ALDI STORES

ALDI STORE
DALYELLUP

ENVIRONMENTAL ACOUSTIC ASSESSMENT

NOVEMBER 2024

OUR REFERENCE: 33171-3-24288

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ENVIRONMENTAL ACOUSTIC ASSESSMENT

ALDI STORE – DALYELLUP

Job No: 24288

Document Reference: 33171-3-24288

FOR

ALDI STORES

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APPENDICES

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Aldi Stores to undertake an acoustic assessment of noise emissions associated with the proposed Aldi Store to be located in Dalyellup, on the corner of Portobello Road and Grafton Lane.

The objective of this study was to assess noise emissions from delivery vehicles and mechanical services at the noise sensitive premises surrounding the proposed site for compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

The assessment was undertaken to inform the design development team of the store and address likely development approval conditions.

The site plan is attached in Appendix A.

2. SUMMARY

Noise emissions associated with the proposed Aldi store have been determined to comply with the Environmental Protection (Noise) Regulations at all noise sensitive premises in the area.

It is noted that our assessment has assumed that refrigeration equipment and engines are turned off during unloading within the loading dock. It is noted that this is a recommendation, however compliance would still be achieved with the trucks operating refrigeration equipment within the dock. A 2.5m loading dock wall has been included in our noise modelling calculations.

Mechanical plant noise emissions have been calculated to achieve compliance with the applicable Assigned Noise Levels at all times for all noise sensitive premises considered. Mechanical plant has been assumed to be located on the roof of the proposed Aldi store in the vicinity of the loading dock. No barriering of the mechanical plant has been included in our modelling/assessment.

3. CRITERIA

3.1 ENVIRONMENTAL PROTECTION (NOISE) REGULATIONS 1997

The *Environmental Protection (Noise) Regulations 1997* stipulate the allowable noise levels at any noise sensitive premises from other premises. The allowable noise level is determined by the calculation of an influencing factor, which is added to the baseline criteria set out in Table 1 of the Regulations. The baseline assigned noise levels are listed in Table 3.1.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises within 15 metres of a dwelling (Highly Sensitive Areas)	0700 - 1900 hours Monday to Saturday	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	35 + IF	45 + IF	55 + IF

Note: The L_{A10} noise level is the noise that is exceeded for 10% of the time.
The L_{A1} noise level is the noise that is exceeded for 1% of the time.
The L_{Amax} noise level is the maximum noise level recorded.

It is a requirement that noise from the site be free of annoying characteristics (tonality, modulation and impulsiveness) at other premises, defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

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

"tonality" means 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.

Where the above characteristics are present and cannot be practicably removed, the following adjustments are made to the measured or predicted level at other premises.

TABLE 3.2 – ADJUSTMENTS FOR ANNOYING CHARACTERISTICS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+ 5 dB	+ 5 dB	+ 10 dB

The following locations have been determined to require an assessment of noise level emissions.

The receiver locations considered are shown below in Figure 3.1.

