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# KENSINGTON LANE HOTEL BLOCK 3A, CENTRAL PARK: ADAPTIVE REUSE OF THE CLARE HOTEL AND ADMINISTRATION BUILDING

PA Acoustic Report

2012-10-31

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# KENSINGTON LANE HOTEL BLOCK 3A, CENTRAL PARK: ADAPTIVE REUSE OF THE CLARE HOTEL AND ADMINISTRATION BUILDING

## PA Acoustic Report

2012-10-31

### Client

Frasers Broadway Pty. Limited

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# 1 Introduction

WSP Acoustics has been appointed to provide acoustic consultancy services for the proposed Kensington Lane Hotel also known as Block 3A on the Central Park Development site in Sydney, NSW

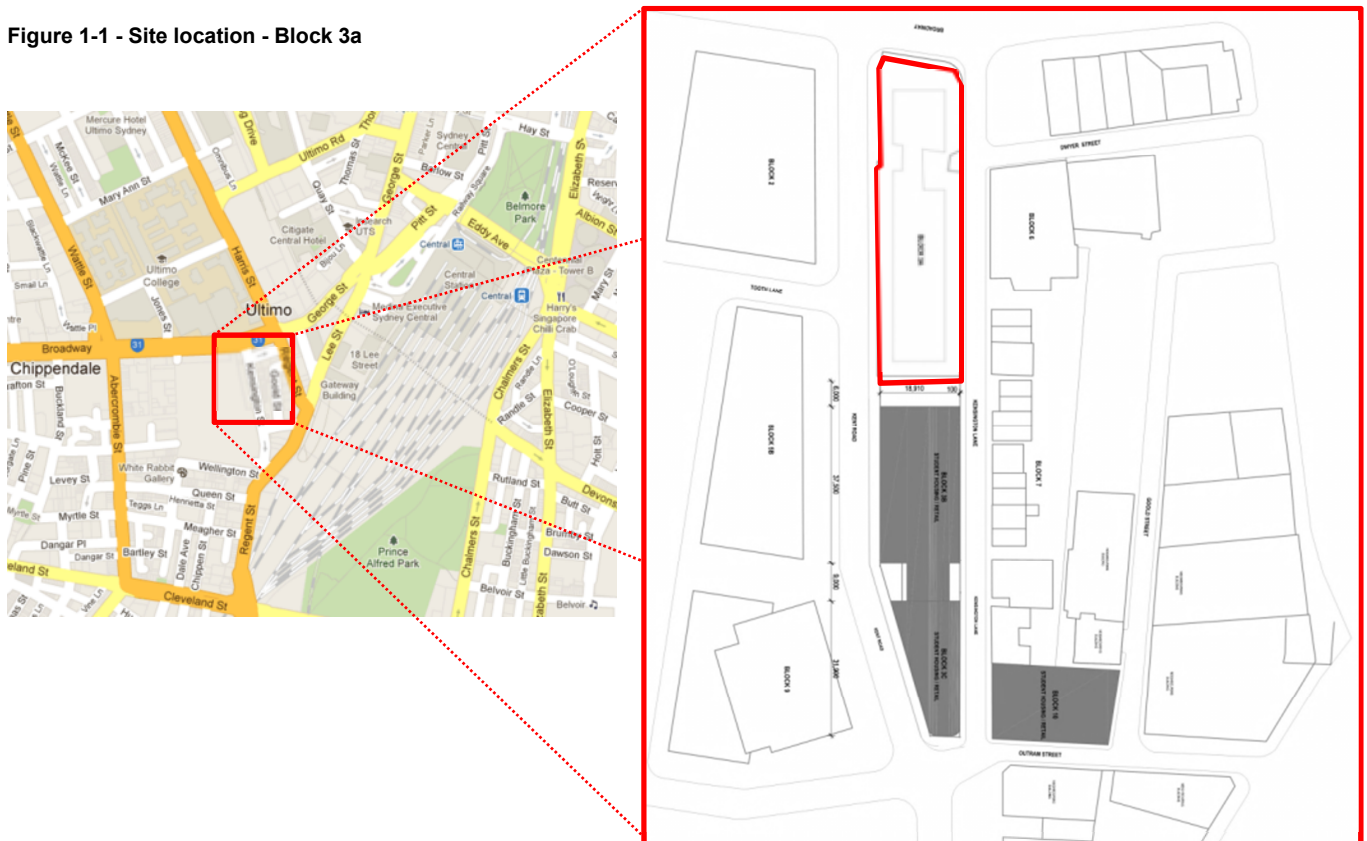
The purpose of this report is to provide an acoustic impact assessment in support of the Project Application for this Block. A masterplan report for the Development site as a whole has been approved (*'Fraser's Broadway Site Concept Plan – Acoustic Report'*, Heggies Pty Ltd, May 2008), and this report calls on this masterplan to provide specific information for the proposed plot 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 development of the subject of this Project Application is situated in the north-eastern of the Central Park site, as highlighted below. The proposed block (shown in red) is bounded by Kensington Lane, Broadway and Carlton Street. The proposed use of the block is a Hotel with restaurants, bars and conference facilities.

