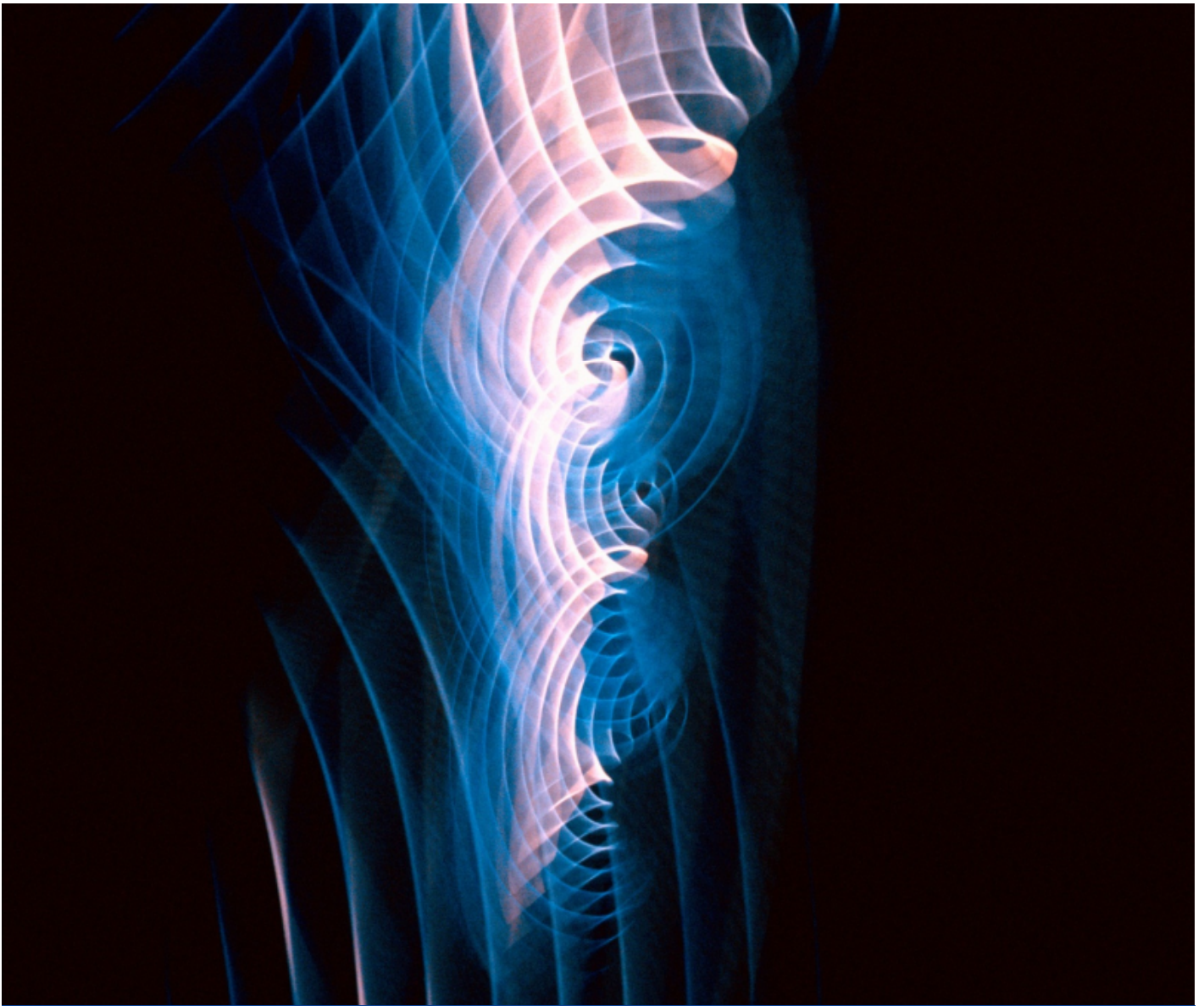




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BLOCKS 6 + 7, CENTRAL PARK: COMMERCIAL AND RETAIL ADAPTIVE REUSE

PA Acoustic Report

November 2012

Quality Management

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
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Blocks 6 + 7, Central Park: Commercial and Retail adaptive reuse

PA Acoustic Report

9/11/2012

Client

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Consultant

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Table of Contents

1	Introduction	5
1.1	Site Description	5
2	Prevailing External Noise Environment.....	6
2.1	Noise Emission Limits.....	6
3	Occupant noise	7
3.1	Design criteria.....	7
3.2	Assessment.....	7
4	External Noise Intrusion	9
4.1	Design Criteria	9
4.2	Ventilation Scheme.....	9
4.3	External Building Envelope.....	10
4.3.1	Solid Areas of Façade	10
4.3.2	Glazing	10
5	Mechanical Services Noise	11
5.1	Internal Noise Levels	11
5.2	Atmospheric Noise Emissions	11
6	Summary.....	12
	Appendix A – Site Masterplan Noise Mapping Results.....	13

