

WOOLWORTHS GROUP

**PROPOSED WOOLWORTHS SUPERMARKET DEVELOPMENT
CORNER OF SHEPPERTON ROAD AND ALBANY HIGHWAY
EAST VICTORIA PARK**

PRELIMINARY ENVIRONMENTAL ACOUSTIC ASSESSMENT

FEBRUARY 2024

OUR REFERENCE: 32384-1-24064

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TOWN OF VICTORIA PARK
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ENVIRONMENTAL ACOUSTIC ASSESSMENT
CORNER OF SHEPPERTON ROAD AND ALBANY HIGHWAY
SUPERMARKET DEVELOPMENT

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FOR

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1. INTRODUCTION

Herring Storer Acoustics were commissioned by Woolworths Group to undertake a preliminary review for the proposed development located at the corner of Shepperton Road and Albany Highway in East Victoria Park.

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The development consists of a supermarket and speciality retail tenancies, child care centre, gym and commercial tenancies.

This preliminary assessment was undertaken to inform the design development team and accompany the development application.

2. SUMMARY

Refrigerated truck deliveries have been calculated to comply at all times.

Smaller truck deliveries, such as bakery deliveries, have also been calculated to comply at all times.

Noise levels associated with the typical mechanical plant assumed for the purposes of this preliminary assessment have been calculated to comply at all times.

It is noted that the mechanical plant assumed in our assessment is indicative only, hence, the calculated noise levels are an indication that control of noise emissions associated with mechanical plant and location on the roof of the proposed development, will need to be included in the design. Based on previous projects of this nature, the selection/location of exhaust fans that are utilised during the early hours of the morning (i.e. bakery and chicken cooker exhaust fans) will be critical in ensuring compliance with the Regulations is achieved.

A preliminary assessment of noise impact associated with traffic noise on Albany Highway and Shepperton Road has been carried out in accordance with State Planning Policy 5.4. This work is included in a separate report (HSA Ref : 32380-1-24064).

2.1 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 2.1.

TABLE 2.1 – 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
Commercial Premises	All Hours	60	75	80

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 2.2 – 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. It is noted that some of the locations have been identified as multiple stories (up to 3 floors), hence, have been considered at the worst case height in terms of noise level calculation.