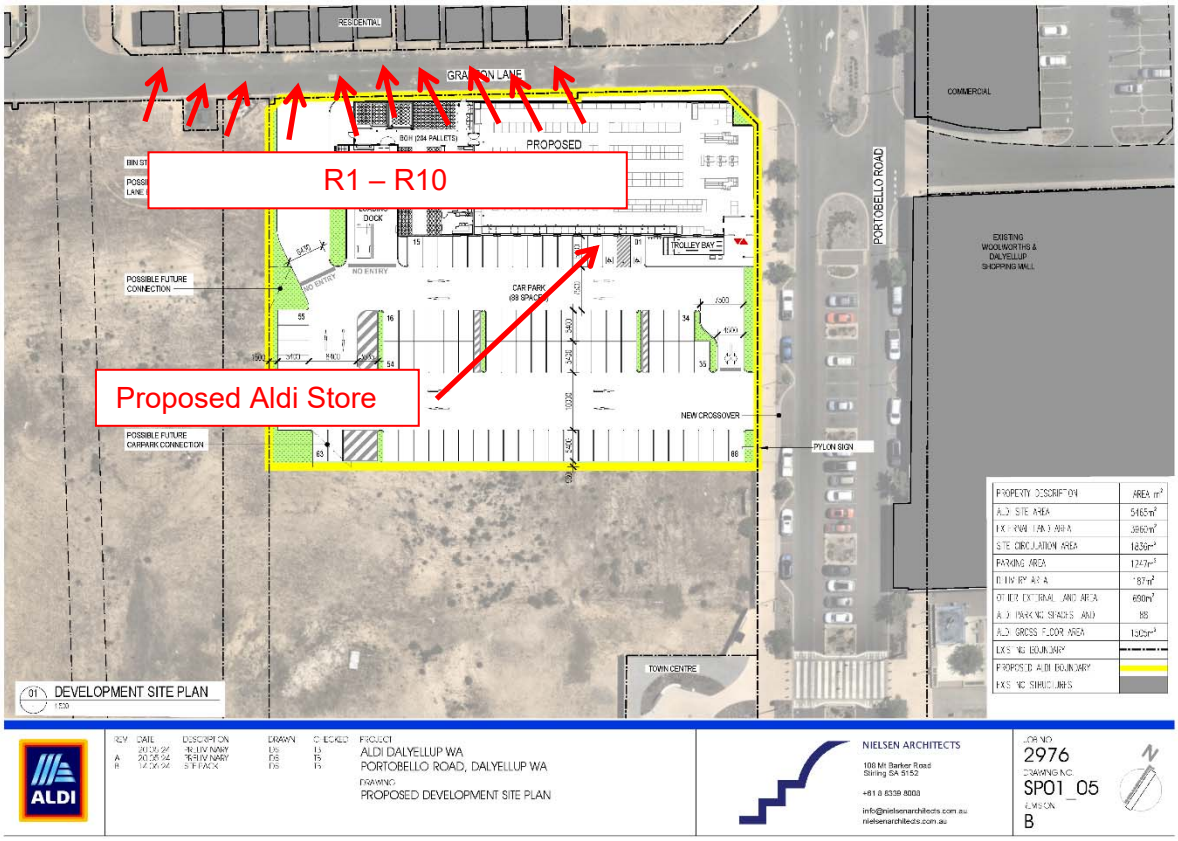


FIGURE 3.1 – RECEIVER POINTS

The influencing factor at the neighbouring residential premises (both proposed and existing) has been calculated based on the following :

Secondary Roads within the Inner circle;

Norton Promenade	+ 2 dB
Parade Road	+ 2 dB

Commercial Premises within the inner circle;

40 %	+ 2 dB

Commercial Premises within the outer circle;

20 %	+ 1 dB

Hence, the influencing factor is estimated at 7 dB.

Based on the above influencing factor, the assigned outdoor noise levels are listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises	0700 - 1900 hours Monday to Saturday (Day)	52	62	72
	0900 - 1900 hours Sunday and Public Holidays (Sundays)	47	57	72
	1900 - 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

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.

4. PROPOSED DELIVERIES

The use of the delivery dock is understood to accommodate 19m articulated delivery trucks and have been assumed to be refrigerated trucks (i.e worst case scenario). In addition to the larger deliveries a bakery delivery occurring between 5am and 7am each morning has been assumed to be a 13m rigid truck.

The truck types assumed in our assessment have been determined through consultation with ALDI stores.

It is noted that we have assumed that the carpark leading to the delivery dock is a public place, hence we have only considered delivery truck noise levels as they enter the dock itself– outside of this space the trucks are in a public area and therefore compliance with the Regulations are not applicable and hence have not been considered.

5. MECHANICAL PLANT

Mechanical plant details have been based on information provided for previous Aldi stores and provided information are located on the ground level to the south of the building.

A barrier at least 1m above the height of the top of the equipment has been assumed to be in place around the equipment, based on preliminary calculations indicating that this is required.

The barrier is required to be of surface density not less than 14kg/m^2.

The barrier is to be constructed of 9mm thick compressed fibre cement sheeting, with no gaps, to the internal face of the plant area with solid colorbond cladding to the external face.

Acoustic data is contained in Table 6.3.

6. METHODOLOGY

Noise modelling of the noise propagation from the site was carried out using the environmental noise modelling computer program, “SoundPlan”. Single point calculations were undertaken.

Input data for computer modelling included:

- Design of store as per drawings in Appendix A.
- EPA standard weather condition for the day and night periods (see Table 6.1).
- Sound power levels, as summarised in Table 6.2.

TABLE 6.1 - WEATHER CONDITIONS

Condition	Day Period	Night Period
Temperature	20 °C	15 °C
Relative humidity	50%	50%
Pasquil Stability Class	E	F
Wind speed	4 m/s*	3 m/s*

* From source to receiver

TABLE 6.2 – SOUND POWER LEVELS OF DELIVERY VEHICLES

DESCRIPTION	dB(A)
19m articulated delivery truck with refrigeration unit	97
13m rigid delivery truck	85

TABLE 6.3 – NOISE LEVELS OF MECHANICAL PLANT

DESCRIPTION	dB(A)
Condenser Unit (Daikin RXYQ54TNY1A(E))	67 dB(A) @ 3m
Refrigeration Plant	61 dB(A) @ 3m
R134A Aldi Pack	61.8 dB(A) @ 3m

For the above sound power levels, single point calculations were undertaken for the following scenarios :

Scenario 1 : One large refrigerated truck delivery.

