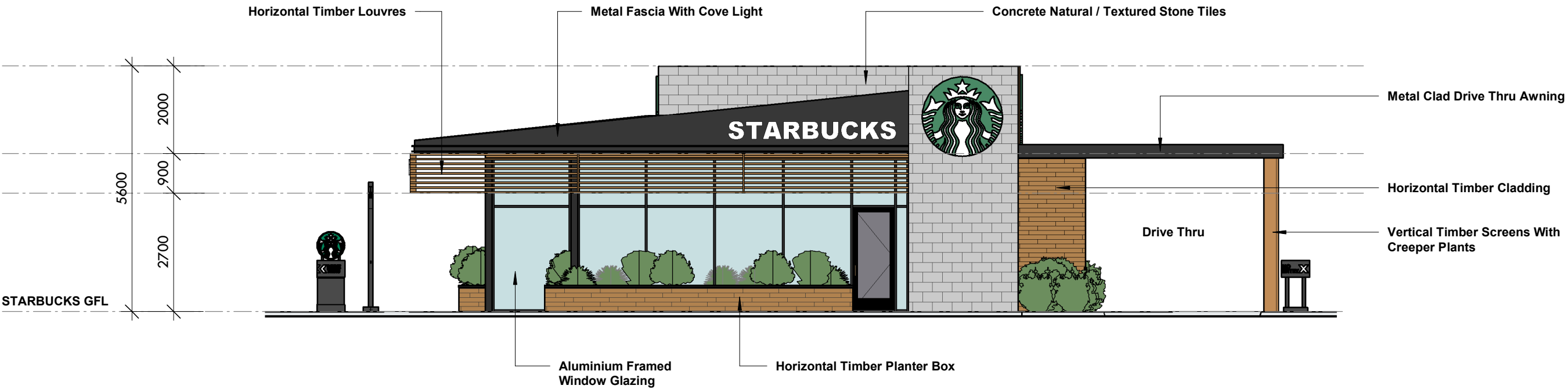
NOTE:
1. Signage is not a part of this Development Application.
2. Signage will be by a seperate Application.
3. Signage shown is indicative only.



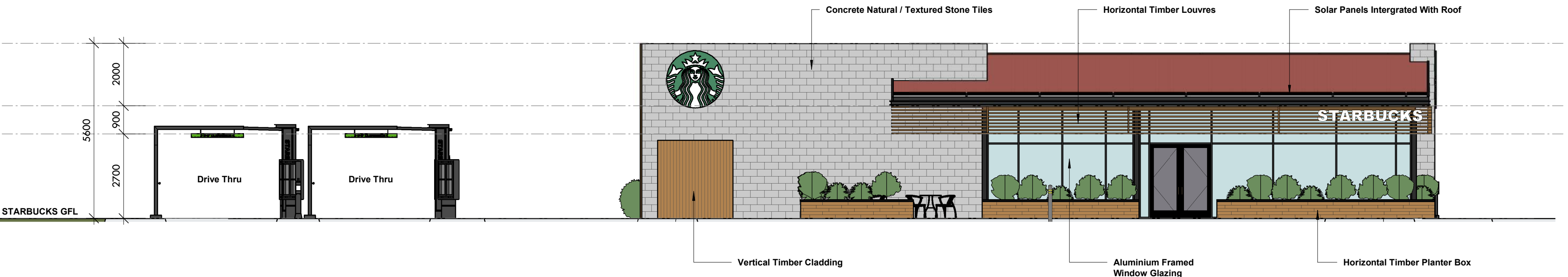
BUILDING 3 - WEST ELEVATION
SCALE: 1 : 100