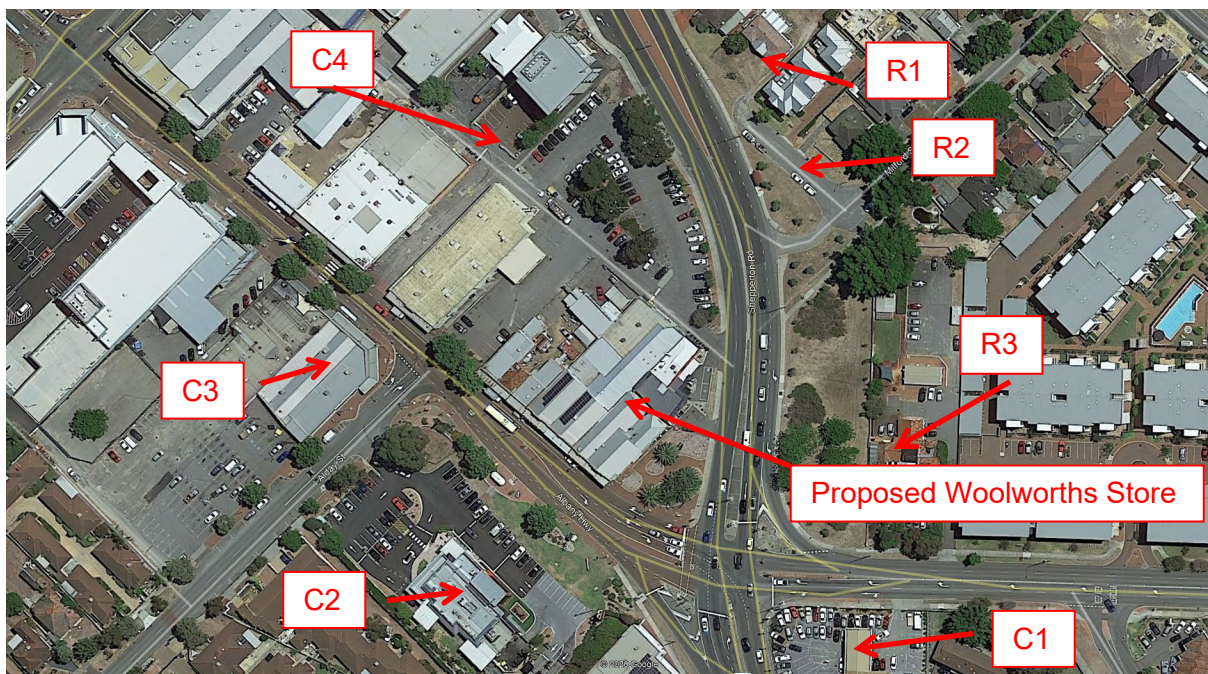


FIGURE 2.1 – RECEIVER POINTS

The influencing factor at the identified noise sensitive premises has been estimated as follows :

Major Road within the inner circle;	
Shepperton Road	+ 6 dB
Commercial Premises within the inner circle;	
40 %	+ 2 dB
Commercial Premises within the outer circle;	
20 %	+ 1 dB
Industrial Premises within the outer circle;	
20 %	+ 2 dB

Hence, the influencing factor is estimated at 11 dB.

Based on the above influencing factor, the assigned outdoor noise levels are listed in Table 2.3.

TABLE 2.3 - ASSIGNED OUTDOOR NOISE LEVEL FOR R1 TO R7

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)	56	66	76
	0900 - 1900 hours Sunday and Public Holidays (Sundays)	51	61	76
	1900 - 2200 hours all days (Evening)	51	61	66
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	46	56	66
Commercial Premises	All Hours	60	75	80

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.

We note that noise emissions from the premises need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*.

This primarily consists of mechanical services associated with the development, noise levels associated with the child care centre and noise emissions associated with the loading dock area.

3. PROPOSED DELIVERIES

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The use of the delivery dock is understood to accommodate 15m articulated delivery trucks, and have been assumed to be refrigerated trucks (i.e worst case scenario). In addition to the larger deliveries, smaller delivery vehicles (i.e. for bakery goods) have been assumed to be a 13m rigid truck.

It is understood that there is some consideration for delivery trucks moving towards electric motor systems. In the event of the adoption of such technology for delivery trucks, the noise impact will be substantially reduced, which may substantially affect the findings of this preliminary report.

4. MECHANICAL PLANT

Mechanical plant details have been based on information provided for previous Woolworths stores and provided information are located on the roof as shown in the drawings in Appendix A.

The mechanical plant noise levels have been based on the Woolworths Inglewood store currently under construction.

It is noted that carpark exhaust systems are excluded from this preliminary assessment. It would appear, based on the development application drawings, that specific plantrooms for the carpark exhausts are proposed within the carparking areas – which would provide sufficient attenuation to control radiate noise emissions from the fans. Attenuators may be required on the ductwork, however, the determination of what level of attenuation is needed will be unable to be undertaken until the design development phase.

5. CHILD CARE CENTRE

Based on previous assessments of child care centres, the outdoor area for the centre would be the critical component for assessment.

Typically, child care centre normal hours of operations would be between 0630 and 1830 hours, Monday to Friday (closed on public holidays). It is noted that although the proposed child care centre could open before 7 am (ie during the night period), the outdoor play areas are typically not used until after 7am – which is considered to be industry standard for child care centres.

It is also noted that the child care centre would be considered a noise sensitive premise in accordance with State Planning Policy 5.4 “Road and Rail Noise”, hence, due to the proximity to Shepperton Road and Albany Highway, and assessment of the traffic noise impact would be required.

Whilst it is expected that an assessment would form part of the development approval conditions, a preliminary assessment has been provided here.

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:

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- 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 and 6.3.

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)
15m articulated delivery truck with refrigeration unit	97
13m rigid delivery truck	85

TABLE 6.3 – SOUND POWER LEVELS OF MECHANICAL PLANT

DESCRIPTION	dB(A)
Kitchen Exhaust Fan	83 dB(A)
Exhaust Fans	3 @ 70 dB(A)
Refrigeration Equipment	2 @ 88 dB(A)
Commercial Tenancy Equipment	4 @ 88 dB(A)
Packaged Air Conditioning Unit	75 dB(A)

TABLE 6.4 – SOUND POWER LEVELS

Item	Sound Power Level, dB(A)
Children Playing	83 (per 10 children)

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.
- Scenario 4:** Child Care outdoor play.