Scenario 2 : One 13m rigid truck delivery (bakery delivery).

Scenario 3 : Mechanical Plant.

Note : For the noise to be less than 10% of the time and be assessed under the L_{A1} assigned noise levels, the truck engines and refrigeration units would need to be turned off while unloading is occurring

The L_{A1} assigned noise level would be the pertinent prescribed noise level in this instance (for deliveries) as the duration of time that the noise of the deliveries is present is less than 10% of a representative time period. The noise associated with the delivery is the manoeuvring of the truck into place, upon which the truck is switched off – hence – even if the delivery takes some time (i.e. 30 – 60 minutes) the noise level associated with the truck is not present throughout the duration of the delivery.

It is noted that this also means the noise assessment is more “realistic” as if the L_{A10} parameter was to be used as the noise level associated with the truck is not present for more than 10% of a representative time period, the L_{A10} noise level would be at the ambient noise level of the area, rather than the truck noise.

A height of 2.5m has been assumed for the delivery dock wall.

Mechanical plant has been assumed to be located on the roof of the proposed store, in the vicinity of the loading dock. No barriering has been included in our modelling/assessment.

7. RESULTS

Single point calculations were undertaken for all locations shown in Figure 3.1, with the results of the modelling listed in Table 7.1.

TABLE 7.1 – RESULTANT NOISE LEVEL

Receiver Location	Scenario / Calculated Noise Level, (dB(A))		
	Scenario 1	Scenario 2	Scenario 3
R1	26	15	37
R2	27	16	37
R3	28	17	37
R4	30	17	36
R5	29	16	36
R6	28	16	36
R7	28	16	36
R8	27	15	36
R9	26	14	35
R10	25	13	35

Based on the definitions of tonality, noise emissions from truck movements, being an L_{A1}, being present for less than 10% of the time, would not be considered tonal.
Noise levels associated with mechanical services activity could contain tonal characteristics, hence, a + 5 dB adjustment would be applicable.

Therefore, the assessable noise levels for each of the noise sources are listed below in Table 7.2.

TABLE 7.2 – ASSESSABLE NOISE LEVELS

Receiver Location	Scenario / Assessable Noise Level, (dB(A))		
	Scenario 1	Scenario 2	Scenario 3
R1	26	15	42
R2	27	16	42
R3	28	17	42
R4	30	17	41
R5	29	16	41
R6	28	16	41
R7	28	16	41
R8	27	15	41
R9	26	14	40
R10	25	13	40

Tables 7.3 and 7.4 compares the assessable noise level for large truck deliveries and small truck deliveries against the relevant L_{A1} Assigned Noise Levels for the day, evening (and Sundays) and night periods. Noise levels that are calculated to exceed the relevant criteria are listed in red.

TABLE 7.3 – ASSESMENT OF NOISE LEVEL – SCENARIO 1
LARGE TRUCK DELIVERIES

Receiver Location	Assessable Noise Level, dB(A)	Assigned Noise Level, L_{A1} dB		Exceedance to Assigned Noise Level
	Scenario 1	Time of Day	L_{A1} dB	
R1	26	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R2	27	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R3	28	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R4	30	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R5	29	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R6	28	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R7	28	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R8	27	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R9	26	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R10	25	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies

TABLE 7.4 – ASSESMENT OF NOISE LEVEL – SCENARIO 2
SMALL TRUCK DELIVERIES

Receiver Location	Assessable Noise Level, dB(A)	Assigned Noise Level, L_{A1} dB		Exceedance to Assigned Noise Level
	Scenario 2	Time of Day	L_{A1} dB	
R1	15	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R2	16	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R3	17	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R4	17	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R5	16	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R6	16	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R7	16	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R8	15	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R9	14	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies
R10	13	Day	62	Complies
		Sundays	57	Complies
		Evening	57	Complies
		Night	52	Complies

Table 7.5 compares the assessable noise level for mechanical plant against the relevant L_{A10} Assigned Noise Levels for the day, evening (and Sundays) and night periods. Noise levels that are calculated to exceed the relevant criteria are listed in red.