1 Introduction

WSP Acoustics has been appointed to provide acoustic consultancy services for the proposed developments known as Blocks 6 and 7 on the Central Park Development site in Sydney, NSW

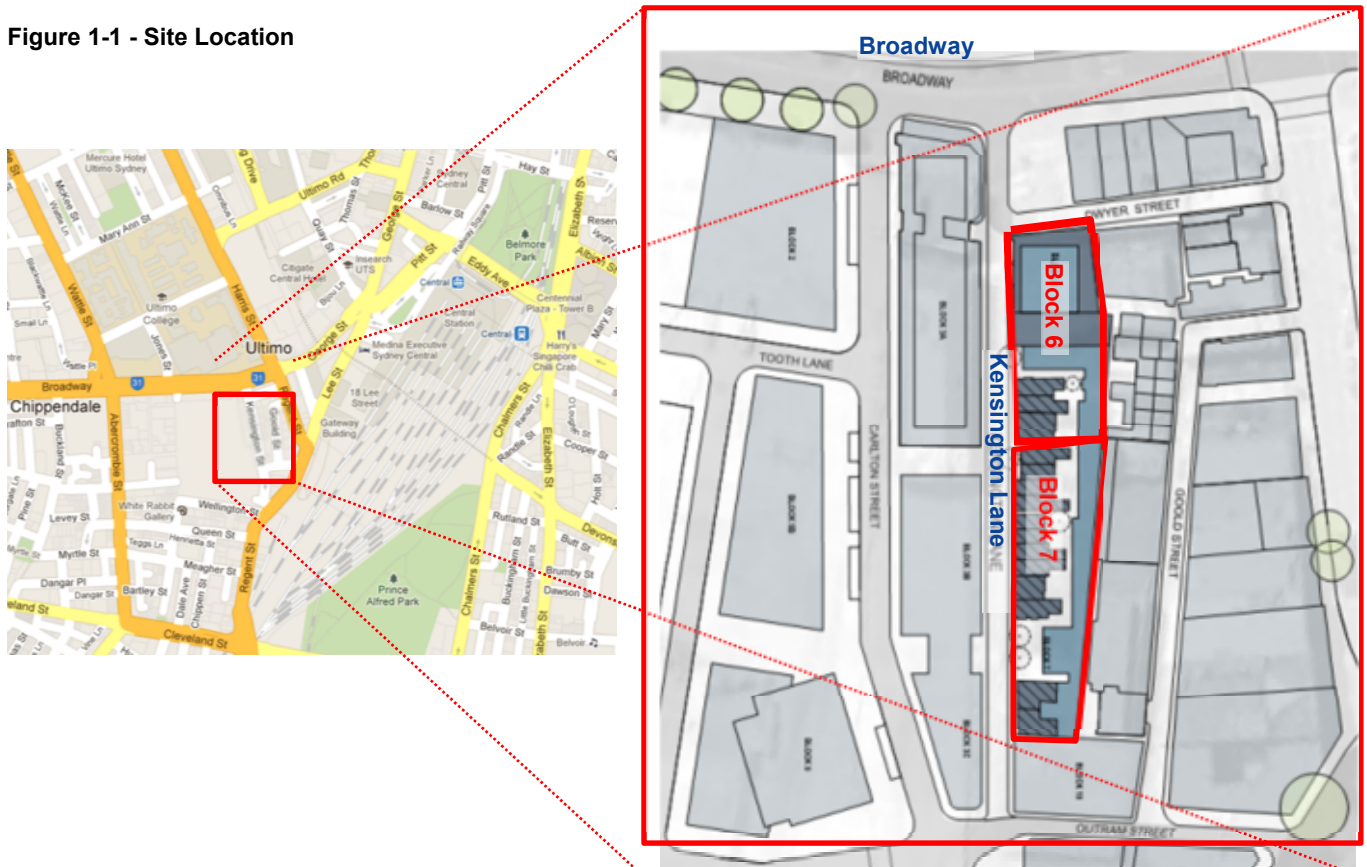
The purpose of this report is to provide an acoustic impact assessment in support of the Project Application for these Blocks. A Concept Plan report for the development site as a whole has been approved (*'Fraser's Broadway Site Concept Plan – Acoustic Report'*, Heggies Pty Ltd, May 2008). This report calls on this Concept Plan to provide specific information for the proposed plots with respect to:

- Noise impact of the noise sources introduced by the development on the surrounding properties
- Control of the prevailing external noise levels to meet suitable internal noise criteria in the proposed development

1.1 Site Description

The proposed developments subject to this Project Application are Blocks 6 and 7 on the eastern boundary of the Central Park site, as highlighted below. The proposed blocks (shown in red) are along Kensington Lane which links Broadway and Regent Street.