Notes: Given the total number of children, acoustic modelling of outdoor play noise was made, based on 100 children playing within the outdoor play areas at the one time, utilising 10 groups of 10 children, sound power levels distributed as plane sources.

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.

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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.

7. RESULTS

Single point calculations were undertaken for all locations shown in Figure 2.1, with the results of the modelling listed in Table 7.1. It is noted that for the locations with multiple floors, the highest noise level has been utilized for ease of report.

TABLE 7.1 – RESULTANT NOISE LEVEL

Receiver Location	Scenario / Calculated Noise Level, (dB(A))			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
R1	43	31	22	26
R2	6	2	23	27
R3	18	6	17	22
C1	15	3	5	21
C2	18	6	9	34
C3	5	2	21	41
C4	50	38	27	31

Given the location and the nature of the noise emissions, noise levels associated with the deliveries – being an L_{A1} – as defined in the Regulations would not contain tonal characteristics. Whilst unlikely, noise levels associated with mechanical, to be conservative, has had an adjustment of +5 dB(A) to the assessable noise level. It is also noted that noise emissions from children playing does not contain any annoying characteristics. Therefore, Table 7.2 lists the assessable noise level for each scenario (including the adjustment for tonality for mechanical plant emissions).

TABLE 7.2 – ASSESSABLE NOISE LEVELS

Receiver Location	Scenario / Calculated Noise Level, (dB(A))			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
R1	43	31	27	26
R2	6	2	28	27
R3	18	6	22	22
C1	15	3	10	21
C2	18	6	14	34
C3	5	2	26	41
C4	50	38	32	31

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	43	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
R2	6	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
R3	18	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
C1	15	All Hours	75	Complies
C2	18	All Hours	75	Complies
C3	5	All Hours	75	Complies
C4	50	All Hours	75	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	31	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
R2	2	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
R3	6	Day	66	Complies
		Sundays	61	Complies
		Evening	61	Complies
		Night	56	Complies
C1	3	All Hours	75	Complies
C2	6	All Hours	75	Complies
C3	2	All Hours	75	Complies
C4	38	All Hours	75	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.

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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	27	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
R2	28	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
R3	22	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
C1	10	All Hours	60	Complies
C2	14	All Hours	60	Complies
C3	26	All Hours	60	Complies
C4	32	All Hours	60	Complies

Table 7.6 compares the assessable noise level for outdoor play against the relevant L_{A10} Assigned Noise Levels for the day period.

TABLE 7.6 – ASSESMENT OF NOISE LEVEL – SCENARIO 4 – OUTDOOR PLAY

Receiver Location	Assessable Noise Level, dB(A)	Assigned Noise Level, L_{A10} dB		Exceedance to Assigned Noise Level
	Scenario 4	Time of Day	L_{A10} dB	
R1	26	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
R2	27	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
R3	22	Day	56	Complies
		Sundays	51	Complies
		Evening	51	Complies
		Night	46	Complies
C1	21	All Hours	60	Complies
C2	34	All Hours	60	Complies
C3	41	All Hours	60	Complies
C4	31	All Hours	60	Complies

Noise levels associated with the typical mechanical plant assumed for the purposes of this preliminary assessment have been calculated to comply with the Assigned Noise Levels at all times.

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Additionally, noise emissions from outdoor play associated with the child care would comply with the Assigned Noise Levels during the day period.

Deliveries within the proposed loading dock have been calculated to comply with the relevant assigned noise levels for all time periods.

It is noted that the mechanical plant assumed in our assessment is indicative only. Based on previous projects of this nature, the selection/location of exhaust fans that are utilised during the early hours of the morning (i.e. bakery and chicken cooker exhaust fans) will be critical in ensuring compliance with the Regulations is achieved. Hence, it is considered appropriate for a condition of approval to include an assessment of noise impact as a part of the design development process prior to issuance of building permit.

