

YOLK PROPERTY GROUP

**65 SOUTH TERRACE HOTEL
FREMANTLE**

**DEVELOPMENT APPLICATION
ACOUSTIC REPORT**

JANUARY 2021

OUR REFERENCE: 27092-1-20390

DOCUMENT CONTROL PAGE

DA ACOUSTIC REPORT
65 SOUTH TERRACE HOTEL
FREMANTLE

Job No: 20390

Document Reference : 27092-1-20390

FOR

YOLK PROPERTY GROUP

DOCUMENT INFORMATION				
Author:	George Watts	Checked by:	Tim Reynolds	
Date of Issue :	13 January 2021			
REVISION HISTORY				
Revision	Description	Date	Author	Checked
DOCUMENT DISTRIBUTION				
Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Harris – Jenkins Architects Attn: Rhys Jenkins Email: rhys@harrisjenkins.com		✓

CONTENTS

1.0	INTRODUCTION	1
2.0	CRITERIA	1
2.1	BCA Provisions	1
2.2	Environmental Protection (Noise) Regulations 1997	2
2.3	Noise Ingress	4
3.0	BCA REQUIREMENTS	4
4.0	NOISE INGRESS	4
4.1	Noise Source Identification	4
5.0	NOISE FROM DEVELOPMENT	5
5.1	Mechanical Services	5
5.2	Bar / Cafe	5

1.0 INTRODUCTION

Herring Storer Acoustics was commissioned by Yolk Property Group, through Harris – Jenkins Architects, to conduct a preliminary review of the proposed hotel development in Fremantle, at 65 South Terrace.

The development consists of floors four floors of hotel, with the fifth floor being commercial office space. The ground floor consists of hotel amenities and a café/bar.

The development also includes a basement carpark.

This report has been based on the Development Application drawings provided.

2.0 CRITERIA

2.1 BCA PROVISIONS

For Class 2 or 3 buildings, Part F5 of the National Construction Code (NCC), outlines the minimum acoustic isolation of apartments, and in this instance hotel rooms.

The following summarises the acoustic criteria:

2.1.1 Walls

Wet to wet	$R_W + C_{tr}$ not less than 50 dB.
Living to living	$R_W + C_{tr}$ not less than 50 dB.
Wet to living	$R_W + C_{tr}$ not less than 50 dB plus discontinuous construction.
Kitchens to living	$R_W + C_{tr}$ not less than 50 dB plus discontinuous construction.

Note: Where kitchens are part of an open living area, we consider the kitchen to be part of the living area and in these cases a discontinuous construction is required. This also includes cases where kitchens are back-to-back, however, discontinuous construction is only required on one side.

2.1.2 Floors

Floors	$R_W + C_{tr}$ not less than 50 dB.
Impact Isolation	$L_{n,w}$ not more than 55 dB is recommended.

Note: The impact isolation criteria under the BCA is an $L_{n,w}$ of not more than 62 dB. However, as a member firm of the Association of Australasian Acoustic Consultants, (AAAC) we recommend a criteria of an $L_{n,w}$ of not more than 55 dB be adopted for a development of this type.

2.1.3 Service Risers

to Habitable Rooms	$R_W + C_{tr}$ not less than 40 dB.
to Non-Habitable Rooms	$R_W + C_{tr}$ not less than 25 dB.

2.1.4 Hydraulics

The above requirements also apply to storm water down pipes.

2.1.5 Doors

Door (Connecting) R_w not less than 30 dB.

The development would be designed to comply with the requirements of Part F5 of the BCA.

2.2 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 or assigned noise levels for noise sensitive premises are 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. For commercial premises, the allowable or assigned noise levels are the same for all hours of the day. Table 3.1 also lists the assigned noise levels for commercial premises.

TABLE 3.1 – ASSIGNED NOISE LEVELS

Premises Noise	Receiving	Time of Day	Assigned Level (dB)		
			L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling		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 –

- is more than 3dB $L_{A Fast}$ or is more than 3dB $L_{A Fast}$ in any one-third octave band;
- is present for more at least 10% of the representative assessment period; and
- 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

From a review of the development, the influencing factor for this development would be 6 dB, based on the following :

Secondary Roads within inner circle;

South Terrace + 2 dB

Commercial Premises within inner circle;

40% + 2 dB

Commercial Premises within outer circle;

20% + 1 dB

Total IF + 5 dB

Hence the influencing factor would be + 4 dB and the assigned noise levels would be as listed in Table 3.3.

