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KENSINGTON STREET PROJECT

PA Acoustic Report – Blocks 3B, 3C, 10

April 2012

Quality Management

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KENSINGTON STREET PROJECT

PA Acoustic Report – Blocks 3B, 3C, 10

11/04/2012

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Consultant

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1 Introduction

WSP Acoustics has been appointed to provide acoustic consultancy services for the proposed developments known as Blocks 3B, 3C and 10 on the Central Park Development site in Sydney, NSW

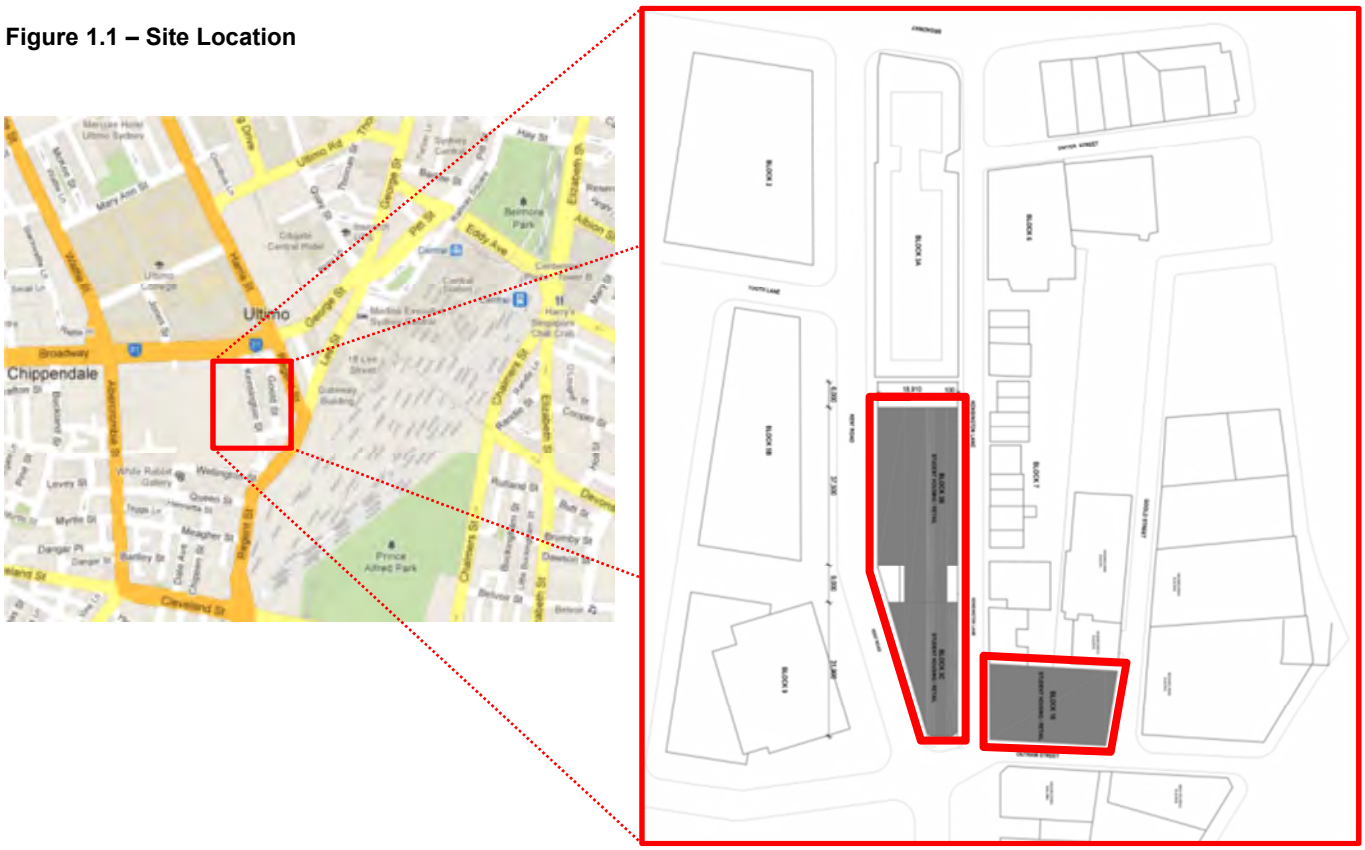
The purpose of this report is to provide an acoustic impact assessment in support of the Project Application for these Blocks. A masterplan report for the Development site as a whole has been approved (*'Frasers Broadway Site Concept Plan – Acoustic Report',* Heggies Pty Ltd, May 2008), and this report calls on this masterplan 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 3B, 3C and 10 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 and Residential / Student Accommodation.