BUILDING 3 - SOUTH ELEVATION
SCALE: 1 : 100

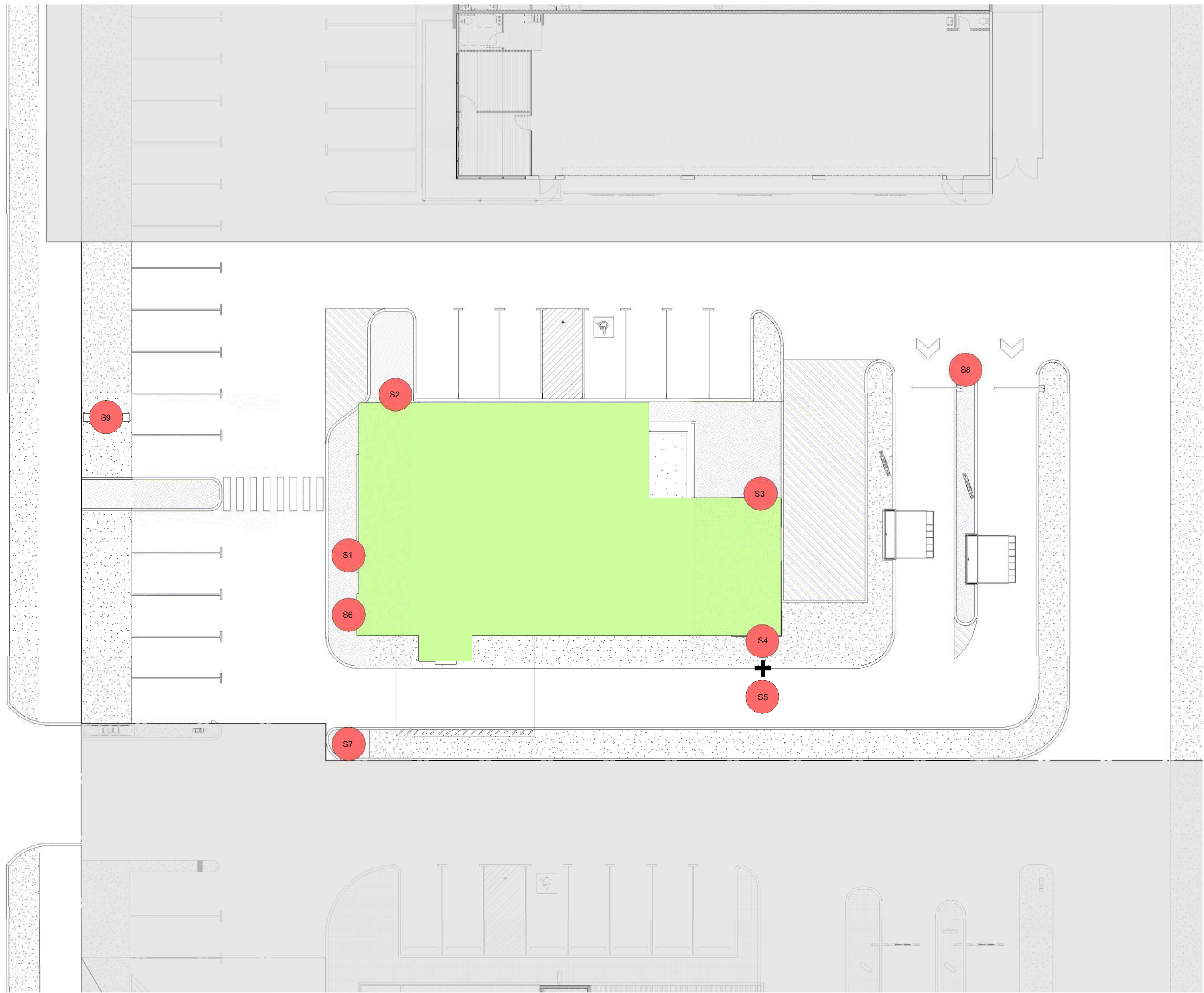


BUILDING 3 - NORTH ELEVATION
SCALE: 1 : 100



BUILDING 3 - EAST ELEVATION
SCALE: 1 : 100

BUTLER BOULEVARD



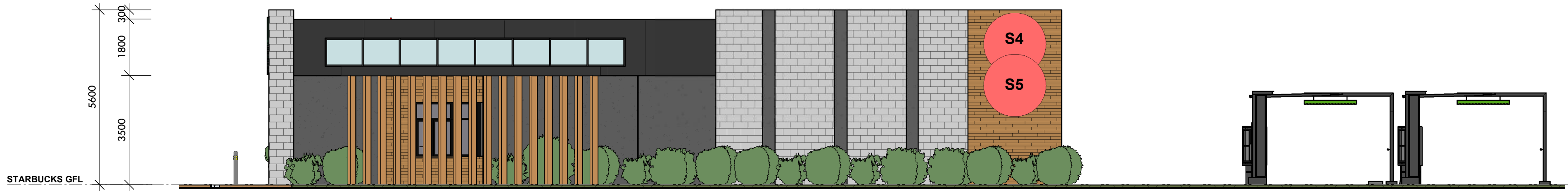
PROPOSED SIGNAGE LOCATIONS

SCALE: 1: 200

No.	Location	Signage Graphic	Description
S1	Tenancy 3 Side Roof	Refer Elevations	Aluminium Composite Panel Building Sign in corporate colours. Client to confirm details.
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S9	Tenancy 3 Pylon Sign	Refer Pylon Sign Elevation	Aluminium Composite Panel Building Sign in corporate colours. Client to confirm details.

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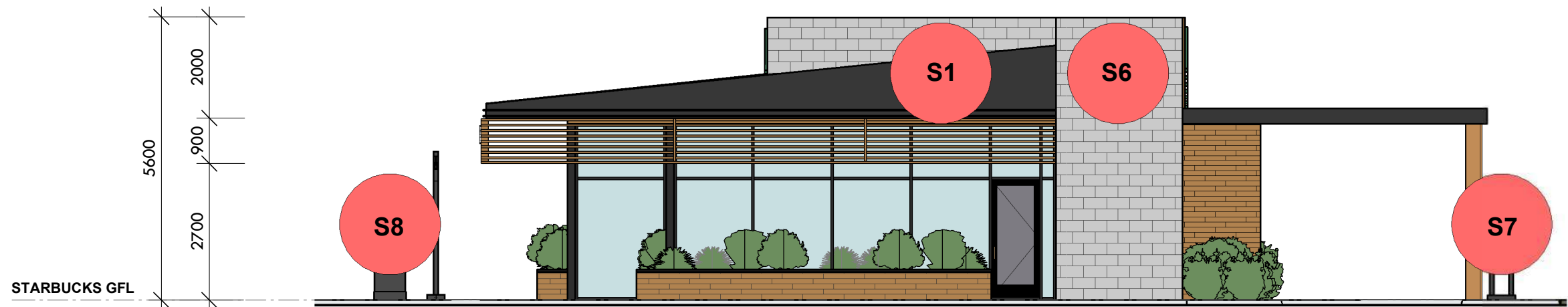
BUILDING 3 - WEST ELEVATION SIGNAGE

SCALE: 1: 100



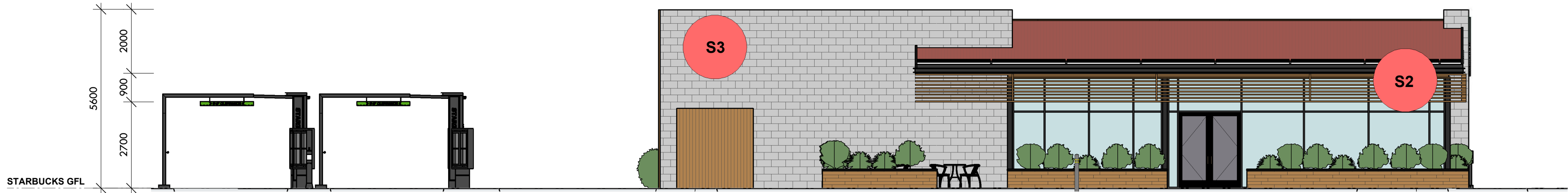
BUILDING 3 - SOUTH ELEVATION SIGNAGE

SCALE: 1: 100



BUILDING 3 - NORTH ELEVATION SIGNAGE

SCALE: 1: 100



BUILDING 3 - EAST ELEVATION SIGNAGE








SCALE: 1: 100



PYLON SIGN ELEVATION

SCALE: 1: 50

LANDSCAPE LEGEND

PLANTING SCHEDULE			
Symbol	Description	Spacing	Size
	MIX 01 - Groundcovers	3 per sqm.	140mm
	MIX 02 - Low Hedging & Groundcovers	3 per sqm.	140mm
	MIX 03 - Low Shrubs & Groundcovers	3 per sqm.	140mm
TREE SCHEDULE			
Symbol	Description	Spacing	Size
	TREE 01 - AGONIS FLEXUOSA	As shown	100L
	TREE 02 - CORYMBIA FICIFOLIA	As shown	100L
	TREE 03 - EUCALYPTUS TORQUATA	As shown	100L
	EXISTING TREE		