Figure 1-1 - Site location - Block 3a



## 2 Prevailing External Noise Environment

As part of the approved Concept Plan a masterplan report was submitted and approved by the then Department of Planning. This masterplan acoustic report ("*Frasers Broadway Site Concept Plan - Acoustic Report*" 7<sup>th</sup> 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 block are as follows:

**Figure 2-1 - Summary of External Noise Levels from Concept Plan Noise Report**



### 2.1 Noise Emission Limits

In the site masterplan report ("*Frasers Broadway Site Concept Plan - Acoustic Report*", 7<sup>th</sup> 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 are to be assessed at 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*", 7<sup>th</sup> May 2008 by Heggies Pty Ltd) establishes internal noise criteria for residential spaces. For all other spaces have been taken from AS2107:2000 as follows:

**Table 3-1 Internal noise criteria**

| Type of Space                                                                                  |                                                     | Internal Noise Target            |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------|
| Guest rooms - naturally ventilated - windows closed condition                                  | <b>Sleeping areas</b> (night-time only 2200 - 0700) | <b>35 dBA L<sub>eq,1hr</sub></b> |
|                                                                                                | <b>Living Areas</b> (24 hrs)                        | <b>45 dBA L<sub>eq,1hr</sub></b> |
| Guest rooms - naturally ventilated - windows open condition (5% of floor area)                 | <b>Sleeping areas</b> (night-time only 2200 - 0700) | <b>45 dBA L<sub>eq,1hr</sub></b> |
|                                                                                                | <b>Living Areas</b> (24 hrs)                        | <b>55 dBA L<sub>eq,1hr</sub></b> |
| Guest rooms - mechanically ventilated (with windows shut and mechanical ventilation operating) | <b>Sleeping areas</b> (night-time only 2200 - 0700) | <b>38 dBA L<sub>eq,1hr</sub></b> |
|                                                                                                | <b>Living Areas</b> (24 hrs)                        | <b>46 dBA L<sub>eq,1hr</sub></b> |
| Office and meeting rooms                                                                       |                                                     | <b>40 dBA L<sub>eq,1hr</sub></b> |
| Restaurants                                                                                    |                                                     | <b>45 dBA L<sub>eq,1hr</sub></b> |
| Retail / Commercial space (Hotel Reception)                                                    |                                                     | <b>45 dBA L<sub>eq,1hr</sub></b> |
| Bars and lounges                                                                               |                                                     | <b>50 dBA L<sub>eq,1hr</sub></b> |

### 3.2 Ventilation Scheme

#### 3.2.1 Guest rooms

##### Ground floor, level 1 and level 2

The guest rooms located on the ground floor, level 1 and level 2 as part of the scheme are proposed to be mechanically ventilated to comply with internal noise criteria.

##### Level 3 and level 4

The guest rooms located on level 3 and level 4 are located within the administration building (to rear of the site) and as part of the scheme are proposed to be a mixture of naturally and mechanically ventilated systems.



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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. i.e. with 50dBA outside the building, 35-45dBA can be expected inside.

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, along the facades of the rear administration building, it can be seen that an openable window natural ventilation strategy can be employed for all guest rooms located on these floors.

### 3.2.2 Restaurants, reception, offices, meeting rooms, bars and lounges

#### Ground floor

The restaurants, reception, bars and lounges located on the ground level as part of the scheme are proposed to be a mixture of naturally and mechanically ventilated systems.

#### Level 1

The office and meeting rooms located on level 1 are proposed to have mechanical ventilation.

#### Level 2 and level 3

The restaurant, bar and lounge located on levels 2 and 3 are proposed to be a mixture of naturally and mechanically ventilated systems.

## 3.3 External Building Envelope

Based on the predicted external noise levels, and the recommended internal noise levels in Table 3-1 the following acoustic performances 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: 32 dB  $R_w$

For “Office” spaces exposed to the highest noise levels (shown in Figure 2-1 yellow and orange)

- 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.

### 3.3.1 Solid Areas of Façade

The majority of the façade is existing brickwork and it is expected that this construction will achieve the design targets 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 onerous design criteria and can be achieved with many lightweight façade systems or cavity masonry traditional façade constructions.