8. CHILD CARE CENTRE PRELIMINARY SPP 5.4 ASSESSMENT

The location of the development is situated in proximity to major roads, such that an assessment of noise impacts upon noise sensitive premises in accordance with SPP 5.4 is required.

This is shown in Figure 2 below.

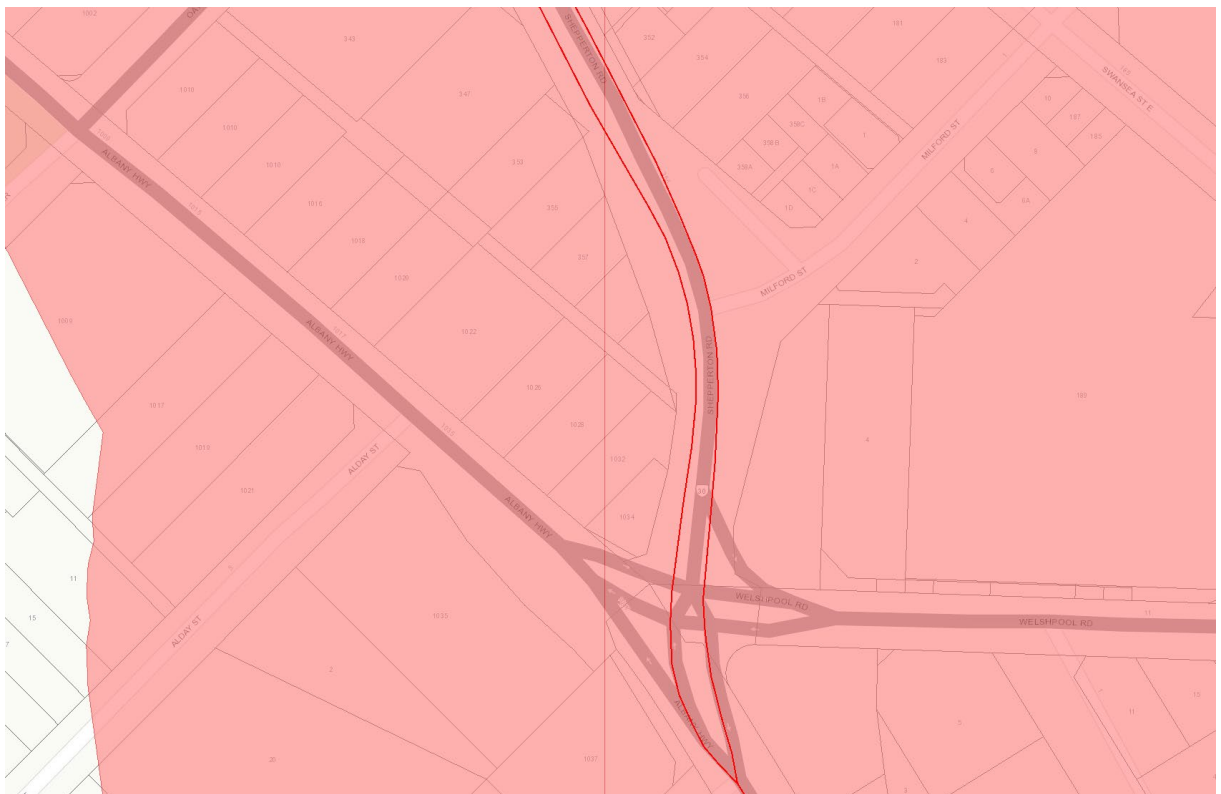


FIGURE 2 – PROXIMITY TO ALBANY HIGHWAY AND SHEPPERTON ROAD

An assessment was undertaken based on the Road and Rail Guidelines (dated September 2019) for State Planning Policy 5.4. This work is presented in a separate document (our Ref : 32380-1-24064).

