



MEYER SHIRCORE

**PROPOSED LARGE FORMAT RETAIL
LOT 2813, CORNER CAMBORNE PARKWAY &
BRACKLEY WAY
BUTLER**

ENVIRONMENTAL ACOUSTIC ASSESSMENT

MAY 2019

OUR REFERENCE: 24378-3-19113



DOCUMENT CONTROL PAGE

**ENVIRONMENTAL ACOUSTIC ASSESSMENT
LARGE FORMAT RETAIL**

Job No: 19113

Document Reference : 24378-3-19113

FOR

MEYER SHIRCORE

DOCUMENT INFORMATION

Author:	George Watts	Checked By:	Tim Reynolds
Date of Issue:	28 May 2019		

REVISION HISTORY

Revision	Description	Date	Author	Checked
1	Revised Site Plan	14/06/19	TR	-
1	Revised Site Plan	18/06/19	TR	-

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Meyer Shircore Attn : Eden Molinaro Email : eden@meyershircore.com.au		✓
1	2	Meyer Shircore Attn : Eden Molinaro Email : eden@meyershircore.com.au		✓
1	3	Meyer Shircore Attn : Eden Molinaro Email : eden@meyershircore.com.au		✓

This report has been prepared in accordance with the scope of services and on the basis of information and documents provided to Herring Storer Acoustics by the client. To the extent that this report relies on data and measurements taken at or under the times and conditions specified within the report and any findings, conclusions or recommendations only apply to those circumstances and no greater reliance should be assumed. The client acknowledges and agrees that the reports or presentations are provided by Herring Storer Acoustics to assist the client to conduct its own independent assessment.

CONTENTS

1.	INTRODUCTION	1
2.	SUMMARY	1
3.	CRITERIA	1
4.	MODELLING	4
5.	PREDICTED NOISE EMISSIONS	5
6.	ASSESSMENT	5
6.1	L _{A10} Noise Emissions – Mechanical Services	5
6.2	L _{A1} Noise Emissions – Delivery Vehicles	6

APPENDICIES

A	Site Plan
---	-----------

1. INTRODUCTION

Herring Storer Acoustics were commissioned by Axiom Properties Ltd, through Meyer Shircore, to undertake an acoustic assessment of noise emissions associated with the proposed Large Format Retail development at Lot 2813, located on the corner of Camborne Parkway and Brackley Way, Butler.

This report assesses noise emissions from the premises with regards to compliance with the requirements of the *Environmental Protection (Noise) Regulations 1997*. Noise sources considered as part of this assessment include :

- Mechanical Services; and
- Delivery vehicles.

For reference, the site plan for the proposed development is attached in Appendix A.

2. SUMMARY

The closest neighbouring residences to this development have been identified as shown in Figure 3.1.

The assessment indicates that noise emissions from delivery trucks would be assessed against the assigned L_{A1} noise level and mechanical services against the assigned L_{A10} noise level.

From the analysis undertaken, noise emissions from the proposed development has been assessed to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

As the mechanical services design would only be confirmed as part of the next design phase, it is recommended that an acoustic review of the mechanical services be undertaken once the design has been finalised, to ensure compliance is achieved.

3. CRITERIA

The allowable noise level for noise sensitive premises in the vicinity of the proposed Large Format Retail development is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 and 8 stipulate maximum allowable external noise levels or assigned noise levels that can be received at a premise from another premises. For residential premises, this noise level is determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern. The base noise levels for residential premises and the assigned noise levels for industrial premises are listed in Table 3.1.

TABLE 3.1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _{A10}	L _{A1}	L _{Amax}
Noise sensitive premises: highly sensitive area	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF

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.
 IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), 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 15 dB when determined for a single representative event;

“modulation” means a variation in the emission of noise that –

- (a) is more than 3 dB L_{AFast} or is more than 3 dB L_{AFast} 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_{ASlow} levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 3.2 below.

TABLE 3.2 - ADJUSTMENTS TO MEASURED LEVELS

Where tonality is present	Where modulation is present	Where impulsiveness is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

For this development, the closest residential premises of concern are located to the north east, as shown on Figure 3.1 below. Each individual premises have been considered in our assessment, however, to simplify reporting, only the highest noise level for each scenario considered has been reported.