Figure 1-1 - Site Location

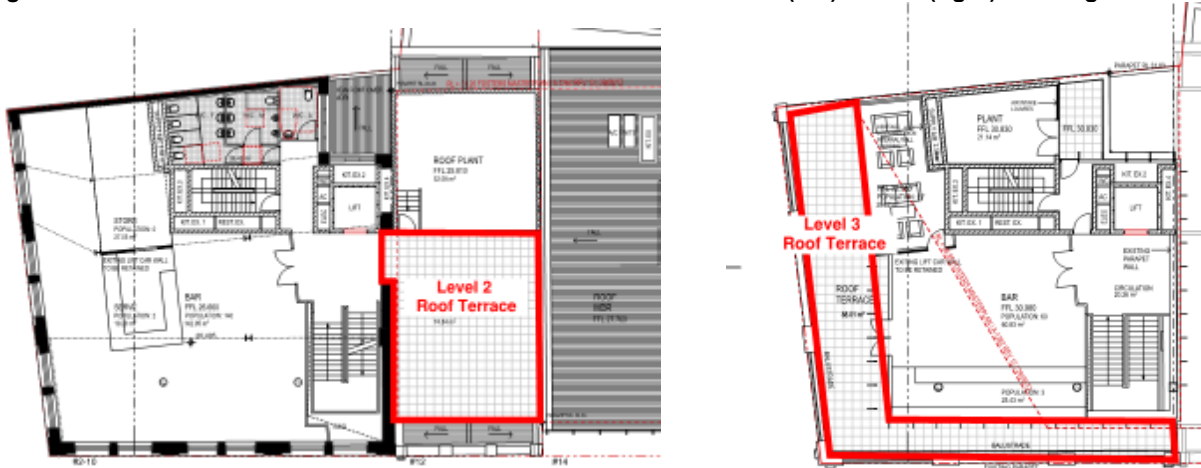


The proposed use for the blocks is for a mix of Retail, Restaurant, Bar and Office spaces.

3 Noise emissions from occupant noise

The proposals contain 2 areas where people are expected to congregate when using the amenities; the roof terraces at number 10 and 14. These can provide a source of noise and potential disturbance to nearby noise sensitive properties. An assessment has been conducted of the predicted noise levels associated with occupancy of the roof top garden and bar terrace to nearest noise sensitive properties.

Figure 3-1 - Roof terrace areas - located on level 2 and 3 of number 10 (left) and 14 (right) Kensington Lane



3.1 Design criteria

Occupant noise would typically be assessed against requirements stated in *Sound Advice – Reducing the risk of noise disturbance*, October 2009 by the New South Wales Office of Liquor, Gaming & Racing (NSW OLGR). The document states;

The LA10 noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5Hz – 8kHz inclusive) by more than 5dB between 07:00am and 12:00 midnight at the boundary of any affected residence.*

The LA10 noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5Hz – 8kHz inclusive) between 12:00am and 07:00 midnight at the boundary of any affected residence.*

Notwithstanding the above, the noise from the licensed premises shall not be audible within any habitable room in any residential premises between the hours of 12:00 midnight and 07:00am.

**LA10 is the average maximum deflection of the noise emission from the licensed premises.*

3.2 Assessment

The following information summaries the assessment conducted for noise associated with the terraces on block 6. The nearest noise sensitive properties are deemed as;

- New developments on Dwyer Street (10m from level 3 terrace)
- New developments on Kensington Lane (18m from level 2 terrace)
- New developments on Goold Street (25m from level 2 terrace)

The following assumptions have been used for the prediction calculations;

- The assessment adopts the distance from the central point of each terrace space to the external façade of the nearest noise sensitive property.
- Level 3 terrace occupancy capacity of 30 people with 15 speaking at the same time.
- Level 2 terrace occupancy capacity of 60 people with 30 speaking at the same time.
- The predicted background noise levels are based on data for 15m above ground level contained in '*Frasers Broadway Site Concept Plan – Acoustic Report*', Heggies Pty Ltd, May 2008. The predicted (L_{A90}) background noise levels were not presented in the report for some of the development locations. A correction has been applied to the presented data for conversion from ambient noise levels to background noise levels (L_{A90}) by subtracting 2dB from the presented values. This is in accordance with recognised standards (such as CoRTN) when the dominant noise source is heavy road traffic.
- The assessment assumes that there are no loudspeakers to amplify music or speech and the source of noise is only from raised voices. This is in line with the developers preferences. The sound pressure level assumed for raised voices is in accordance with the levels stated in BS8233:1999.