2 Prevailing External Noise Environment

As part of the approval for the development of the Central Park Development site as a whole, a masterplan report has been conducted and submitted for approved be the responsible authority. This masterplan acoustic report ("*Frasers Broadway Site Concept Plan - Acoustic Report*" 7th May 2008 by Heggies Pty Ltd) used noise mapping techniques to predict the external noise levels throughout the site based on the future (post development) predicted traffic flow data.

Key noise maps from this report are reproduced in Appendix A. Using this data, the predicted external noise levels surrounding the blocks are as follows:

Figure 2.1 – Summary of External Noise Levels from Masterplan Noise Report

Daytime: 58 dBA L_{eq} – 62 dBA L_{eq}
Night-time: 50 dBA L_{eq} – 53 dBA L_{eq}

Daytime: 58 dBA L_{eq} – 62 dBA L_{eq}
Night-time: < 50 dBA L_{eq}

Daytime: < 55 dBA L_{eq}
Night-time: < 50 dBA L_{eq}

2.1 Noise Emission Limits

In the site masterplan report ("*Frasers Broadway Site Concept Plan - Acoustic Report*", 7th May 2008 by Heggies Pty Ltd) an assessment in accordance with NSW "*Industrial Noise Policy*" has been undertaken. This assessment established the following noise emission criteria for noise associated with the development. Note that these are the total noise levels from all equipment operating, and assessed at to be assessed at the location of the surrounding noise sensitive receptors

- Day 52 dBA L_{eq}
- Evening 48 dBA L_{eq}
- Night 46 dBA L_{eq}

3 External Noise Intrusion

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

3.1 Design Criteria

The site masterplan report ("*Frasers Broadway Site Concept Plan - Acoustic Report*", 7th May 2008 by Heggies Pty Ltd) establishes internal noise criteria for residential spaces as follows:

Figure 3.1 – Internal Noise Criteria

Type of Space		Internal Noise Target
In a naturally ventilated - windows closed condition	Sleeping areas (night-time only 2200 - 0700)	**35 dBA $L_{eq,1hr}$**
	Living Areas (24 hrs)	**45 dBA $L_{eq,1hr}$**
In a naturally ventilated - windows open condition (5% of floor area	Sleeping areas (night-time only 2200 - 0700)	**45 dBA $L_{eq,1hr}$**
	Living Areas (24 hrs)	**55 dBA $L_{eq,1hr}$**
Mechanically ventilated unit (with windows shut and mechanical ventilation operating)	Sleeping areas (night-time only 2200 - 0700)	**38 dBA $L_{eq,1hr}$**
	Living Areas (24 hrs)	**46 dBA $L_{eq,1hr}$**
Retail / Commercial Space (taken from AS2107:2000)		**45 dBA $L_{eq,1hr}$**

3.2 Ventilation Scheme

The residential spaces as part of the scheme are proposed to be a mixture of mechanically and naturally ventilated units, whilst the retail / commercial space will be mechanically ventilated.

According to various research studies, such as World Health Organisation *Guidelines for Community Noise*, a sound reduction of approximately 10-15 dBA can be achieved from external noise levels through an open window to a room.

Using this 10 dBA as a conservative estimate, in order to permit natural ventilation through a standard openable window solution and achieve the internal noise criteria in Figure 3.1, external noise levels for the residential units can be:

- ≤ 55 dBA outside sleeping areas at night (2200 – 0700), and
- ≤ 65 dBA outside living areas

By comparing these levels to the predicted future external noise levels in Figure 2.1, it can be seen that an openable window natural ventilation strategy can be employed throughout Blocks 3B, 3C and 10.

It is noted that the majority of units in Blocks 3B, 3C and 10, crossflow ventilation will be employed with exhaust air passing from the units into the central atrium space and using the stack effect to leave the building via clerestory windows. In order to maintain the acoustic integrity of the wall between the units and corridor, acoustic crossflow attenuators will be used to mitigate noise transfer. This will be specified to match the acoustic performance of the doors as described in BCO Part F5.

3.3 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:

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

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

3.3.1 Solid Areas of Façade

A façade system will be selected which achieves a minimum sound insulation performance of 40 dB R_W. This is not an onerous design criteria and can be achieved with many lightweight façade systems (with plasterboard inner leaf or similar), and all cavity masonry traditional façade constructions.