PLANTING MIX 01



PLANTING MIX 02



PLANTING MIX 03

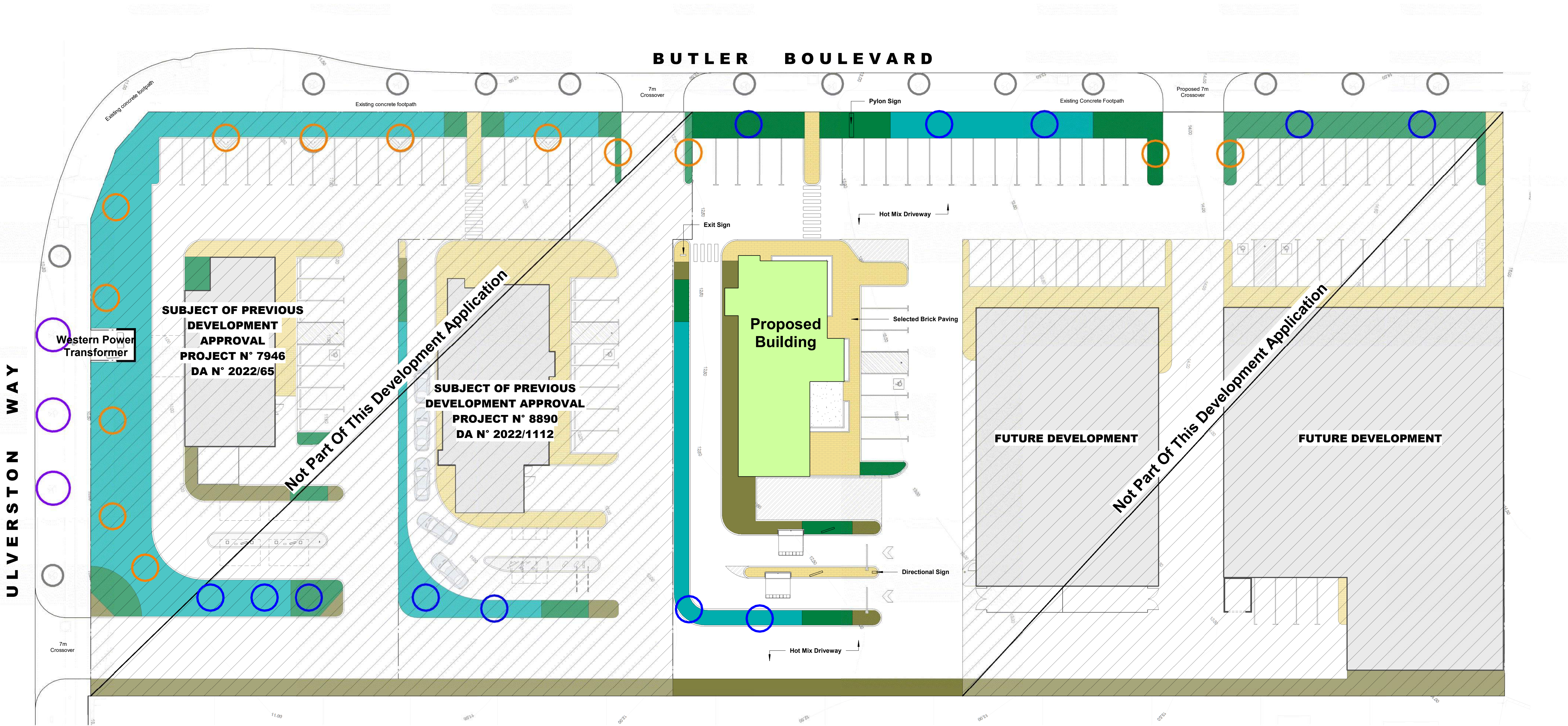


TREE



NOTES

1. Landscape Works
- 1.1 Confirm set out of all trees and kerbs prior to commencement of works.
- 1.2 All areas are to be fine graded evenly to conform to kerb levels and surrounding finishes.
- 1.3 Final grading shall be provide consistently self draining falls to surfaces. Surfaces shall be free from depressions, irregularities and awkward and noticeable changes in grade. Generally, grades shall deviate in level no greater than 20mm in one linear metre.
2. Soil Preparation
- 2.1 Existing soil in planting areas shall be treated with soil wetting agent. Planted areas shall be spread with 50mm of approved standard soil conditioner that shall be ripped into existing soil to a min. depth of 200mm.
- 2.2 Turf areas shall be evenly spread w/50mm of medium texture general purpose garden soil, to comply with AS 2223-1978. rip into existing site soil to a depth of 50mm.
3. Planting
- 3.1 Planted areas shall be mulched with an organic mulch unless otherwise stated to a minimum depth of 100mm.
- 3.2 Advanced trees shall be staked w/ 3 x 85mm Dia CCA treated pine poles. Posts shall be painted black and installed to a min depth of 600mm. Trees shall be secured to poles w/ 3 x rubber ties
- 3.3 Trees planted within 1000mm of boundary walls and/or parking areas shall be installed within 600mm depth nylux root barrier membrane. Membrane shall be installed as per manufacturers recommendations.
4. Irrigation
- 4.1 All planting and grassing to be irrigated via a fully automatic system from mains.
- 4.2 All turf to be irrigated via articulated risers. All shrubs to be irrigated w/ poly riser jets. All trees to be irrigated via bubblers.
- 4.3 Controller to be located in bin store unless otherwise directed.
- 4.4 System to overlap sufficiently to counteract wind blow and avoid drought shadow.
- 4.5 Sleeves beneath paved surfaces to be provided by others.
- 4.6 Irrigation system shall be dual program to allow turf and planting areas to be watered separately.



LANDSCAPE PLAN

SCALE: 1 : 250

Appendix B – Influencing Factor Calculation

The assigned levels combine a baseline assigned level with an influencing factor, with the latter increasing the assigned level on the basis of the existence of significant roads and commercial or industrial zoned land within an inner circle (100 metre radius) and an outer circle (450 metre radius) of the noise sensitive premises. The calculation for the influencing factor is:

$$= \frac{1}{10} (\% \text{ Type A}_{100} + \% \text{ Type A}_{450}) + \frac{1}{20} (\% \text{ Type B}_{100} + \% \text{ Type B}_{450})$$

where :

% Type A₁₀₀ = the percentage of industrial land within
a 100m radius of the premises receiving the noise

% Type A₄₅₀ = the percentage of industrial land within
a 450m radius of the premises receiving the noise

% Type B₁₀₀ = the percentage of commercial land within
a 100m radius of the premises receiving the noise

% Type B₄₅₀ = the percentage of commercial land within
a 450m radius of the premises receiving the noise

+ Transport Factor (maximum of 6 dB)

= 2 for each secondary road (6,000 to 15,000 vpd) within 100m

= 2 for a major road (> 15,000 vpd) within 450m

= 6 for a major road within 100m

The nearest noise sensitive premise used within the assessment is identified as 16 Millom Street, Butler.

Table B-1 shows the percentage of industrial and commercial land within the inner (100 metre radius) and outer (450 metre radius) circles of the noise sensitive premises, with this also shown on Figure B-1 for Receiver R1.

Table B-1: Percentage of Land Types within 100m and 450m Radii

Receiver	Land Type	Within 100m	Within 450m
16 Millom St	Type A - Industrial and Utility	0	0
	Type B – Commercial	37	22



Figure B-1: Land Types within 100m and 450m Radii

From the Main Roads WA Traffic Map (refer *Figure B-2*), *Table B-2* shows the relevant roads and their traffic counts within the inner (100 metre radius) and outer (450 metre radius) circles.

Table B-2: Relevant Roads within 100m and 450m Radii

Receiver	Within 100m		Within 450m
	Major Road (+ 6 dB)	Secondary Road (+ 2 dB)	Major Road Not Within 100m (+ 2 dB)
16 Millom St	-	Butler Boulevard (8,915 2023 #LM01049)	Marmion Avenue (34,799 2023 #LM01049)

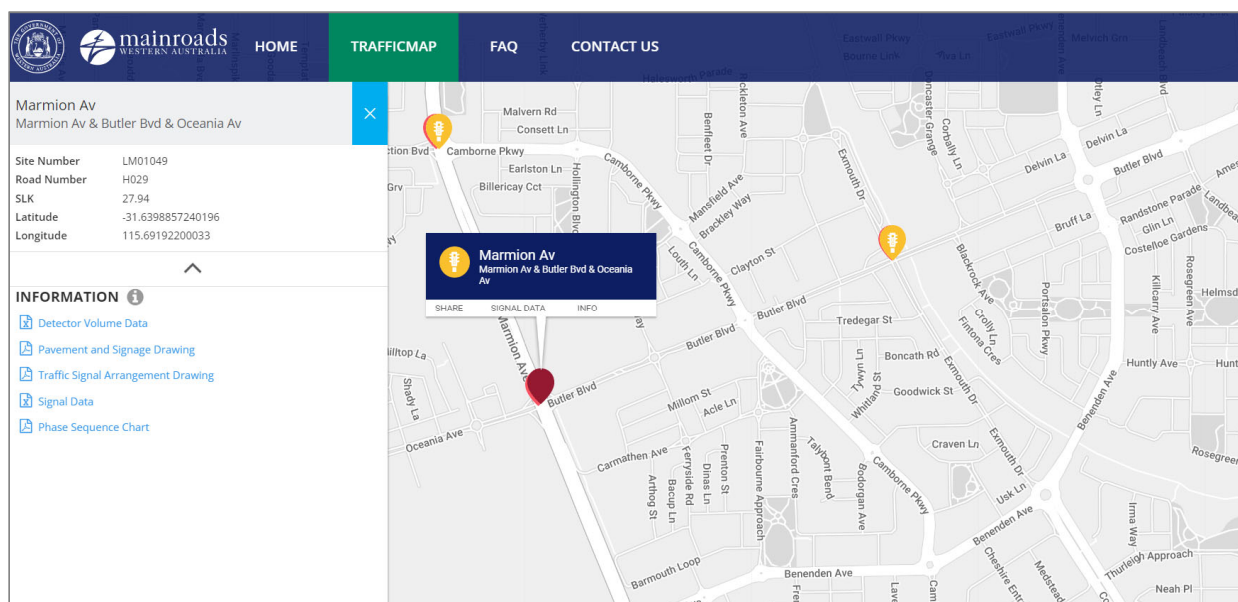


Figure B-2: MRWA Published Traffic Data

Table B-3 combines the percentage land types and Transport Factor to calculate the influencing factor.