Figure 3-2 - Summary of assessment of noise associated with outdoor terraces

Location and time period	Predicted Background noise level	Source of noise	Free field predicted noise level at 1m from façade.	Difference between overall A-weighted Background and predicted noise levels
Dwyer Street (Daytime 07:00-00:00)	62 - 65 dB $L_{A90,15hr}$	Level 3 terrace	53 dB L_{PA}	-9 dB
Dwyer Street (Night time 00:00-07:00)	60 - 63 dB $L_{A90,9hr}$	Level 3 terrace	53 dB L_{PA}	-7 dB
Kensington Lane/ Block 3A (Night time 00:00 – 07:00)	54 dB $L_{A90,9hr}$	Level 2 terrace	52 dB L_{PA}	-2 dB
Kensington Lane/ Block 3A (Daytime 07:00 – 00:00)	59 - 62 dB $L_{A90,15hr}$	Level 2 terrace	52 dB L_{PA}	-7 dB
Goold Street residential (Daytime 07:00-00:00)	62 - 68 dB $L_{A90,15hr}$	Level 2 terrace	49 dB L_{PA}	-13 dB
Goold Street residential (Night time 00:00-07:00)	60 - 68 dB $L_{A90,15hr}$	Level 2 terrace	49 dB L_{PA}	-11 dB

A-weighted sound pressure levels L_{PA} have been used as the assessment descriptor as it matches data presented for measured speech levels in BS8233. L_{A10} descriptor would require a time basis for each individual source. This is not possible with the limitations of the data. It should be noted that a result based on L_{PA} would provide higher noise levels than a result based on L_{A10} .

The assessment indicates that the noise levels associated with the terraces would be below the requirements of the NSW OLGR.

4 External Noise Intrusion

In order to ensure the amenity of the nearest noise sensitive receivers, external noise should be mitigated to appropriate internal noise levels through the proposed external building fabric.

4.1 Design Criteria

Whilst not a statutory requirement not in the Concept Plan for the site; it is recommended that wherever practical, noise is controlled to the “*Satisfactory*” levels give in AS2107:2000:

Figure 4-1 - Internal Noise Criteria

Type of Space	Internal Noise Target
Retail Spaces	45 dBA $L_{eq,1hr}$
Office Buildings - General	40 dBA $L_{eq,1hr}$
Restaurants	45 dBA $L_{eq,1hr}$

4.2 Ventilation Scheme

The proposed spaces in Blocks 6 & 7 are to be a mix of mechanically ventilated / air-conditioned spaces and mixed mode ventilation and cooling. This will include a number of external plant items located at roof top level.

In general fresh air will be supplied through openings in the façade and cooling provided by Fan Coil Units located in dedicated spaces. There will be mechanical ventilation to assist with air supply and exhaust in Kitchens and the Bars.

The plant to be located on the roof will include (but is not an exhaustive list);

- Kitchen supply and extract fans
- Fans for make-up air supply for the Bar
- VRS cooling units

These will be selected and specified in accordance with meeting the noise emissions limits detailed in section 2.1. During the design stage, attenuators and noise control measures will be applied and specified to the equipment where required to ensure that the noise emission limits are met. These may include but are not limited to;

- Careful selection of equipment
- Attenuators
- Acoustic barriers/screens
- Acoustic enclosures

4.3 External Building Envelope

Based on the measured external noise levels, and the recommended internal noise levels in Figure 3.1 – the following acoustic performance are recommended for the external building envelope of the development for the majority of spaces:

- Solid areas of façade: 40 dB R_w
- Glazing / Windows: 30 dB R_w

For “Office” spaces exposed to the highest noise levels (where these are shown as **blue** on Figure 2.1), the following criteria shall apply:

- Solid areas of façade: 45 dB R_w
- Glazing / Windows: 35 dB R_w

In order to achieve the performance levels above, it is recommended that the following measures are adopted.

4.3.1 Solid Areas of Façade

Generally, the majority of spaces in Blocks 6 & 7 are existing buildings that will be refurbished. It is expected that the existing traditional masonry constructions will readily achieve the design criteria stated above.

Where new-build elements are employed, a façade system will be selected which achieves a minimum sound insulation performance of 40 dB R_w (or 45 dB R_w where required). These are not generally an onerous design criteria and can be achieved with many lightweight façade systems (with plasterboard inner leaf or similar), and cavity masonry traditional façade constructions.