TABLE 7.5 – ASSESMENT OF NOISE LEVEL – SCENARIO 3 – MECHANICAL PLANT

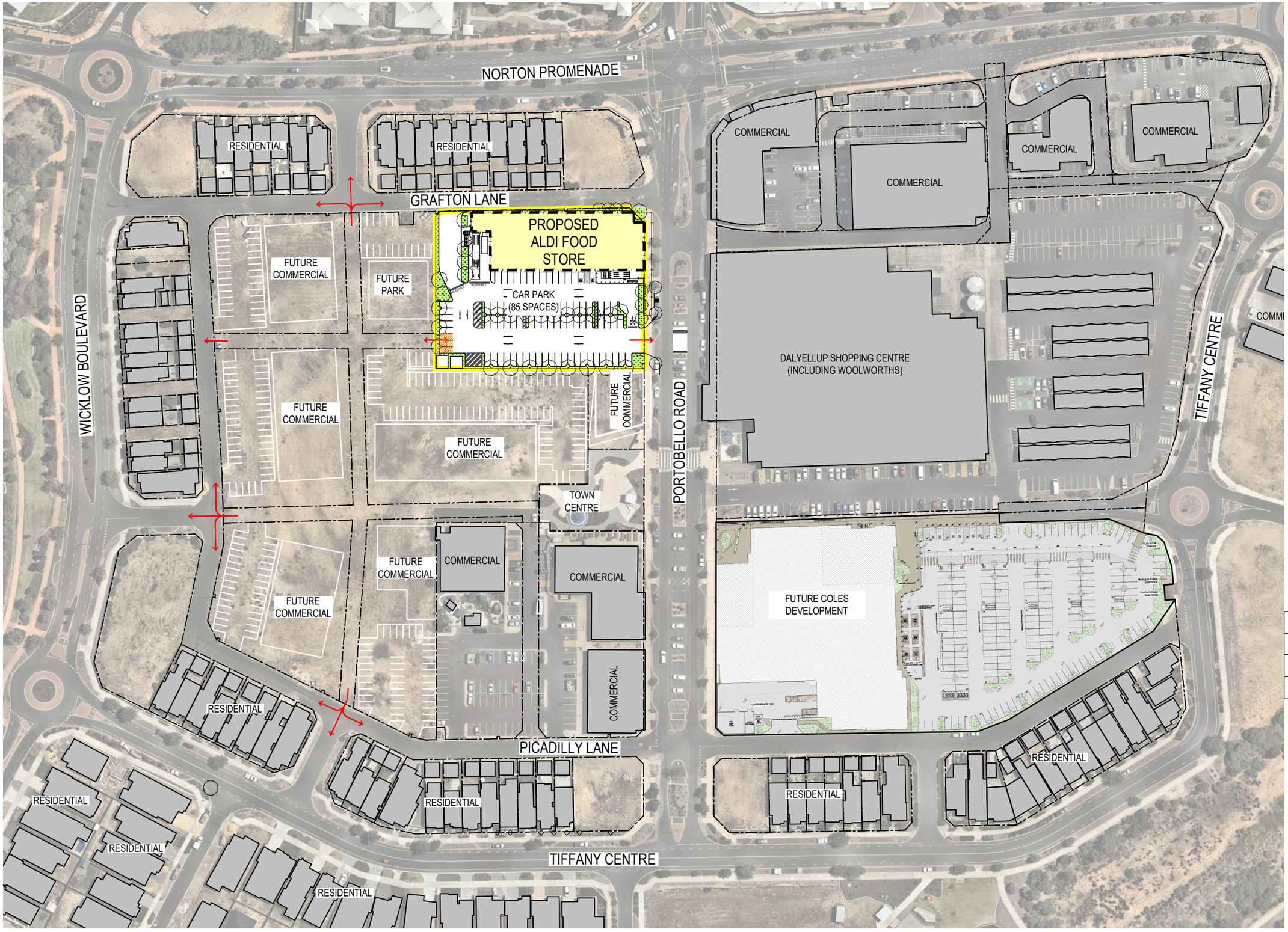
Receiver Location	Assessable Noise Level, dB(A)	Assigned Noise Level, L_{A10} dB		Exceedance to Assigned Noise Level
	Scenario 3	Time of Day	L_{A10} dB	
R1	42	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R2	42	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R3	42	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R4	41	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R5	41	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R6	41	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R7	41	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R8	41	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R9	40	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies
R10	40	Day	52	Complies
		Sundays	47	Complies
		Evening	47	Complies
		Night	42	Complies

Truck deliveries (both refrigerated and bakery delivery trucks) have been calculated to comply at all times.

Noise levels associated with the mechanical plant has also been calculated to comply at all times on the basis that the equipment is located on the roof of the store, in the vicinity of the loading dock. No barriering of mechanical plant has been included in our modelling/assessment.

APPENDIX A

DEVELOPMENT PLANS



1 - LOCALITY PLAN
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NOTES

ORIGINAL A3

REV	DATE	DESCRIPTION	DRN	CHKD
A	05.11.24	REV PLANNING	LT	TB
B	07.11.24	REV PLANNING	LT	TB

PROPERTY DESCRIPTION	
TOTAL ALDI DEVELOPMENT AREA	5465m^2
PROPOSED ALDI BOUNDARY	
EXISTING BOUNDARIES	

CLIENT
ALDI STORES

PROJECT
ALDI DALYELLUP
PORTOBELLO ROAD
DALYELLUP W.A.