APPENDIX A

DEVELOPMENT PLANS

Woolworths EVP

Plans & Elevation Design Update

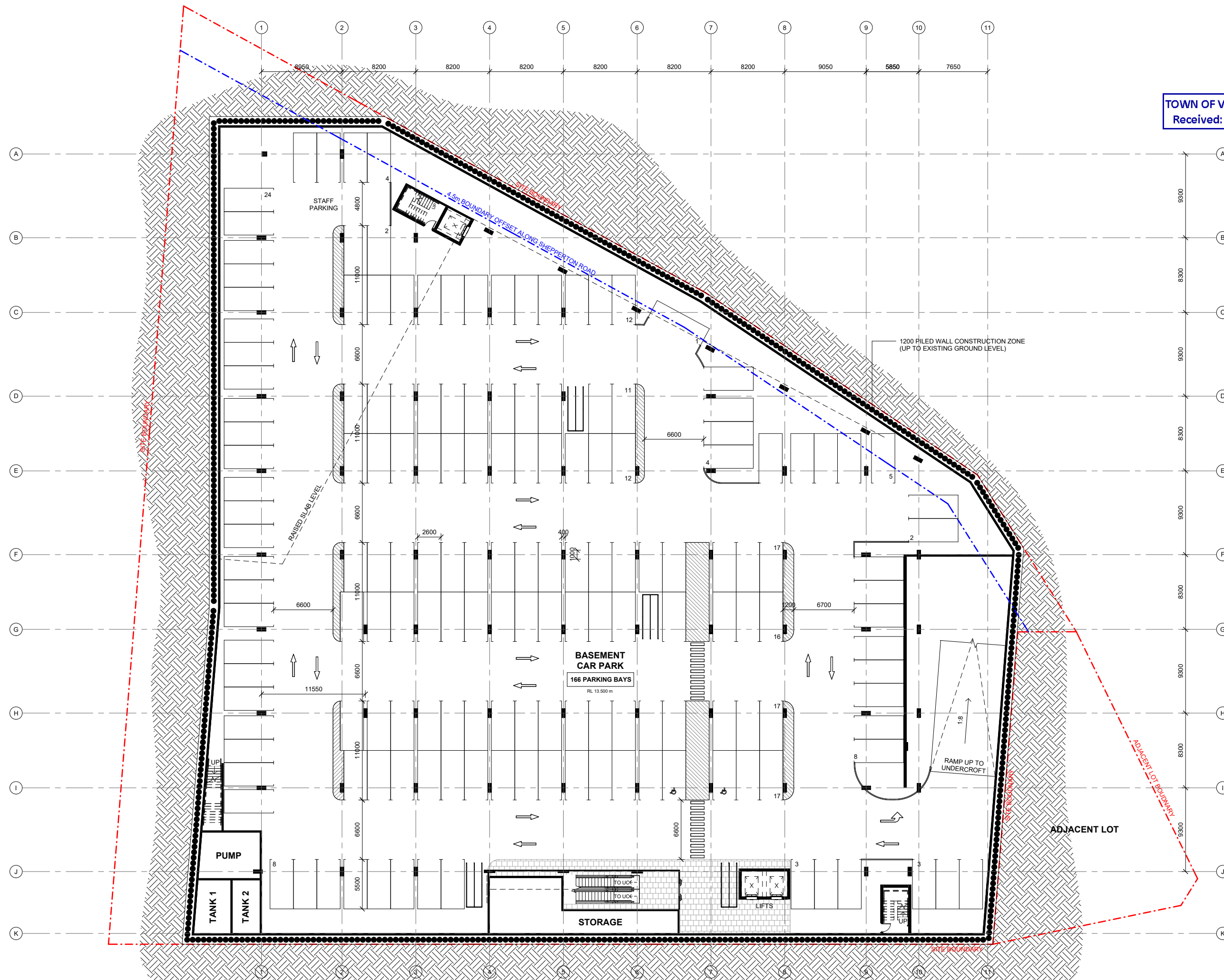
Hames
Sharley

PREPARED FOR WOOLWORTHS

19TH JULY 2023

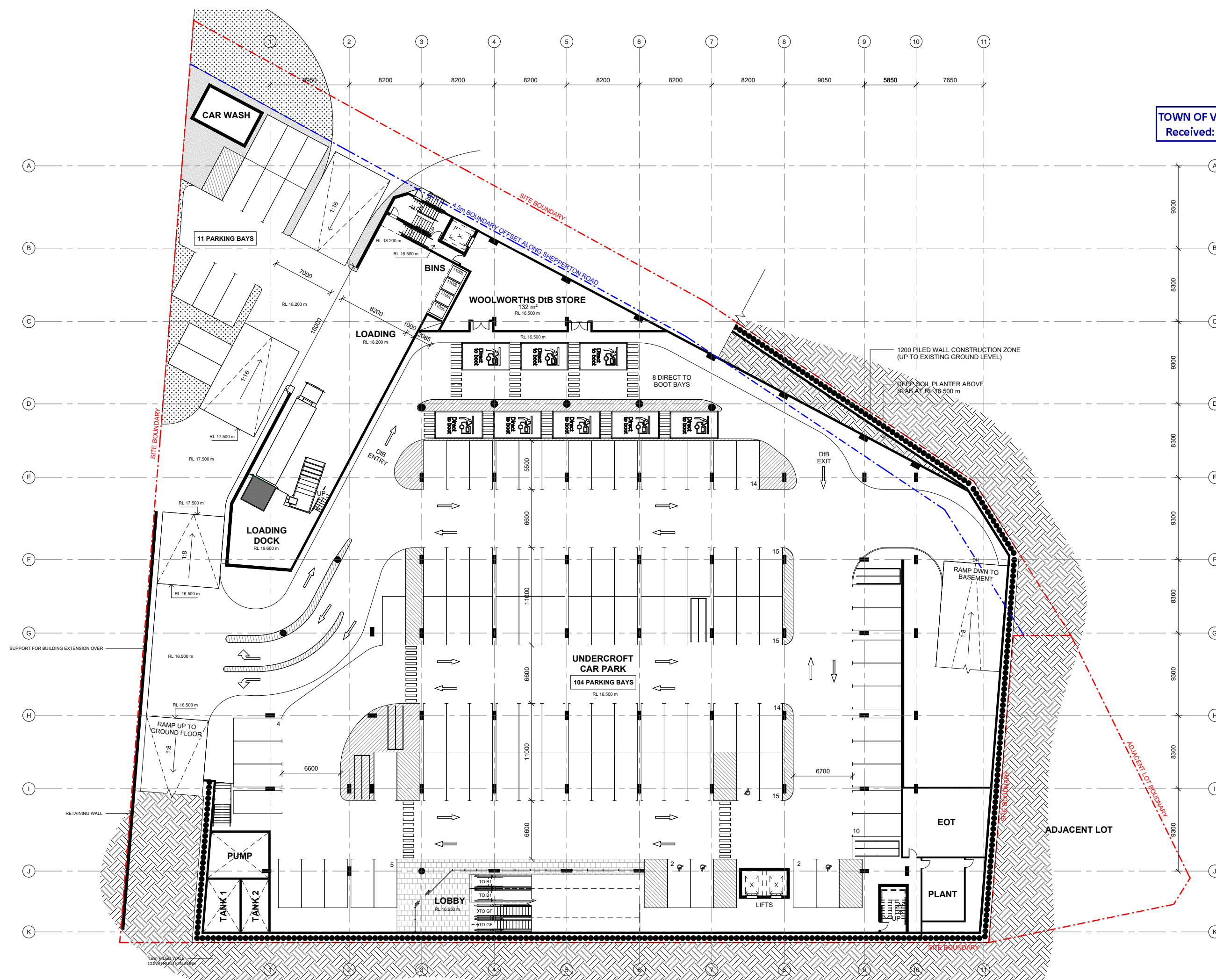
Parking Schedule	
Level	Count
BASEMENT	
BASEMENT	166
UNDERCROFT	
UNDERCROFT	115
Grand total:	281

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Parking Schedule	
Level	Count
BASEMENT	
BASEMENT	166
UNDERCROFT	
UNDERCROFT	115
Grand total:	281