Table B-3: Influencing Factor Calculation, dB

Receiver	Industrial Land	Commercial Land	Transport Factor	Total
16 Millom St	0	2.9	4.0	7

The influencing factor calculated in *Table B-3* is combined with those baseline assigned levels of *Table 2-2*, resulting in the project assigned levels provided in *Table 2-3*.

Appendix C – Terminology

The following is an explanation of the terminology used throughout this report:

- **Decibel (dB)**

The decibel is the unit that describes the sound pressure levels of a noise source. It is a logarithmic scale referenced to the threshold of hearing.

- **A-Weighting**

An A-weighted noise level has been filtered in such a way as to represent the way in which the human ear perceives sound. This weighting reflects the fact that the human ear is not as sensitive to lower frequencies as it is to higher frequencies. An A-weighted sound level is described as L_A , dB.

- **Sound Power Level (L_w)**

Under normal conditions, a given sound source will radiate the same amount of energy, irrespective of its surroundings, being the sound power level. This is similar to a 1kW electric heater always radiating 1kW of heat. The sound power level of a noise source cannot be directly measured using a sound level meter but is calculated based on measured sound pressure level at known distances. Noise modelling incorporates source sound power levels as part of the input data.

- **Sound Pressure Level (L_p)**

The sound pressure level of a noise source is dependent upon its surroundings, being influenced by distance, ground absorption, topography, meteorological conditions etc. and is what the human ear actually hears. Using the electric heater analogy above, the heat will vary depending upon where the heater is located, just as the sound pressure level will vary depending on the surroundings. Noise modelling predicts the sound pressure level from the sound power levels taking into account ground absorption, barrier effects, distance etc.

- **L_{ASlow}**

This is the noise level in decibels, obtained using the A-frequency weighting and the S (slow) time weighting. Unless assessing modulation, all measurements use the slow time weighting characteristic.

- **L_{AFast}**

This is the noise level in decibels, obtained using the A-frequency weighting and the F (fast) time weighting. This is used when assessing the presence of modulation.

- **L_{APeak}**

This is the greatest absolute instantaneous sound pressure level in decibels using the A-frequency weighting.

- **L_{Amax}**

An L_{Amax} level is the maximum A-weighted noise level during a particular measurement.

- **L_{A1}**

The L_{A1} level is the A-weighted noise level exceeded for 1 percent of the measurement period and is considered to represent the average of the maximum noise levels measured.

- **L_{A10}**

The L_{A10} level is the A-weighted noise level exceeded for 10 percent of the measurement period and is considered to represent the “intrusive” noise level.

- **L_{A90}**

The L_{A90} level is the A-weighted noise level exceeded for 90 percent of the measurement period and is considered to represent the “background” noise level.

- **L_{Aeq}**

The equivalent steady state A-weighted sound level (“equal energy”) in decibels which, in a specified time period, contains the same acoustic energy as the time-varying level during the same period. It is considered to represent the “average” noise level.

- **One-Third-Octave Band**

Means a band of frequencies spanning one-third of an octave and having a centre frequency between 25 Hz and 20000 Hz inclusive.

- **Representative Assessment Period**

Means a period of time not less than 15 minutes, and not exceeding four hours, determined by an inspector or authorised person to be appropriate for the assessment of a noise emission, having regard to the type and nature of the noise emission.

- **L_{Amax} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded at any time.

- **L_{A1} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded for more than 1 percent of the representative assessment period.

- **L_{A10} assigned level**

Means an assigned level, which, measured as a L_{ASlow} value, is not to be exceeded for more than 10 percent of the representative assessment period.

- **Tonal Noise**

A tonal noise source can be described as a source that has a distinctive noise emission in one or more frequencies. An example would be whining or droning. The quantitative definition of tonality is:

- the presence in the noise emission of tonal characteristics where the difference between -
 - (a) the A-weighted sound pressure level in any one-third octave band; and
 - (b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ slow}$ levels.

This is relatively common in most noise sources.

- **Modulating Noise**

A modulating source is regular, cyclic and audible and is present for at least 10% of the measurement period. The quantitative definition of modulation is:

- a variation in the emission of noise that —
 - (a) is more than 3 dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band; and
 - (b) is present for at least 10% of the representative assessment period; and
 - (c) is regular, cyclic and audible.

- **Impulsive Noise**

An impulsive noise source has a short-term banging, clunking or explosive sound. The quantitative definition of impulsiveness means:

- a variation in the emission of a noise where the difference between L_{Apeak} and L_{Amax} is more than 15 dB when determined for a single representative event.

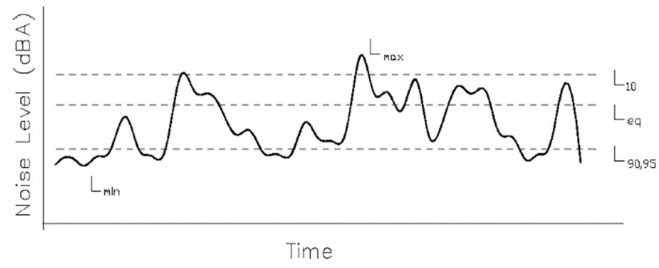
- **Major Road**

Is a road with an estimated average daily traffic count of more than 15,000 vehicles.

- **Secondary / Minor Road**

Is a road with an estimated average daily traffic count of between 6,000 and 15,000 vehicles.

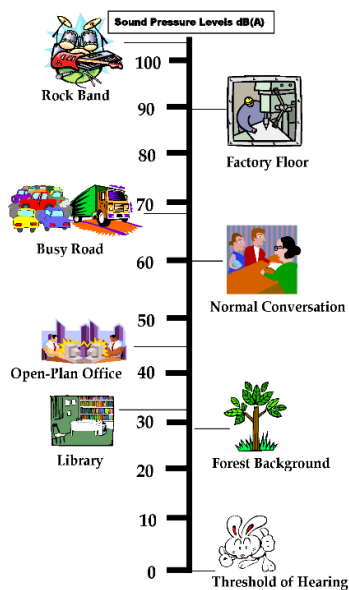
- Chart of Noise Level Descriptors



- Austrroads Vehicle Class

VEHICLE CLASSIFICATION SYSTEM AUSTRROADS		
CLASS	LIGHT VEHICLES	
1	SICUT Car, Van, Minivan, and Utility Vehicle, Motorcycle	
2	SICUT - TOWING Trailer, Caravan, Boat	
HEAVY VEHICLES		
3	TWO AXLE TRUCK OR BUS *2 axle groups	
4	THREE AXLE TRUCK OR BUS *3 axle, 2 axle groups	
5	FOUR AXLE TRUCK *4 axle, 2 axle groups	
6	THREE AXLE ARTICULATED *3 axle, 3 axle groups	
7	FOUR AXLE ARTICULATED *4 axle, 3 or 4 axle groups	
8	SIX AXLE ARTICULATED *6 axle, 3+ axle groups	
9	SIX AXLE ARTICULATED *6 axle, 3+ axle groups or 7+ axle, 3 axle groups	
LONG VEHICLES AND ROAD TRAINS		
10	8 DOUBLE or HEAVY TRUCK and TRAILER *7+ axle, 4 axle groups	
11	DOUBLE ROAD TRAIN *7+ axle, 5 or 6 axle groups	
12	TRIPLE ROAD TRAIN *7+ axle, 7+ axle groups	