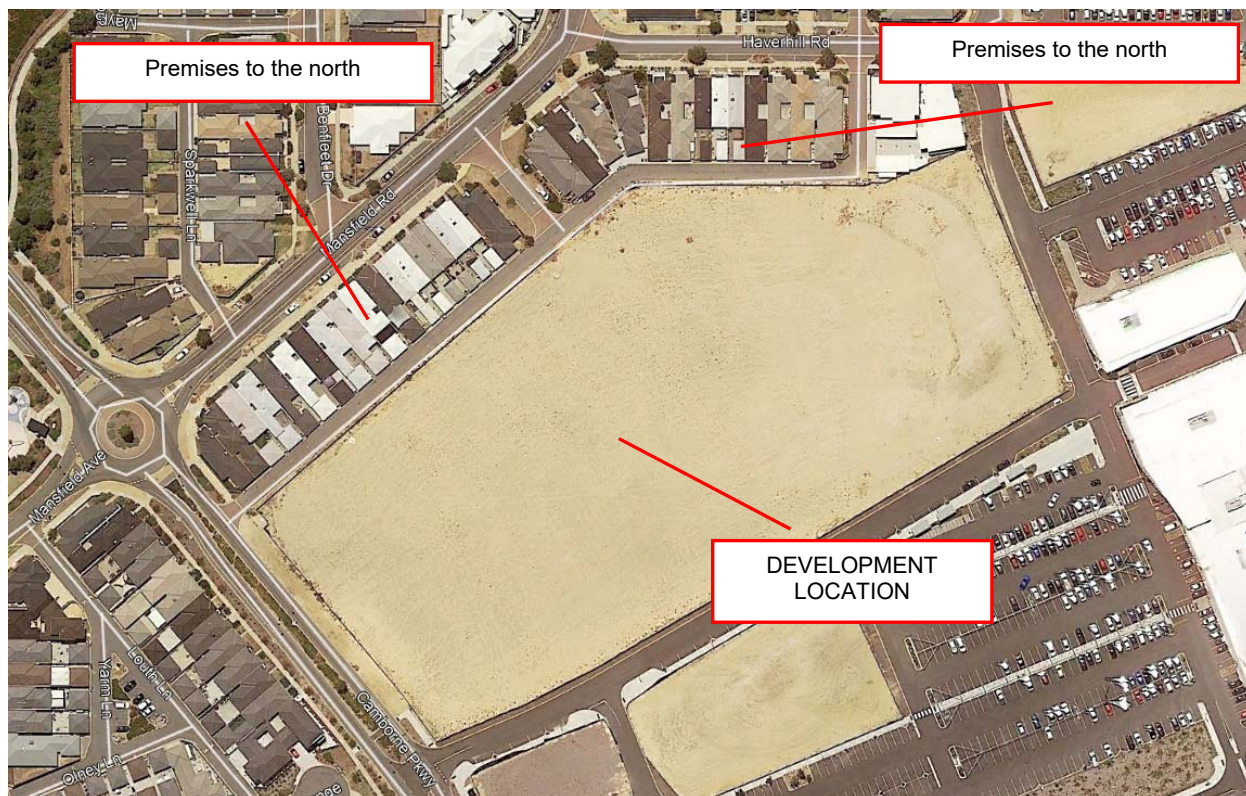


FIGURE 3.1 – AREA AROUND PROPOSED DEVELOPMENT

The influencing factor at the nearest residential locations have been determined as summarised in Table 3.3.

TABLE 3.3 – INFLUENCING FACTOR

Influencing Factor Parameter	Influencing Factor (dB)
	Residences to the North East
40% Commercial land use with inner circle	+ 2
30% Commercial land use with inner circle	+1.5
TOTAL IF	+3 (rounded down)

Based on the above, the assigned noise levels are as listed in Tables 3.4.