4.3.2 Glazing

Generally, the majority of spaces in Blocks 6 & 7 are existing buildings that will be refurbished. It is expected that due to being heritage buildings, where glazing is retained as part of the refurbishment – this will remain intact and the associated resulting acoustic performance accepted.

New glazing will be selected which achieves the recommended design criteria. It will be the responsibility of the nominated supplier to demonstrate compliance with a the design target, however for costing and design purposes, from previous experience a proprietary 6mm single glazed framed & sealed unit will be capable of achieving the nominated performance of 30 dB R_w , and 10.8mm acoustic laminate glass is generally capable of achieving 35 dB R_w .

5 Mechanical Services Noise

5.1 Internal Noise Levels

In order to achieve the recommended target internal noise levels in Figure 3.1, mechanical services noise is to be controlled to the following criteria:

- Offices: 35 dBA $L_{eq,1hr}$
- Retail Spaces: 40 dBA $L_{eq,1hr}$
- Restaurants: 45 dBA $L_{eq,1hr}$
- Kitchens: 45 – 55 dBA $L_{eq,1hr}$
- Bars and lounges 50 dBA $L_{eq,1hr}$

These will be achieved by appropriate equipment selection and attenuation measures such as lined ductwork and acoustic attenuators where necessary. This will be selected during within the design stages of the project to provide appropriate levels of sound attenuation.

5.2 Atmospheric Noise Emissions

Plant equipment is proposed both within and external to the proposed development. WSP Acoustics has been involved with the placement of this equipment on the site, and as the detailed design of the scheme progresses, will ensure that the total noise emissions from the development will not exceed the cited criteria given in Section 2.1.

This will be done during the design stages and will be achieved by appropriate equipment selection and attenuation measures such as acoustic attenuators, enclosures, and screening as appropriate, as outlined in section 4.2.

6 Summary

WSP Acoustics has been appointed to provide acoustic consultancy services for the proposed developments known as Blocks 6 & 7 on the Central Park Development site in Sydney, NSW

This report has assessed the proposals in terms of both

- Noise impact on the surrounding properties and
- Control of external noise affecting the amenity of the proposed uses for the development.

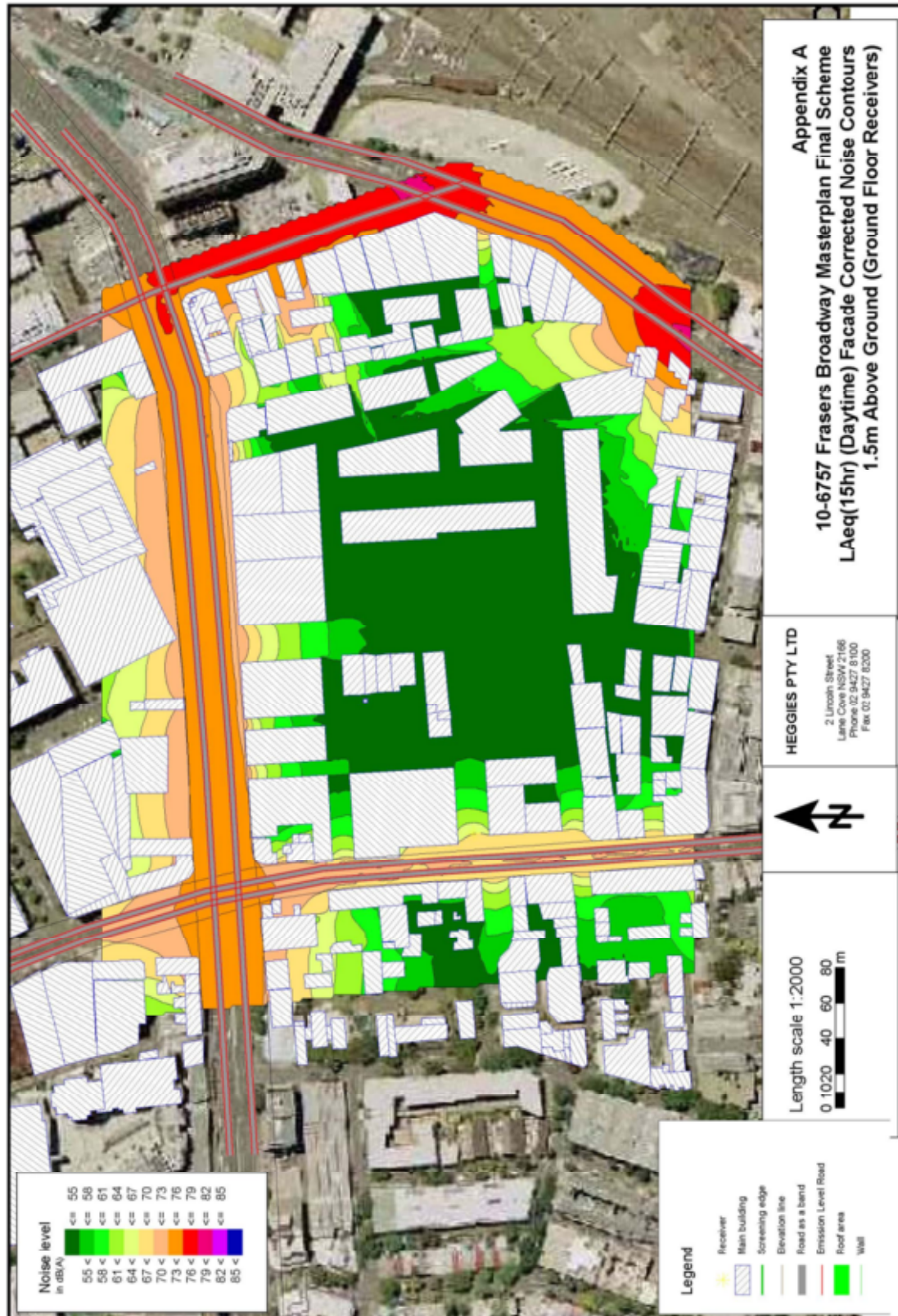
The assessment has been undertaken in accordance with the relevant responsible authority criteria and the criteria established in the approved Concept Plan report for acoustics. No adverse impacts are expected in terms of noise associated with the development, nor are onerous acoustic measures required to protect the amenity of the future spaces.