DRAWING
LOCALITY PLAN

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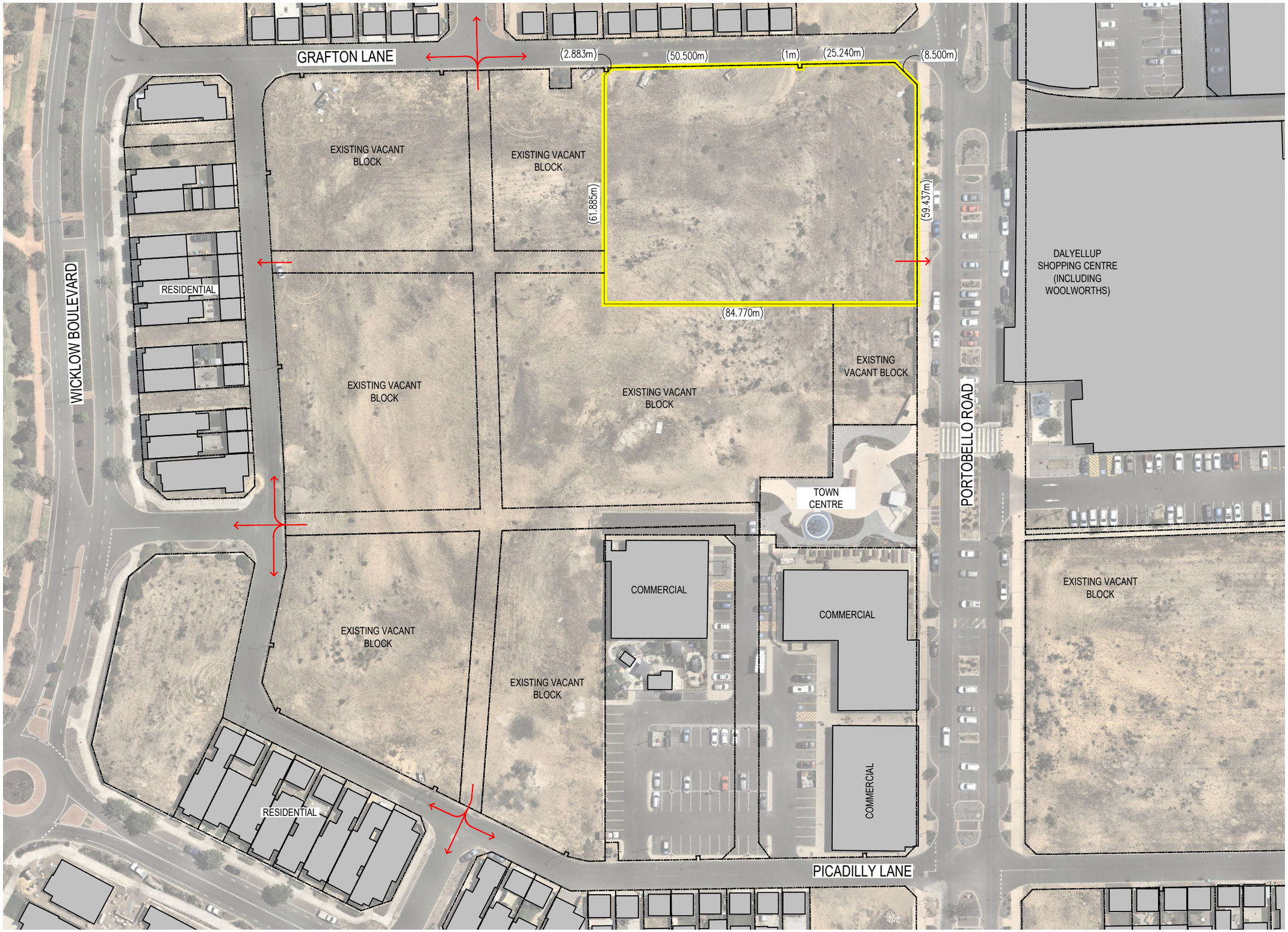

1 / - TITLE PLAN
1:1000

NOTES

ORIGINAL A3

REV	DATE	DESCRIPTION	DRN	CHKD
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TITLE PLAN LEGEND	
EXISTING TITLE LINE	
SUBJECT SITE	
PROPOSED ALDI TITLE	(00.00m)
ALDI SITE AREA	5465m²
EXISTING STRUCTURES	

CLIENT
ALDI STORES

PROJECT
ALDI DALYELLUP
PORTOBELLO ROAD
DALYELLUP W.A.