TABLE 3.4 - ASSIGNED OUTDOOR NOISE LEVEL FOR RESIDENCES TO THE NORTH

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L _A 10	L _A 1	L _A max
Noise sensitive premises : Highly sensitive area	0700 - 1900 hours Monday to Saturday	48	58	68
	0900 - 1900 hours Sunday and Public Holidays	43	53	68
	1900 - 2200 hours all days	43	53	58
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	38	48	58

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. MODELLING

Modelling of the noise propagation from the proposed development was carried out using an environmental noise modelling computer program, "SoundPlan". Calculations were carried out using the EPA worst case weather conditions as stated in the Environmental Protection Authority's "Draft Guideline on Environmental Noise for Prescribed Premises".

Noise emissions from the development, include:

- Mechanical Services; and
- Delivery vehicles.

It is noted that mechanical services have not been selected at this stage of the development, hence, typical noise levels for air conditioners associated with tenancies of the size proposed has been utilized.

The calculations were based in the sound power levels listed in Tables 4.1.

TABLE 4.1 – GENERAL SOUND POWER LEVELS

Item of Equipment	Sound Power Level, (dB(A))
Tenancies 1 - 5, 7 – 11 and 13 - 15	75
Tenancy 6 and 12	80
Delivery Truck	84

It is noted equipment selected during the design phase of the development will need to have noise emissions confirmed in relation to the above assumed noise levels.

The above noise sources need to comply with the following assigned noise levels :

- L_{A10} - Mechanical services.
- L_{A1} - Delivery Trucks.

With regards to noise emissions, the following are noted:

- 1 Noise associated with the mechanical services does not take into account any diversity of operation. Such diversity would occur during the evening periods (whilst cooler). Thus, this is a conservative assessment.
- 2 The location of the mechanical plant has been assumed to be on the roof of the tenancies, with a parapet wall screening the plant.
- 3 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.

5. PREDICTED NOISE EMISSIONS

Calculations were undertaken to all the residences noted on Figure 3.1. The resultant noise levels are listed in Tables 5.1.

NOTE : Noise levels were calculated at all adjacent noise sensitive premises, however, for simplicity of reporting, only the highest noise levels have been included below.

TABLE 5.1 – CALCULATED NOISE LEVELS

Item	Residences (dB(A))
Mechanical services	33 dB L _{A10}
Deliveries	40 dB L _{A1}

6. ASSESSMENT

The following provided the acoustic assessment for the noise sources requiring compliance, as listed in Table 5.1.

6.1 L_{A10} NOISE EMISSIONS – MECHANICAL SERVICES

Noise emissions from the mechanical services would be steady state and would operate for the majority of time. Hence noise received from the mechanical services needs to comply with the assigned L_{A10} noise level.

Given the resultant noise level at the residences and likely background noise level in the area, we believe that noise emissions are likely to be tonal, hence, a +5 dB(A) penalty has been applied to the calculated noise level associated with the mechanical services. Table 6.1 lists the characteristics that should be included in the assessable noise level.

TABLE 6.1 – APPLICABLE ADJUSTMENTS AND ASSESSABLE L_{A10} NOISE LEVELS, dB(A)
MECHANICAL SERVICES

Location	Calculated Noise Level, dB(A)	Applicable Adjustments to Measured Noise Levels, dB(A)			Assessable Noise Level, dB(A)
		Where Noise Emission is NOT music			
		Tonality	Modulation	Impulsiveness	
North Residences	33	+5	-	-	39

Table 6.2 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated for the scenarios associated with the mechanical services.

TABLE 6.2 – ASSESSMENT OF L_{A10} NOISE LEVEL EMISSIONS
MECHANICAL SERVICES

Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L _{A10} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
North Residences	38	Day Period	48	Complies
		Sunday Day Period	43	Complies
		Evenings	43	Complies
		Night	38	Complies

6.2 L_{A1} NOISE EMISSIONS – DELIVERY VEHICLES

Noise emissions from deliveries would be present for less than 10% of a representative time period, hence noise received from this noise source needs to comply with the assigned L_{A1} noise level.

Given the resultant noise level at the residences and likely background noise level in the area and the definition of tonality, noise received at the neighbouring residences from delivery vehicles would not be considered tonal.