Note that in terms of mitigating external noise intrusion to the future proposed space; where existing external building fabric is retained as part of the refurbishment works – this will remain intact and the associated resulting acoustic performance accepted. As the proposed spaces are not residential or noise sensitive, this is considered an appropriate approach given the nature of the existing buildings.

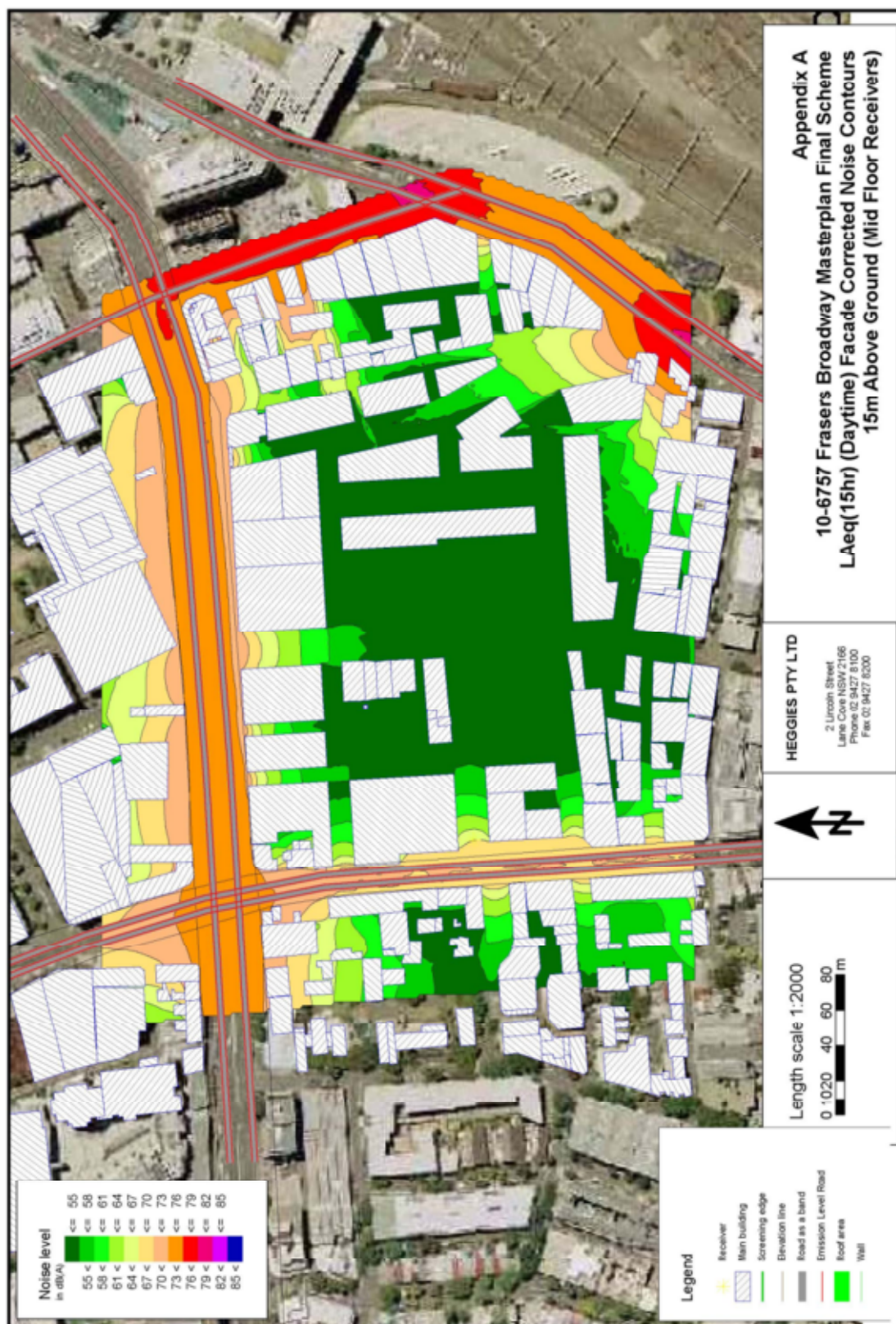
As such the proposed development of Blocks 6 & 7 on the Central Park Development site is considered appropriate from a noise impact aspect.