- Typical Noise Levels





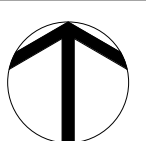


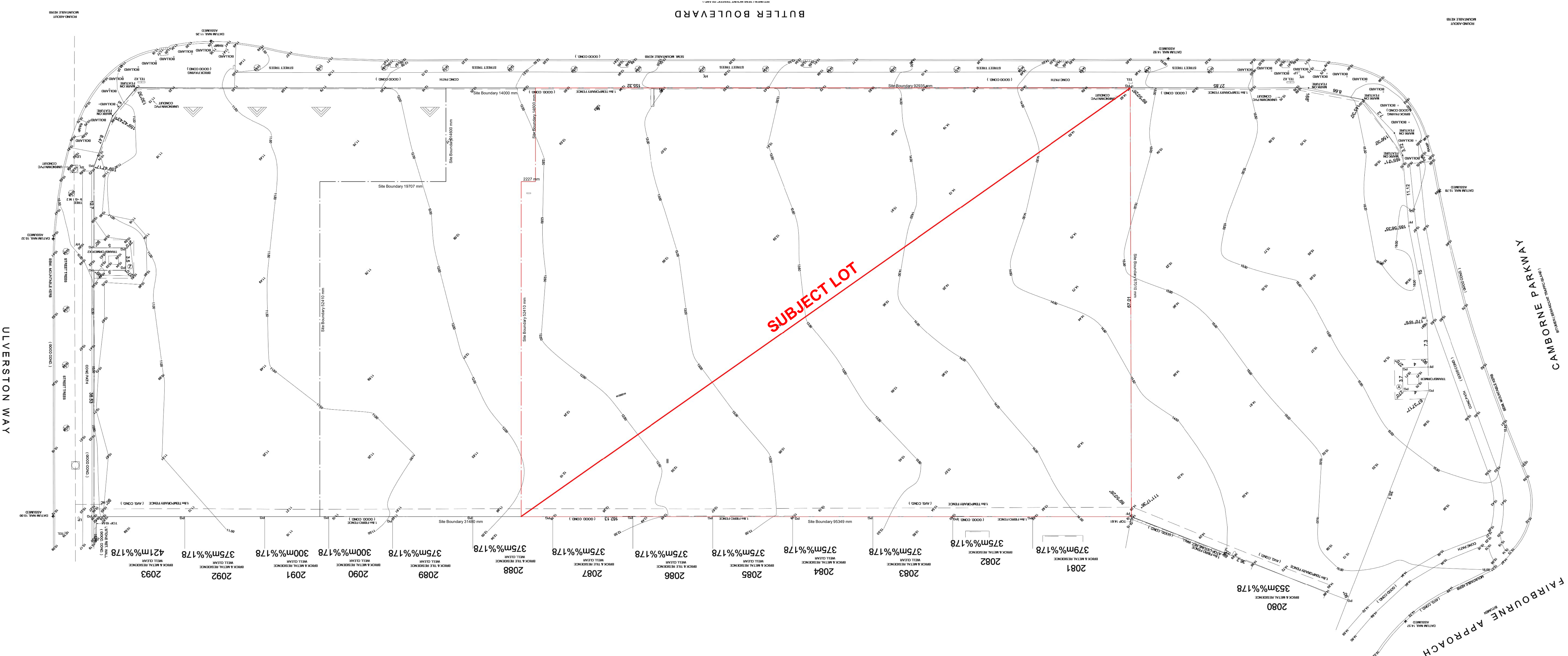
LOCATION PLAN

SCALE: 1 : 500

PROPOSED FAST FOOD DEVELOPMENT

LOCATION : PART LOT 2076, Butler Boulevard, Butler
FOR : SHIMAL REALSTAR PTY LTD BY: VEND PROPERTY





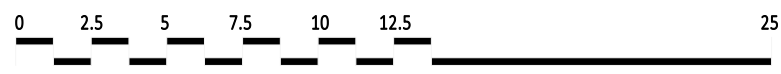
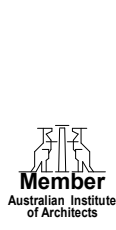
SITE SURVEY

SCALE:1 : 250



PROPOSED FAST FOOD DEVELOPMENT

LOCATION : PART LOT 2076, Butler Boulevard, Butler
FOR : SHIMAL REALSTAR PTY LTD BY: VEND PROPERTY



DATE:	APRIL 2024	PROJECT NUMBER
REVISION:	3	9266
SHEET:	02	© Meyer Shircore & Associates ACN 115 189 216 Suite 2, Ground Floor 437 Roberts Road, Subiaco WA 6008 PO Box 1294 Subiaco WA 6904 t: 08 9381 9511 e: msa@meyershircore.com.au
SCALE:	1 : 250 @B1	

Landscaping

- A. **Hard Landscaping**
 - Defined as paved walkways either open or covered.
- B. **Soft Landscaping**
 - Defined as vegetative landscaping.