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RETAIL AREAS

KIOSK

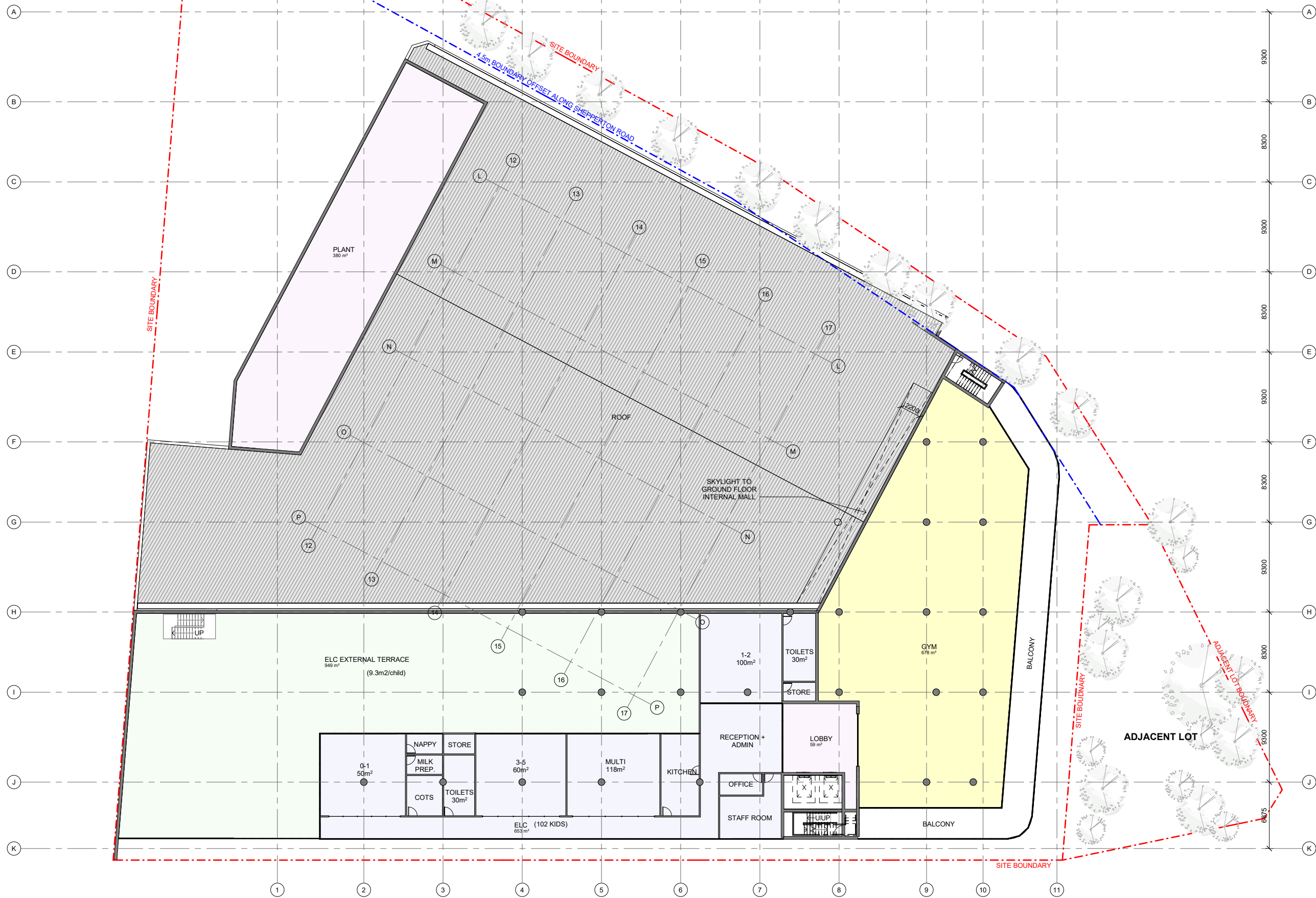
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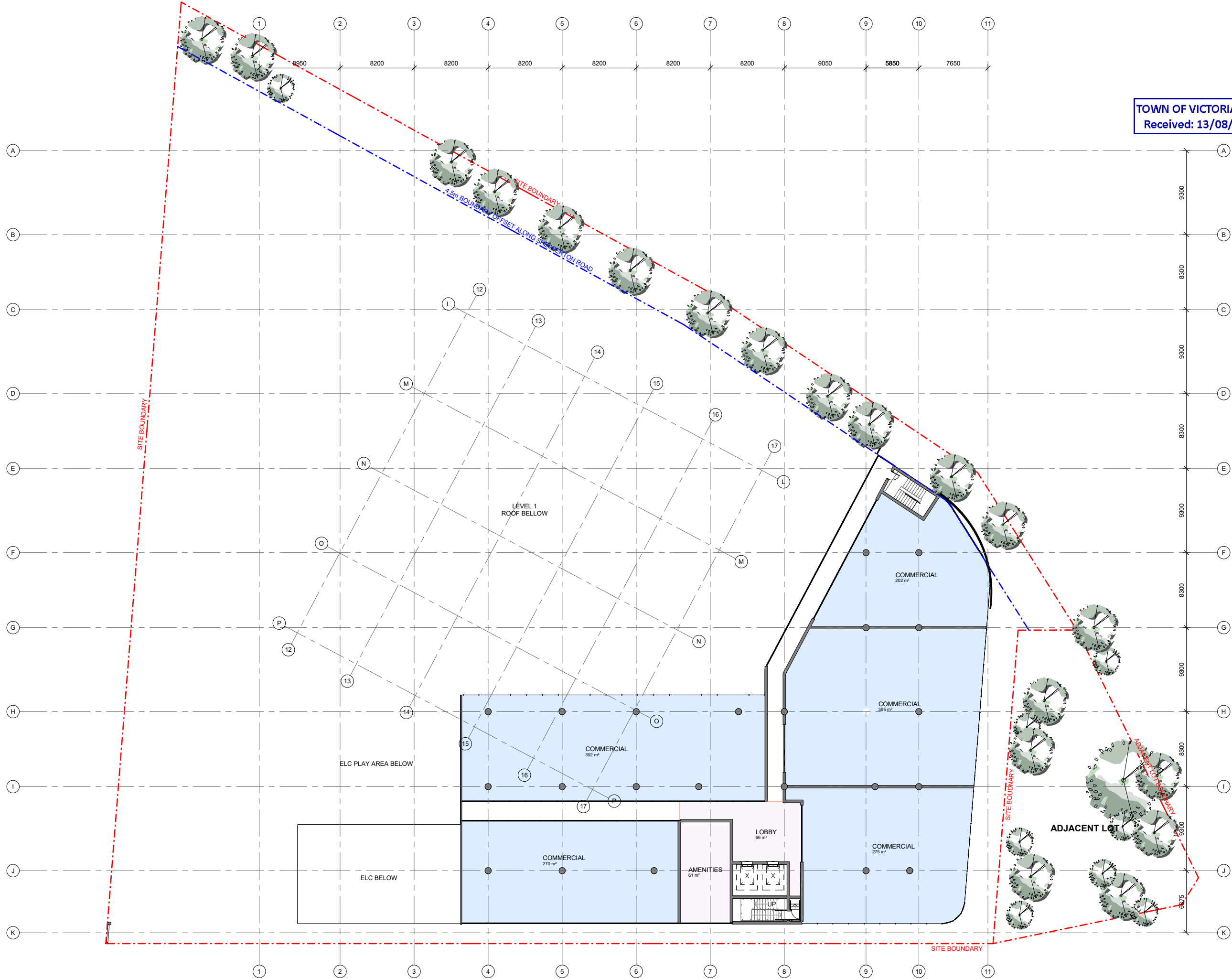
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Parking Schedule	
Level	Count
BASEMENT	
BASEMENT	166
UNDERCROFT	115
Grand total	281







19.07.23

OPTION 3
DEVELOPMENT SUMMARY

REV C

Areas	
Woolworths	3609m ²
Direct to Boot	132m ²
Specialty	980m ²
Kiosk	50m ²
Total Retail GLAR	4771m ²
Office NLA	1504m ²
ELC - 102 places	
Internal	780m ²
External	950m ²
Gym	678m ²
Car Wash	25m ²
TOTAL NLA	8708m ²

Parking Requirement	
Retail:	
5 bays/100m ²	239 Bays
4.5 bays/100m ²	215 Bays
Office	
2 bays/100m ²	30 Bays
ELC	Reciprocal Use*
Gym (24 hour) /office	14 Bays ***
Car wash	Reciprocal Use**
TOTAL REQUIRED	282 Bays Retail at 5.0 bays/100m ² 258 Bays Retail at 4.5 bays/100m ²

Parking Provided	
Basement	166 Bays
Undercroft	104 Bays
Pad Site	11 Bays

* Areas achieved by assuming staggered peak demand in parking between retail, ELC and gym

** Car wash parking reciprocal as serviced car wash customers likely shopping

*** Nominal parking ration of 2.0 bays/100m² applied to gym in case it is required as office