DRAWING
TITLE PLAN

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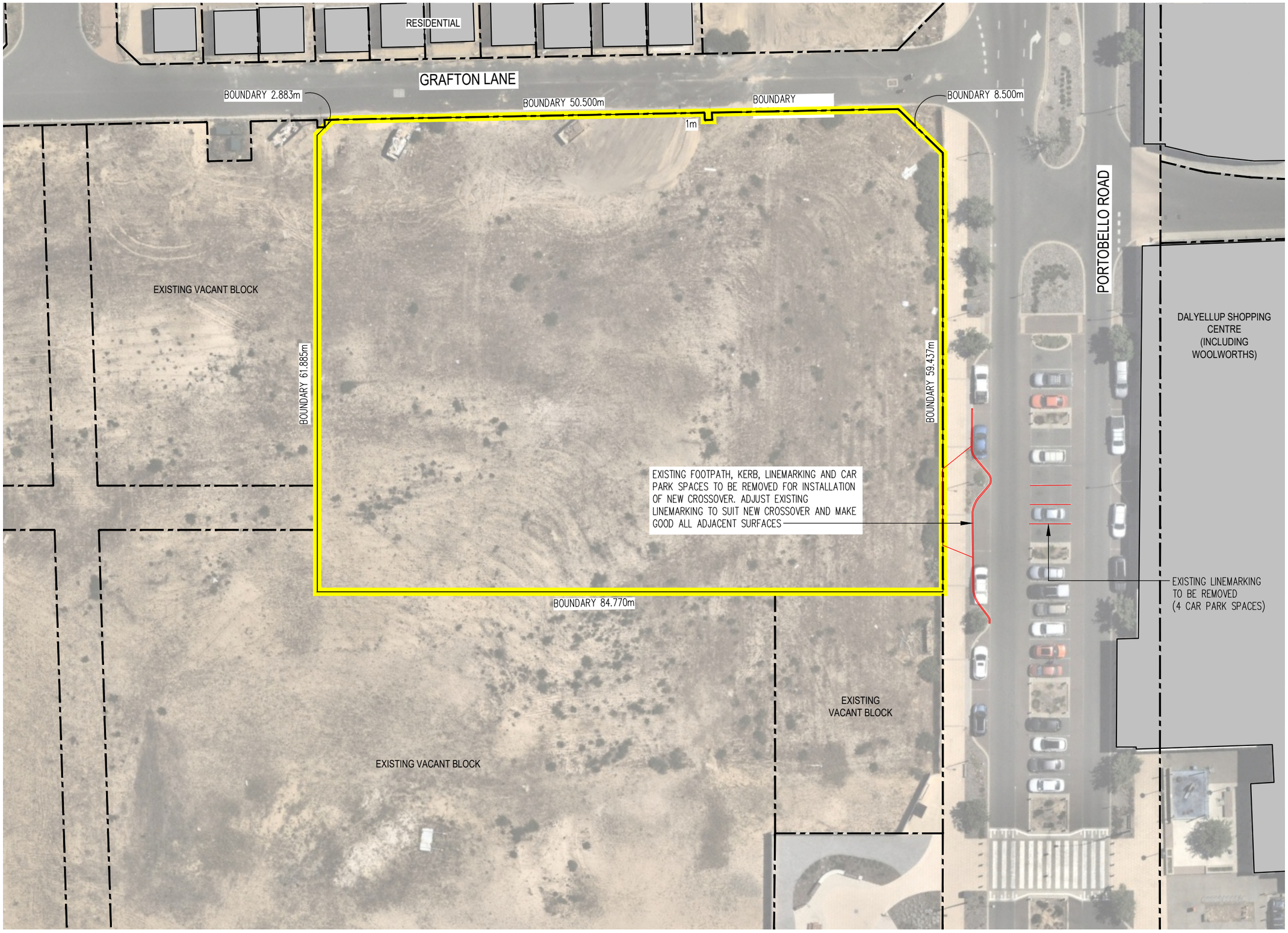

1 / - EXISTING & DEMOLITION PLAN
1:500

NOTES

ORIGINAL A3

REV	DATE	DESCRIPTION	DRN	CHKD
-	-	-	-	-

DEMOLITION LEGEND	
ITEMS TO BE DEMOLISHED	
EXISTING BOUNDARY	
PROPOSED ALDI BOUNDARY	
EXISTING STRUCTURES	

CLIENT
ALDI STORES

PROJECT
ALDI DALYELLUP
PORTOBELLO ROAD
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DRAWING
EXISTING & DEMOLITION SITE PLAN