Appendix A – Approved Concept Plan Noise Mapping Results

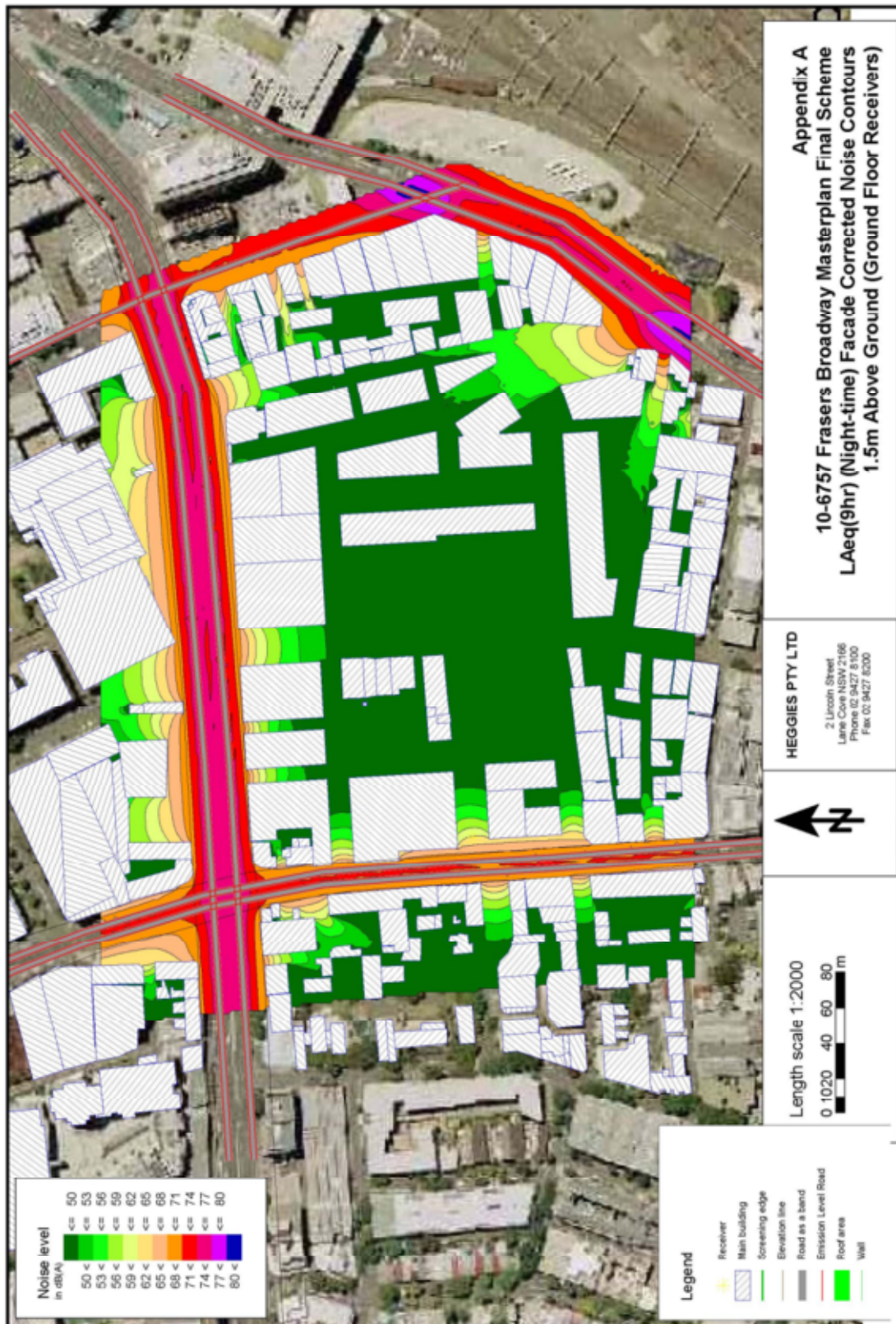
Daytime Noise Levels – 1.5m above Ground Level