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### 3.3.2 Glazing

Generally, the majority of the glazing is existing and will be refurbished.

Where existing glazing is used within guestrooms, an internal glazed panel is proposed to ensure the acoustic rating of the window.

New glazing will be selected which achieves the recommended design criteria. It will be the responsibility of the nominated supplier to demonstrate compliance with the design target, however for costing and design purposes, a proprietary 6mm single glazed frame and sealed unit will be capable of achieving the nominated performance of 32  $R_w$ , and 10.8mm acoustic laminate glass is generally capable of achieving 35 dB  $R_w$ .

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## 4 Mechanical Services Noise

### 4.1 Internal Noise Levels

In order to achieve the target internal noise levels in Table 3-1, mechanical services noise is to be controlled to the following criteria:

- Sleeping areas: 35 dBA  $L_{eq,1hr}$
- Living areas 40 dBA  $L_{eq,1hr}$
- Meeting spaces 40 dBA  $L_{eq,1hr}$
- Restaurant areas 45 dBA  $L_{eq,1hr}$
- Commercial areas 45 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.

### 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.

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## 5 Summary

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

This report has assessed the proposals in terms of both

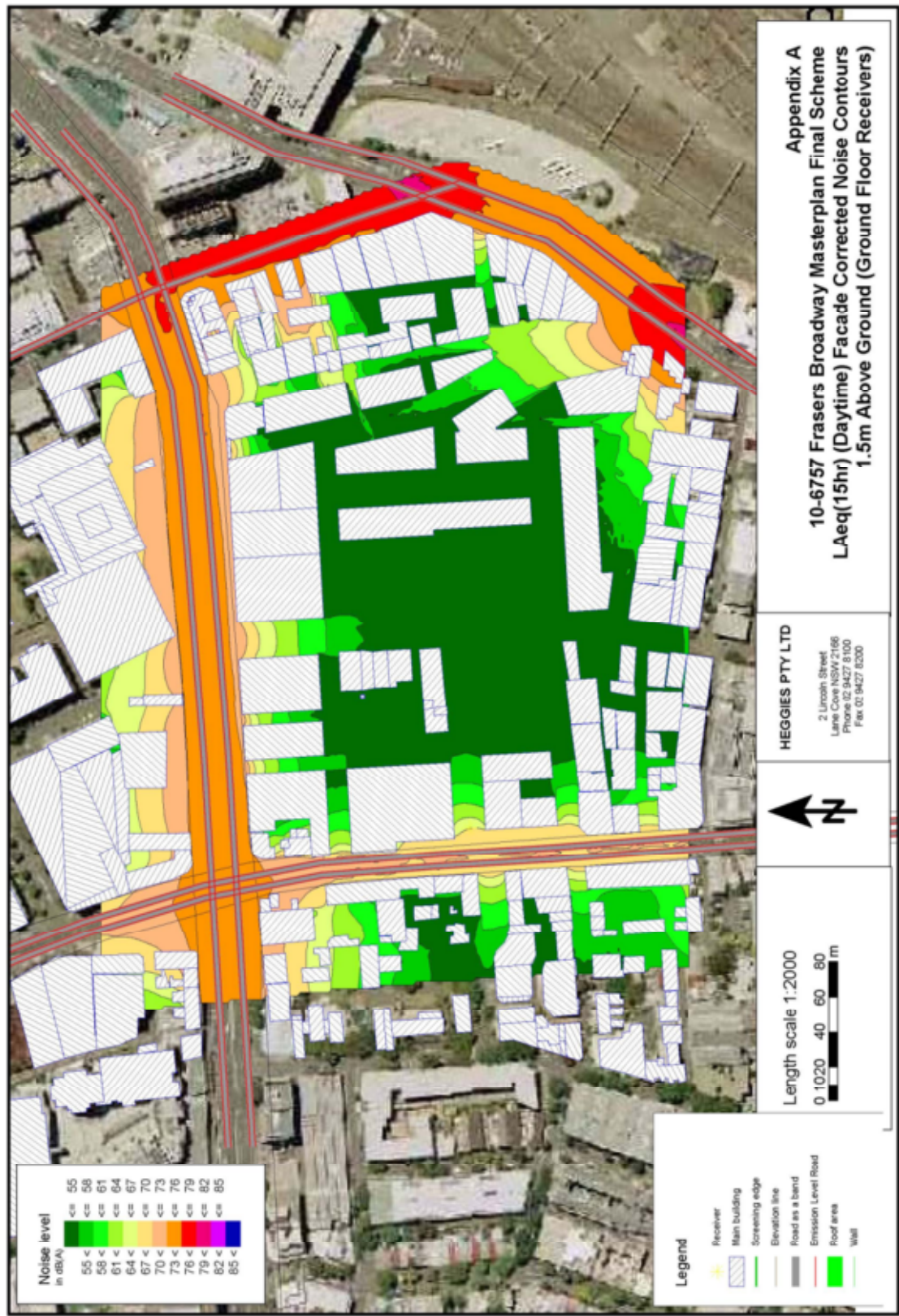
- Noise impact on the surrounding properties and
- Control of external noise affecting the amenity of the proposed uses for the development.