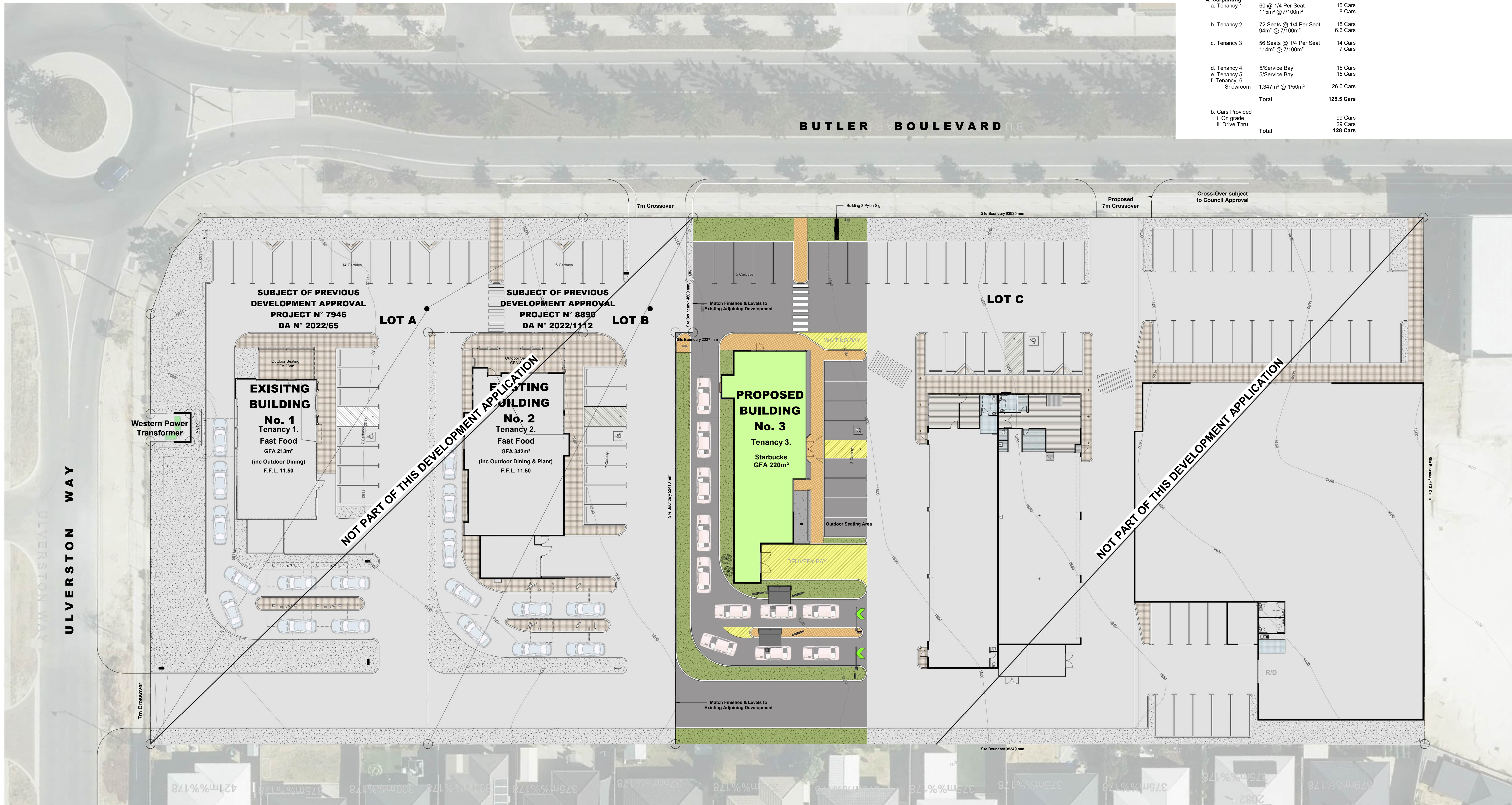
Gross Floor Area - GFA

- A. **All Floor Area** on this plan shown as GROSS FLOOR AREA.
 - Unless otherwise noted on the plan shown as
- B. **Definition of Gross Floor Area is defined as:**
 - i. **GROSS FLOOR AREA OF TENANCY**
 - Gross Floor Area of an individual Tenancy is defined as the area contained between the centre line of common tenancy walls and the outside edge of external walls.
 - ii. **GROSS FLOOR AREA OF A BUILDING**
 - Gross Floor Area of a Building is defined as the total area contained between the outside edge of external walls

Nett Floor Area - NFA

- A. **Nett Floor Area** of a Tenancy on this plan defined as the area between external and internal dividing walls.
- B. This area is inclusive of toilets if the toilets are exclusive to the Tenancy.

1. Site Area		11,483.5m²
2. Landscaping		
a. Required	8% Of Soft Landscaping	919m²
b. Provided Soft		1,508m² (13.2%)
3. Floor Area (GFA)		
a. Tenancy 1 - Fast Food		213m ²
b. Tenancy 2 - Fast Food		342m ²
c. Tenancy 3 - Fast Food		220m ²
d. Tenancy 4 - Auto Service		320m ²
e. Tenancy 5 - Auto Service		352m ²
f. Tenancy 6 - Showroom		<u>1,347m²</u>
	Total	2,794m²
4. Carparking		
a. Tenancy 1	60 @ 1/4 Per Seat 115m ² @ 7/100m ²	15 Cars 8 Cars
b. Tenancy 2	72 Seats @ 1/4 Per Seat 94m ² @ 7/100m ²	18 Cars 6.6 Cars
c. Tenancy 3	56 Seats @ 1/4 Per Seat 114m ² @ 7/100m ²	14 Cars 7 Cars
d. Tenancy 4	5/Service Bay	15 Cars
e. Tenancy 5	5/Service Bay	15 Cars
f. Tenancy 6 Showroom	1,347m ² @ 1/50m ²	26.6 Cars
	Total	125.5 Cars
b. Cars Provided		
i. On grade		99 Cars
ii. Drive Thru		<u>29 Cars</u>
	Total	128 Cars



SCALE: 1 : 200

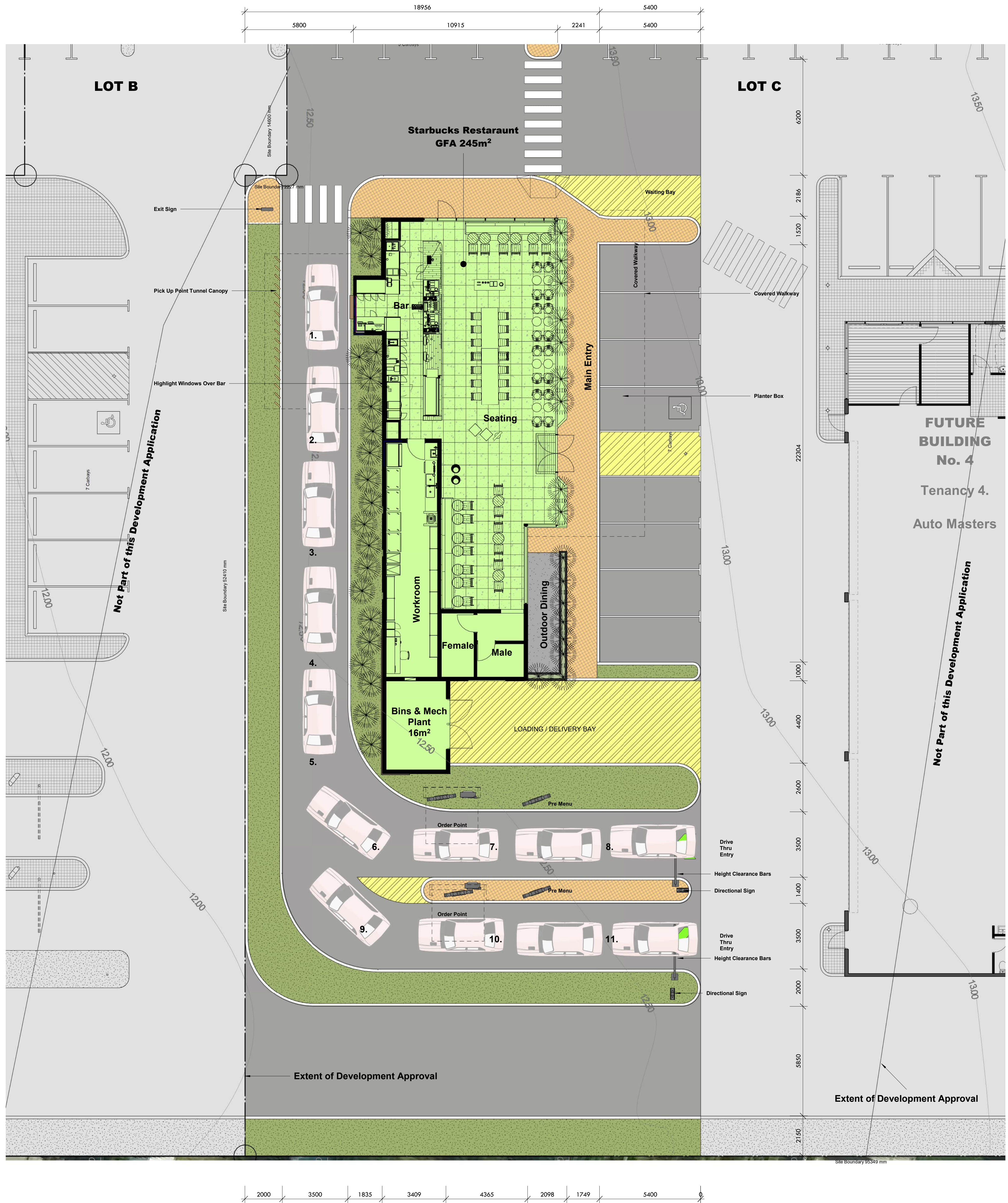
LOCATION : PART LOT 2076, Butler Boulevard, Butler
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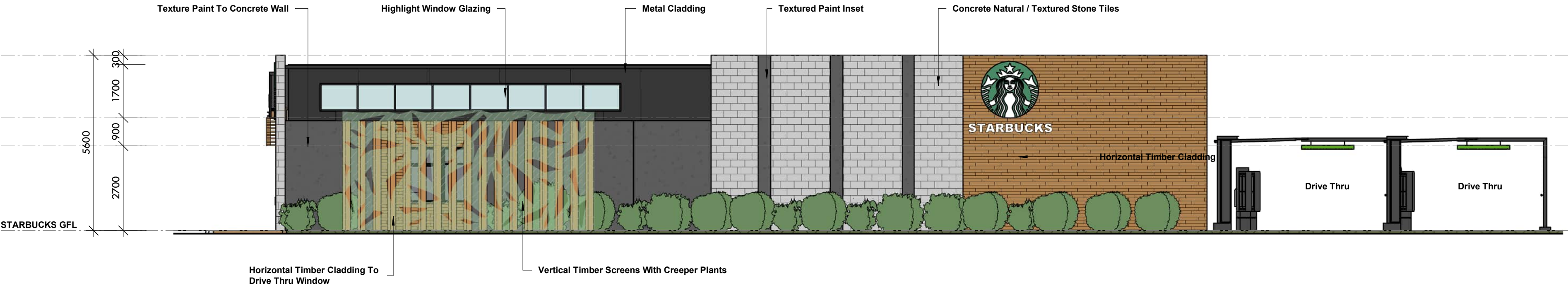
DATE: APRIL 2024 PROJECT NUMBER
REVISION: 3
SHEET: 03
SCALE: As indicated @B1