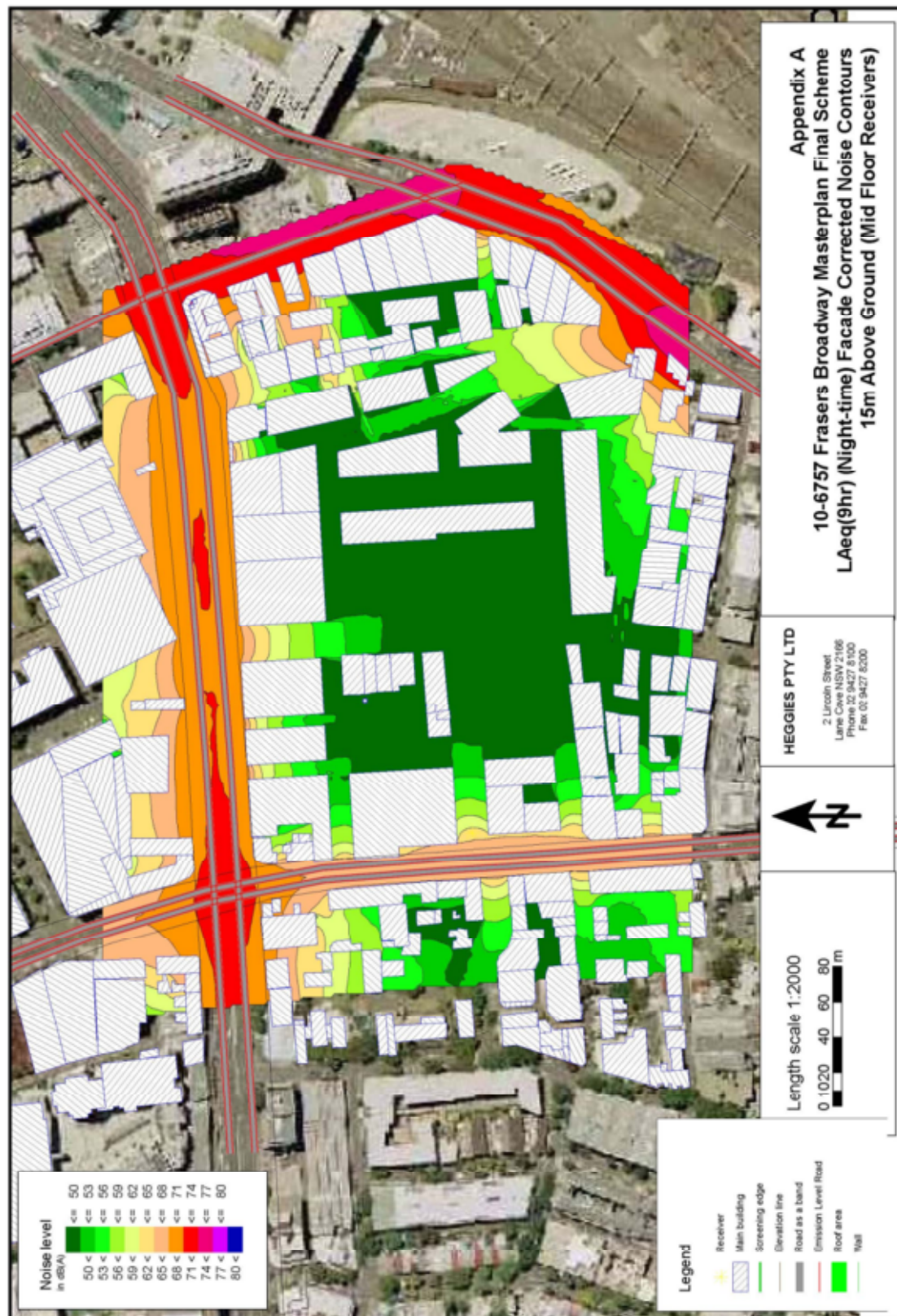
Daytime Noise Levels – 15m above Ground Level



Night-time Noise Levels – 1.5m above Ground Level



Night-time Noise Levels – 15m above Ground Level



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