3.3.2 Glazing

Glazing will be selected which achieves the required design criteria. Again, because of the situation of the proposed development, this is not an onerous design criterion. 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.

4 Mechanical Services Noise

4.1 Internal Noise Levels

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

- Sleeping Areas: 35 dBA $L_{eq,1hr}$
- Living Areas: 40 dBA $L_{eq,1hr}$

These will be achieved by appropriate equipment selection and attenuation measures such as lined ductwork and acoustic attenuators where necessary.

4.2 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.

These will be achieved by appropriate equipment selection and attenuation measures such as acoustic attenuators, enclosures, and screening as appropriate.

5 Summary

WSP Acoustics has been appointed to provide acoustic consultancy services for the proposed developments known as Blocks 3B, 3C and 10 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.

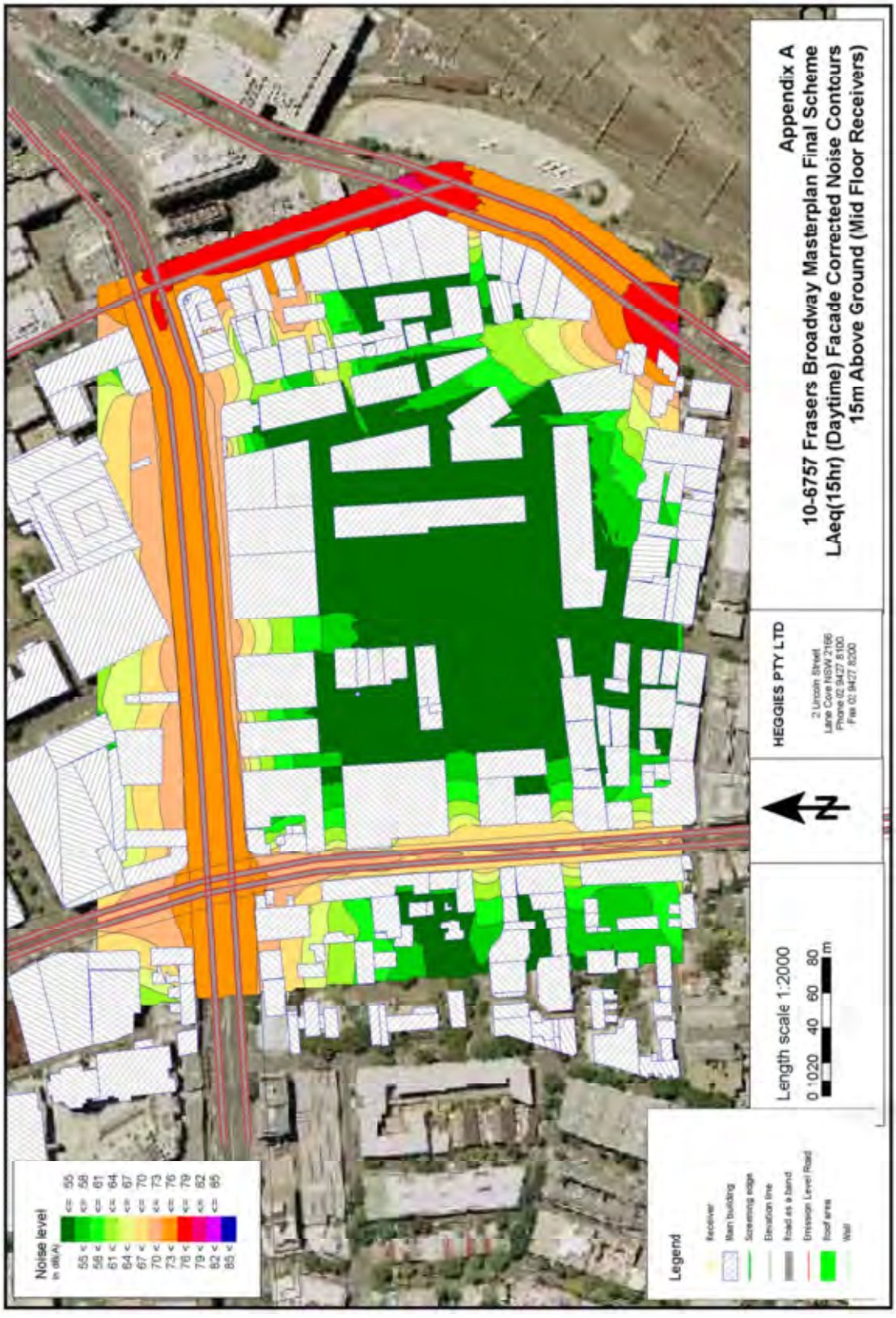
The assessment has been undertaken in accordance with the relevant responsible authority criteria and the criteria established in the site Masterplan report for acoustics. No adverse impacts are expected in terms of noise associated with the development, nor are onerous acoustic measures required to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

As such the proposed development of Blocks 3B, 3C and 10 on the Central Park Development site is considered appropriate from a noise impact aspect.