Table 6.3 shows the applicable Assigned Noise Levels, and assessable noise level emissions associated for the scenarios associated with delivery vehicles.

**TABLE 6.3 – ASSESSMENT OF L_{A1} NOISE LEVEL EMISSIONS
 DELIVERIES**

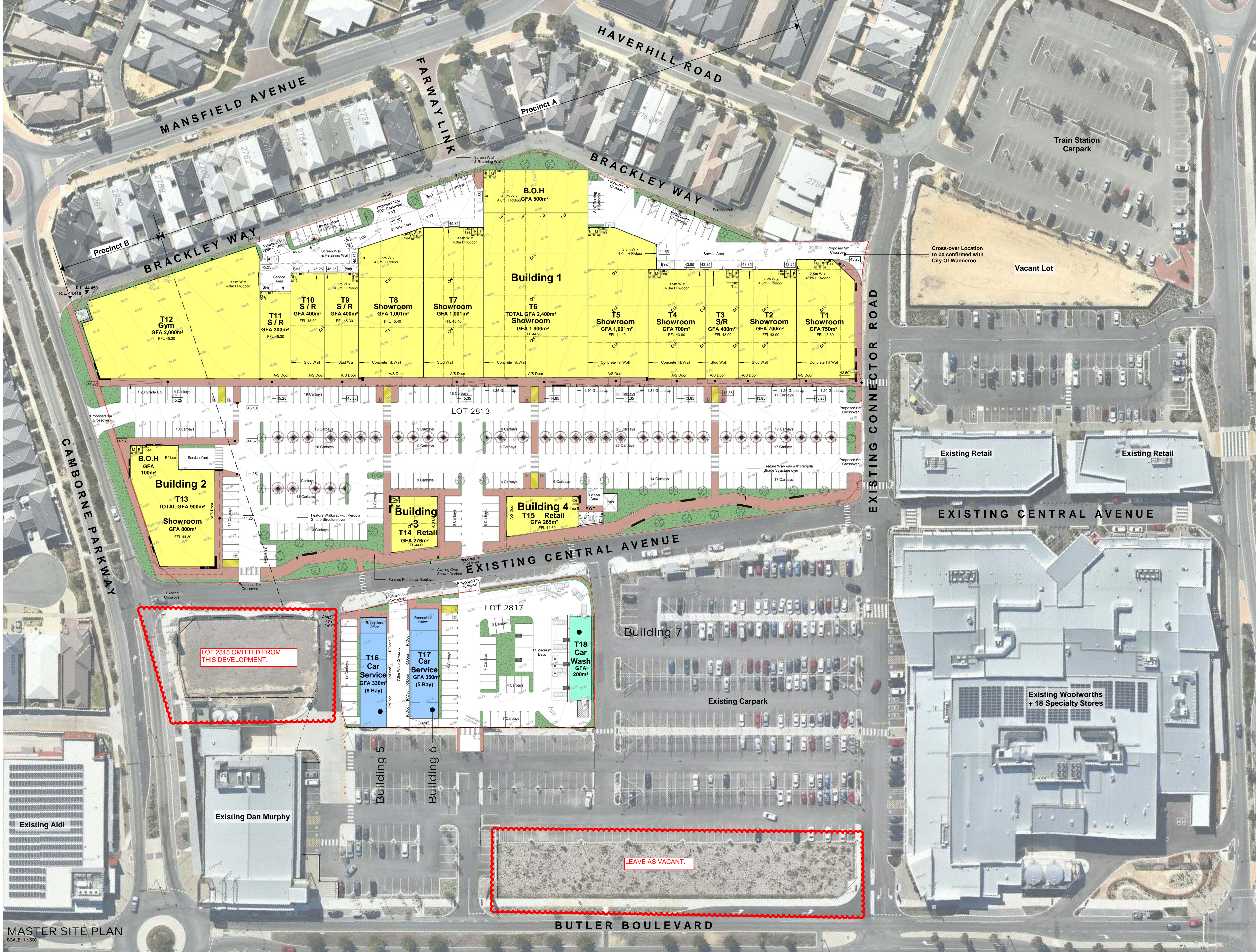
Location	Assessable Noise Level, dB(A)	Applicable Times of Day	Applicable Assigned L _{A1} Noise Level (dB)	Exceedance to Assigned Noise Level (dB)
North Residences	40	Day Period	58	Complies
		Sunday Day Period	53	Complies
		Evenings	53	Complies
		Night	48	Complies

From the above assessments, the noise received at the neighbouring residences complies with the requirements of the *Environmental Protection (Noise) Regulations 1997* at all times.