BUILDING 3 - GROUND FLOOR PLAN

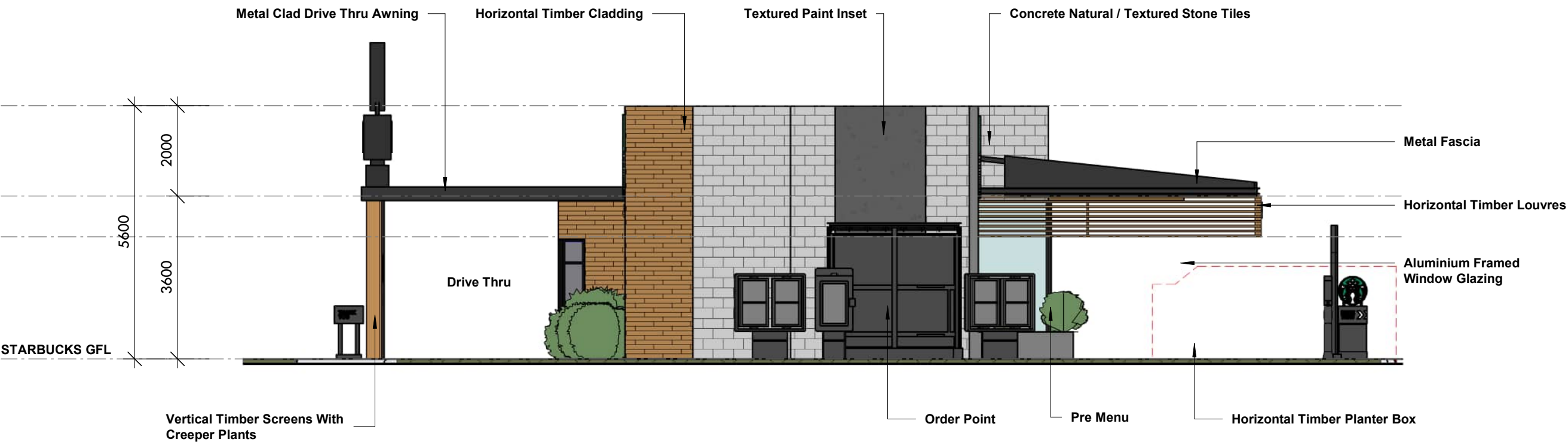
SCALE: 1 : 100



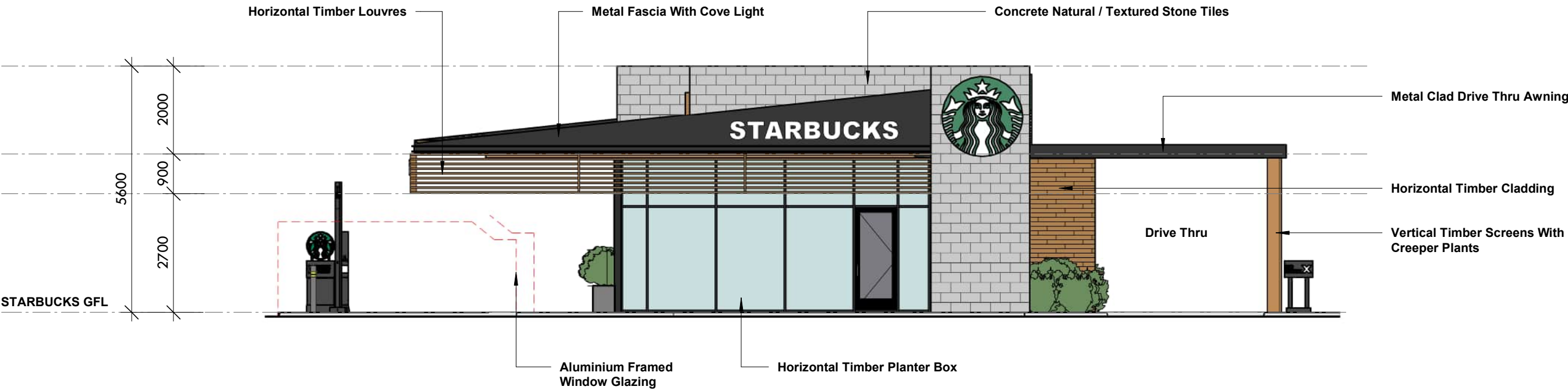
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BUILDING 3 - WEST ELEVATION
SCALE: 1 : 100