Appendix A – Site Masterplan Noise Mapping Results

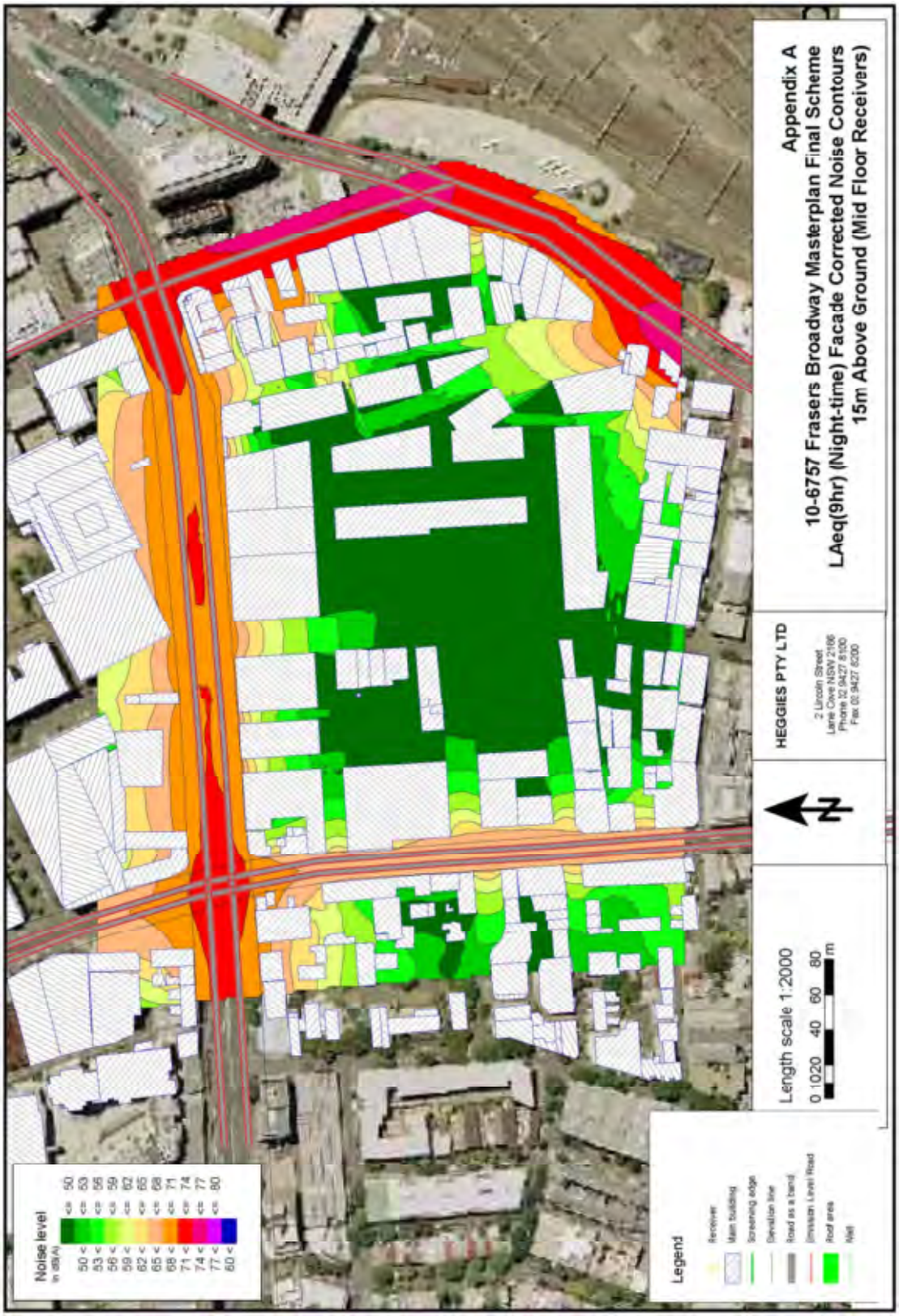
Daytime Noise Levels – 1.5m above Ground Level

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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