TABLE 3.3 - ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		L_{A10}	L_{A1}	L_{Amax}
Noise sensitive premises within 15 metres of a dwelling	0700 - 1900 hours Monday to Saturday	50	60	70
	0900 - 1900 hours Sunday and Public Holidays	45	55	70
	1900 - 2200 hours all days	45	55	60
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays	40	50	60

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 not only includes noise associated with mechanical services (ie air conditioning and ventilation systems), but also noise from commercial premises within the site.

2.3 NOISE INGRESS

Inbound Noise Levels

Traffic noise impact for the proposed development is proposed to be assessed on the basis of achieving an internal noise levels of :

- L_{eq} 35 dB(A) in sleeping areas (bedrooms); and
- L_{eq} 40 dB(A) in living/work areas and other habitable rooms.

This is the same design levels that the WAP State Planning Policy 5.4 utilises for development near major roads, and also aligns with “design for ambient” policies across the metropolitan area.

Outbound Noise

Noise emissions associated with a development are to comply with the Assigned Noise Levels in accordance with the *Environmental Protection (Noise) Regulations 1997*.

3.0 BCA REQUIREMENTS

The proposed development will be constructed to comply with the requirements of Part F5 of the NCC.

4.0 NOISE INGRESS

4.1 NOISE SOURCE IDENTIFICATION

Noise levels were recorded during peak hour traffic conditions to ascertain the critical noise level for the design of the development. Noise levels were also measured during what is considered to be representative of the high use of the nearest entertainment venues in the vicinity.

Traffic noise is considered to be the significant noise source in terms of noise impact.

Noise levels were recorded at up to 66 dB(A) at the proposed development location façade fronting South Terrace.

A preliminary façade assessment is being undertaken however, based on previous work in this area the ability to meet the relevant criteria for traffic noise ingress and ambient noise levels in the area is not considered to be onerous.

5.0 NOISE FROM DEVELOPMENT

The main source of noise from the proposed development will be from mechanical services consisting of air-conditioning plant and perhaps carpark ventilation fans. Noise received at neighbouring premises, and premises within the development, from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

5.1 MECHANICAL SERVICES

The main source of noise from the proposed development will be from mechanical services consisting of car-park ventilation fans (if needed) and air-conditioning plant. Noise received at residence (neighbours and residence within the development) from these items need to comply with the assigned noise levels as determined under the *Environmental Protection (Noise) Regulations 1997*.

As the mechanical services could operate during the night, noise emissions from the development needs to comply with the assigned L_{A10} night period noise level of 40 dB(A) at residential premises. Potentially, noise emissions from mechanical services could be tonal, in which case an +5 dB(A) penalty for a tonal component could be applied to the resultant noise levels. Therefore, the design level at the neighbouring residential premises would be 35 L_{A10} dB.

The mechanical services design of the development is not known at present; however, it appears that the equipment is proposed to be primarily located on the south side of the 5th floor.

Given the location of the equipment and the assigned noise level of the surrounding area, compliance with the applicable noise levels is not considered to be onerous. A complete analysis of the noise impact would be undertaken during the design development phase of the project in response to likely development approval conditions for the project.

5.2 BAR / CAFE

Noise levels associated with operations of the bar / café on the ground floor will need to comply with the requirements of the *Environmental Protection (Noise) Regulations 1997*, and is anticipated to be a condition of development approval.

The management of noise levels within this space will need to be considered on the basis of the style/intensity of entertainment within the space (if any), number of patrons and time of day/night that the space is intended to be used.

The times at which the bifold door from the corner of South Terrace and Suffolk Street can be open may need to be restricted – dependent on the use of the space.

These management issues are proposed to be addressed as part of the design development phase of the project, and addressing anticipated development approval conditions – noting that assuming the use of the café/bar is typical of hotel use, compliance with the Regulations is considered highly unlikely to be onerous to achieve.