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 Block 3a on the Central Park Development site is considered appropriate from a noise impact aspect.

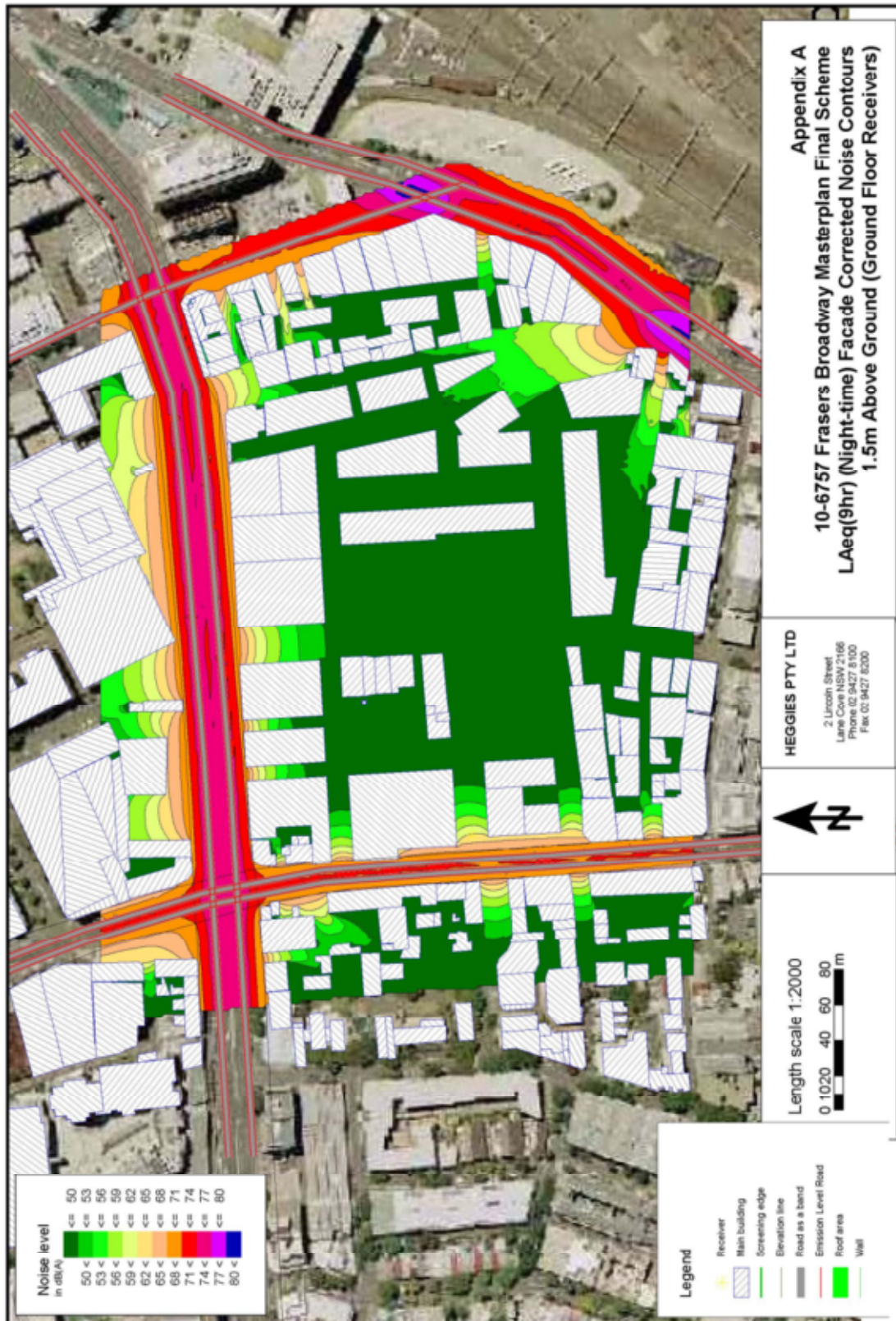
# Appendix A Site Masterplan Noise Mapping Results

Daytime Noise Levels – 1.5m above Ground Level





# Night-time Noise Levels – 1.5m above Ground Level



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