As the mechanical services design would only be confirmed as part of the next design phase, it is recommended that an acoustic review of the mechanical services be undertaken once the design has been finalised, to ensure compliance is achieved.

APPENDIX A

SITE PLAN



SITE CRITERIA - LOT 2813

1. Site Area	27,678m ²		
2. Landscaping	2,214.2m ² or 8% of Site		
Required			
Provided			
i. Soft	1,593.9m ²		
ii. Hard	2,527.5m ² (Inc. Pedestrian Boulevard)		
Total	4,151.3m² or 15% of Site		
3. Floor Area			
i. Showroom	9,353m ²		
ii. Retail	561m ²		
iii. Gym	2,000m ²		
Total	11,914m² or 43% of Site		
4. Car Parking			
Required			
Provided			
i. Showroom	9,353m ² @ 1/30m ²	Carbays	311.8
ii. Retail	561m ² @ 1/25m ²		22.4
iii. Gym	200 Patrons @ 1/4		50.0
Total			384.2
5. Zoning			398

SITE CRITERIA - LOT 2817

1. Site Area	3,769m ²		
2. Landscaping	301.5m ² or 8% of Site		
Required			
Provided			
i. Soft	364m ²		
ii. Hard	84m ²		
Total	448m² or 11.8% of Site		
3. Floor Area			
i. Car Service (14 bays)	1,130m ²		
ii. Car Wash	200m ²		
Total	1,330m² or 26.7% of Site		
4. Car Parking			
Required			
Provided			
i. Car Service	11 Bays @ 5/Bay	Carbays	55
ii. On Grade			50

COMPOSITE CARPARKING

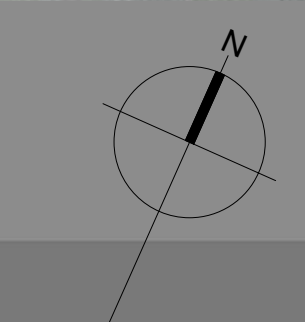
a. Lot 2813 Required / Provided:	
i. Required	384.2 Carbays
ii. Provided	398 Carbays
b. Lot 2817 Required / Provided:	
i. Required	55 Carbays
ii. Provided	50 Carbays
c. Total Required / Provided	
i. Required	439.2 Carbays
ii. Provided	448 Carbays

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 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 or tenancy dividing walls.
 B. This area is inclusive of bases if the bases are exclusive to the Tenancy.

MASTER SITE PLAN
SCALE: 1:500

PROPOSED LARGE FORMAT RETAIL DEVELOPMENT
 LOCATION: LOTS 2813 & 2817 CNR CAMBORNE PARKWAY & BRACKLEY WAY, BUTLER
 FOR: AXIOM PROPERTIES LTD BY: VEND PROPERTY

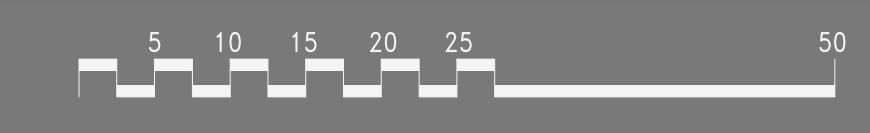


SK010
JUNE 2019
A004
As indicated @ B1

8373



meyer shircore 55 YEARS
architects 1963 | 2018



© Meyer Shircore & Associates ACN 115 189 216
 Suite 2, Ground Floor, 437 Roberts Road Subiaco WA 6008
 P.O. Box 1294 Subiaco WA 6904
 t: 08 9381 8511 e: msa@meyershircore.com.au

12.06.2019

PRELIMINARY