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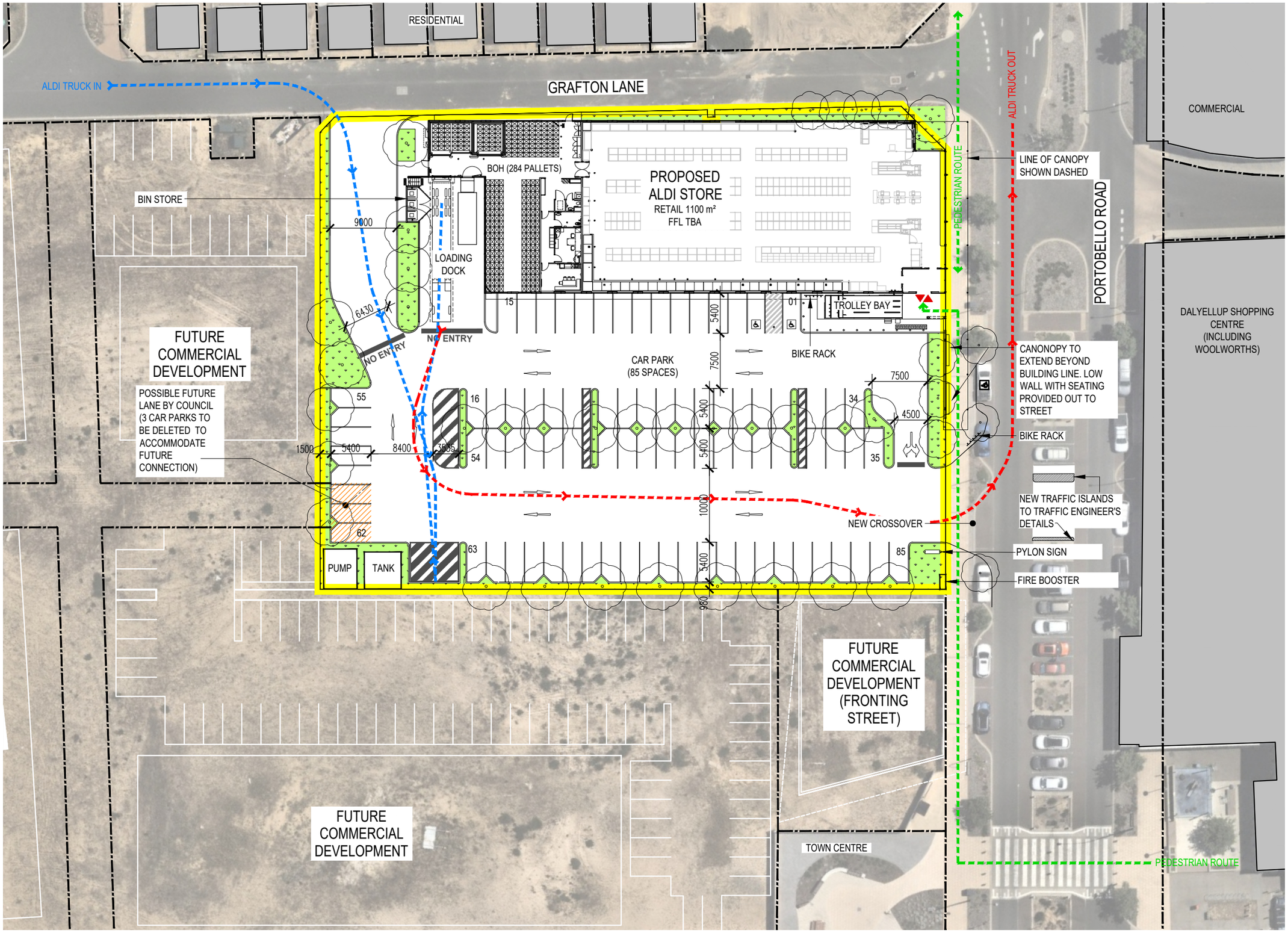

1 / - PROPOSED SITE & FLOOR PLAN
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NOTES

ORIGINAL A3

REV	DATE	DESCRIPTION	DRN	CHKD
A	05.11.24	REV PLANNING	LT	TB
B	07.11.24	REV PLANNING	LT	TB

PROPERTY DESCRIPTION	AREA m^2
ALDI GROSS FLOOR AREA	1505m^2
ALDI NETT FLOOR AREA	1443m^2
REGULAR AREA SALES	1033m^2
CUSTOMER AREA–RETAIL	67m^2
GENERAL AREA INFORMATION	1100m^2
TOTAL STORAGE AREA	268m^2
GENERAL STORAGE AREA	227m^2
FREEZER STORAGE AREA	17m^2
CHILLER STORAGE AREA	24m^2
SIDE ROOMS AREA (AMENITIES)	75m^2
OTHER INTERNAL FLOOR AREA	62m^2