BUILDING 3 - SOUTH ELEVATION
SCALE: 1 : 100



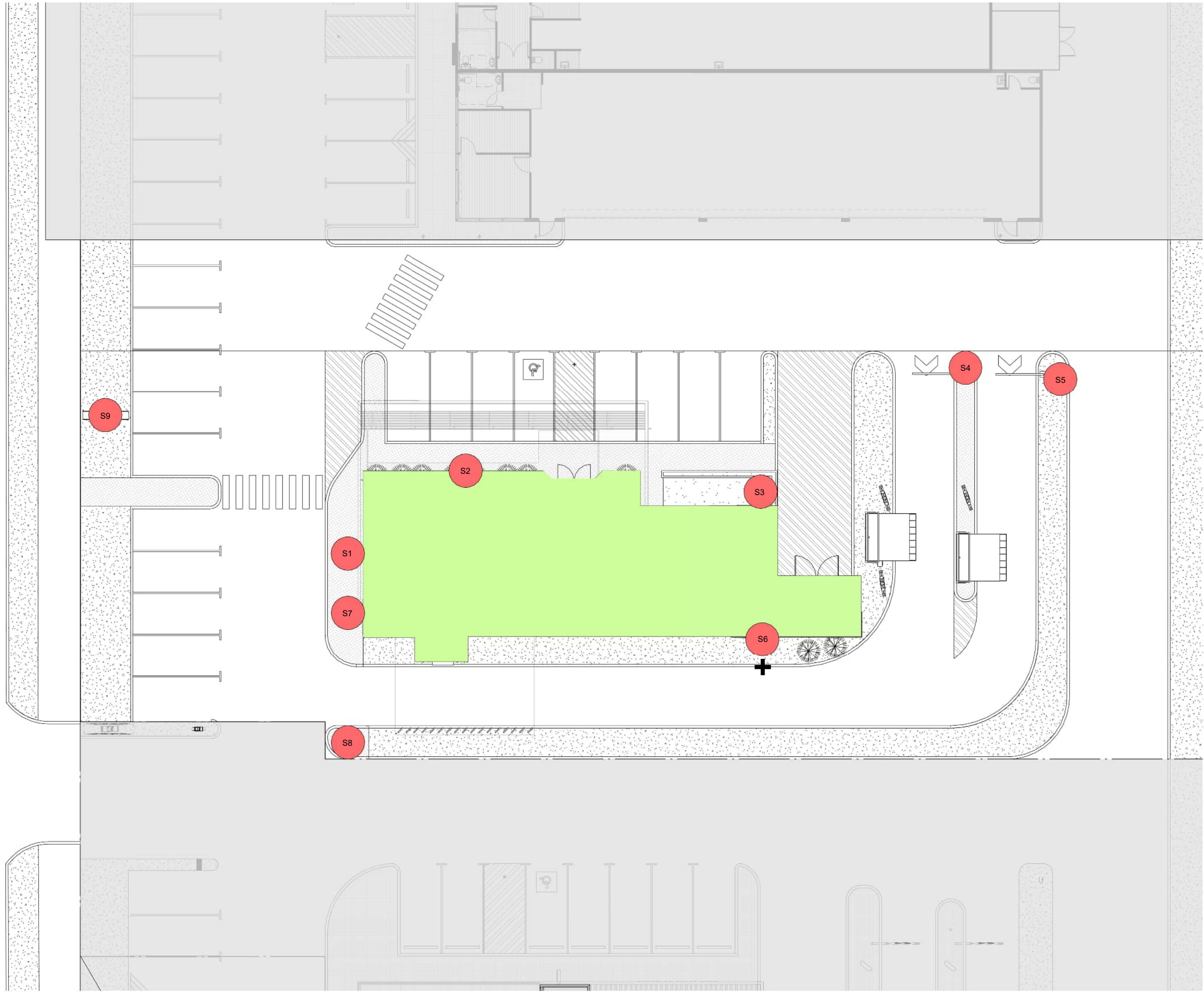
BUILDING 3 - NORTH ELEVATION
SCALE: 1 : 100



BUILDING 3 - EAST ELEVATION
SCALE: 1 : 100



BUTLER BOULEVARD



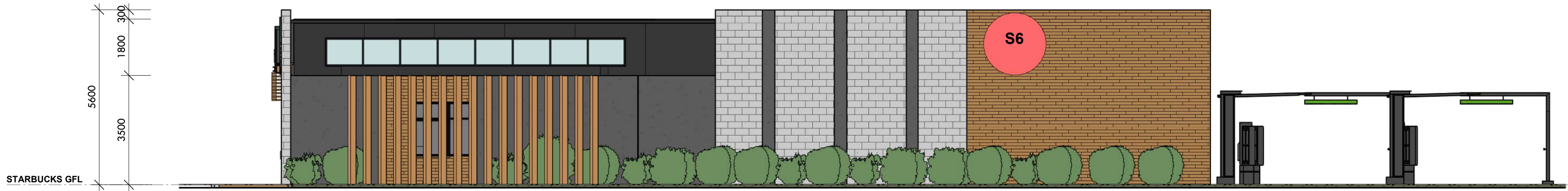
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BUILDING 3 - SOUTH ELEVATION SIGNAGE

SCALE: 1 : 100



BUILDING 3 - NORTH ELEVATION SIGNAGE

SCALE: 1 : 100



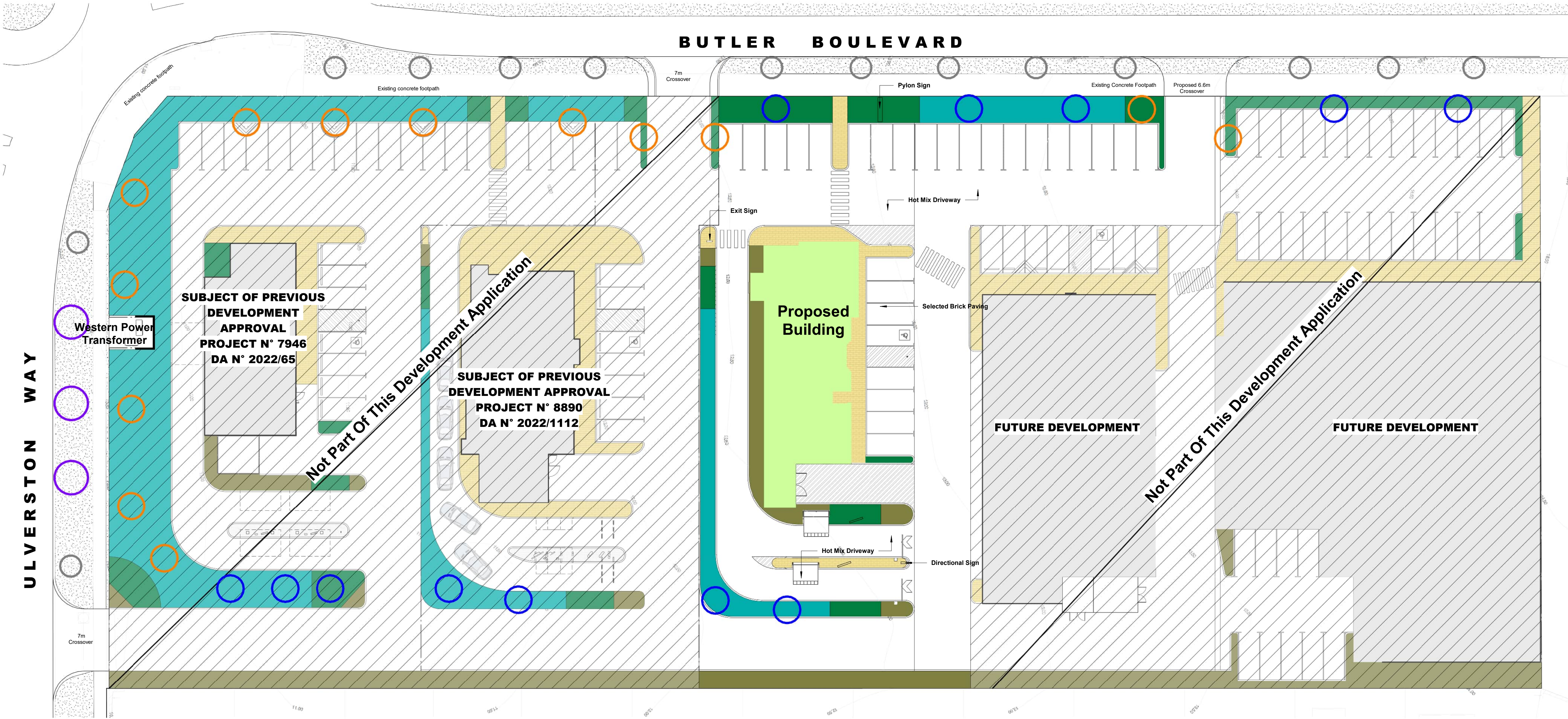
BUILDING 3 - EAST ELEVATION SIGNAGE

SCALE: 1 : 100



PYLON SIGN ELEVATION

SCALE: 1 : 50



LANDSCAPE PLAN

SCALE: 1 : 250

LANDSCAPE LEGEND

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PLANTING MIX 01



PLANTING MIX 02



PLANTING MIX 03



TREE



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