PROPERTY DESCRIPTION	AREA m^2
ALDI SITE AREA	5465m^2
EXTERNAL LAND AREA	3960m^2
SITE CIRCULATION AREA	1840m^2
PARKING AREA	1197m^2
DELIVERY AREA	187m^2
OTHER EXTERNAL LAND AREA	736m^2
ALDI PARKING SPACES LAND	85
ALDI GROSS FLOOR AREA	1505m^2
EXISTING BOUNDARIY	
PROPOSED ALDI BOUNDARY	
EXISTING STRUCTURES	

CLIENT
ALDI STORES

PROJECT
ALDI DALYELLUP
PORTOBELLO ROAD
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DRAWING
PROPOSED SITE & FLOOR PLAN

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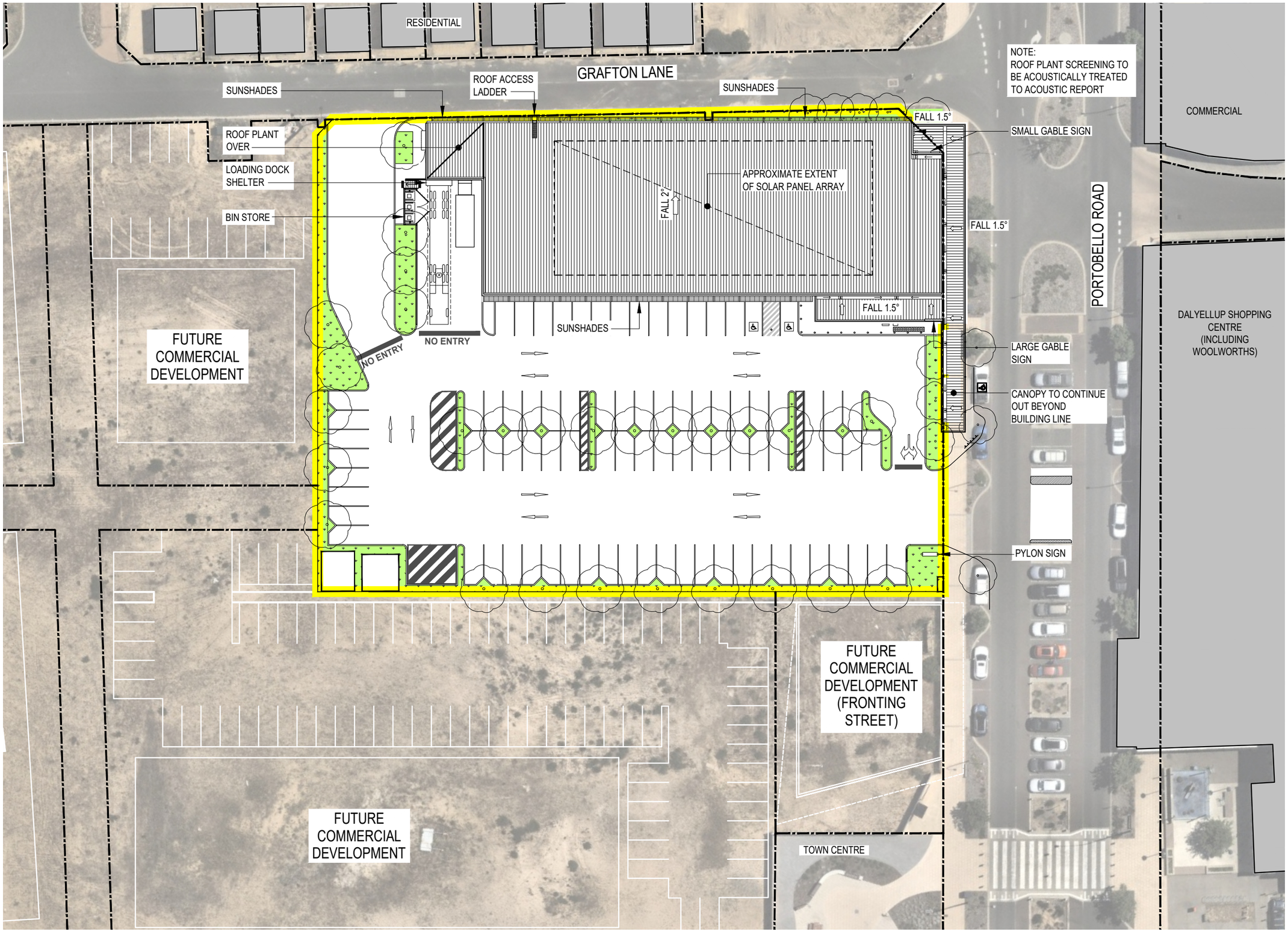

1 / - PROPOSED ROOF PLAN
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ORIGINAL A3

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B	07.11.24	REV PLANNING	LT	TB

CLIENT
ALDI STORES

PROJECT
ALDI DALYELLUP
PORTOBELLO ROAD
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DRAWING
PROPOSED ROOF PLAN

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