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**FRASERS BROADWAY**

**DEMOLITION AND RECYCLING - VIBRATION AND NOISE  
ASSESSMENT**

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**Appendix 1 - Demolition and Recycling Noise and Vibration Management Plan**

## 1. EXECUTIVE SUMMARY

A noise and vibration assessment plan has been carried out for the proposed demolition and recycling activities to assess whether these activities would impact sensitive receivers around the site. The results of the assessment have been used to develop a demolition and recycling noise and vibration management plan that will be used to manage impacts from these activities.

The Management Plan outlines the development of controls and safeguards that would be applied to all activity on the site by the demolition and recycling contractor. The objective of these controls is to ensure that all work is carried out in a highly controlled and predictable manner that will minimise emissions and protect the amenity of the sensitive receivers surrounding the site.

The controls and safeguards implemented would be reviewed at a number of stages including when the actual demolition and recycling contractor selected determines the actual demolition and recycling processes and equipment to be used. Further reviews would be undertaken through the demolition period, as required, in response to revised methods and equipment, as well as in response to the monitoring and evaluation of actual impacts. This management plan outlines the procedures that would be adopted by the contractor during the detailed demolition and recycling planning and execution phases.

## 2. INTRODUCTION

An assessment of demolition and recycling noise and vibration of demolition and recycling activities proposed for the Frasers Broadway site; bounded by Broadway, Kensington Street, Wellington Street O'Conner Street and Abercrombie Street. The site is indicated in Figure 1.

## 3. PROJECT DESCRIPTION

The development site is currently partly vacated and the remainder of the occupied buildings will be vacated in stages while the demolition and recycling works are carried out. The only noise sensitive activity within the site will be the operation of the administration buildings numbers 10A and 10B and operation of building 38 (Clare Hotel). Refer Figure 1.

The scope of work entails the demolition and recycling of most existing buildings and structures. However, there are a number of existing buildings and structures that will be retained and are desired to be protected.

Demolition is projected to occur in a number of stages as outlined below.

- Stage 1 – Mechanical demolition and recycling.
- Stages 2 a and b – Demolition and recycling works in areas as indicated in Figure 1.
- Stage 3 – Mechanical Demolition and recycling – demolition and recycling works as indicated in Figure 1.
- Stage 4 – Mechanical Demolition and recycling – demolition and recycling works as indicated in Figure 1.

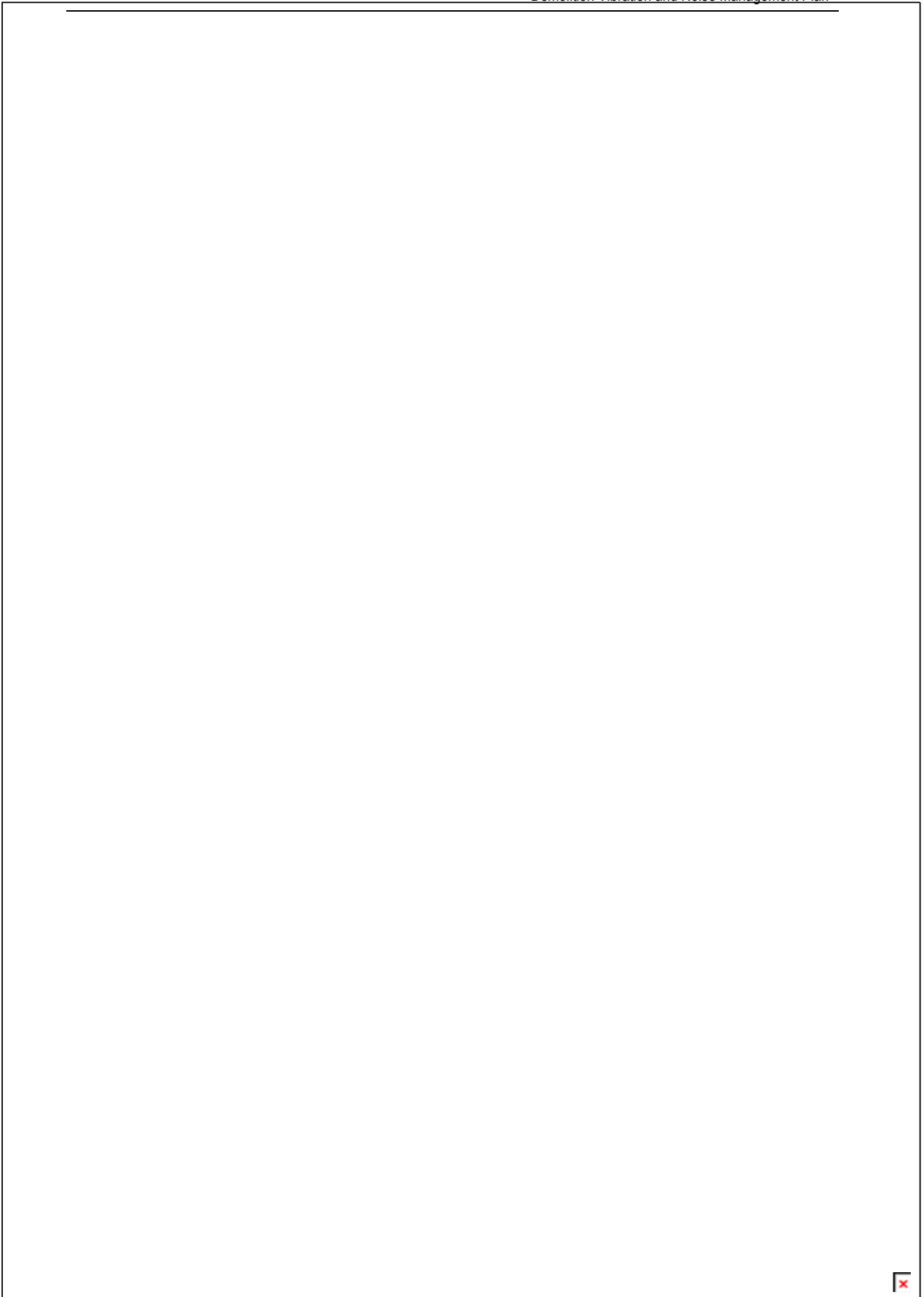
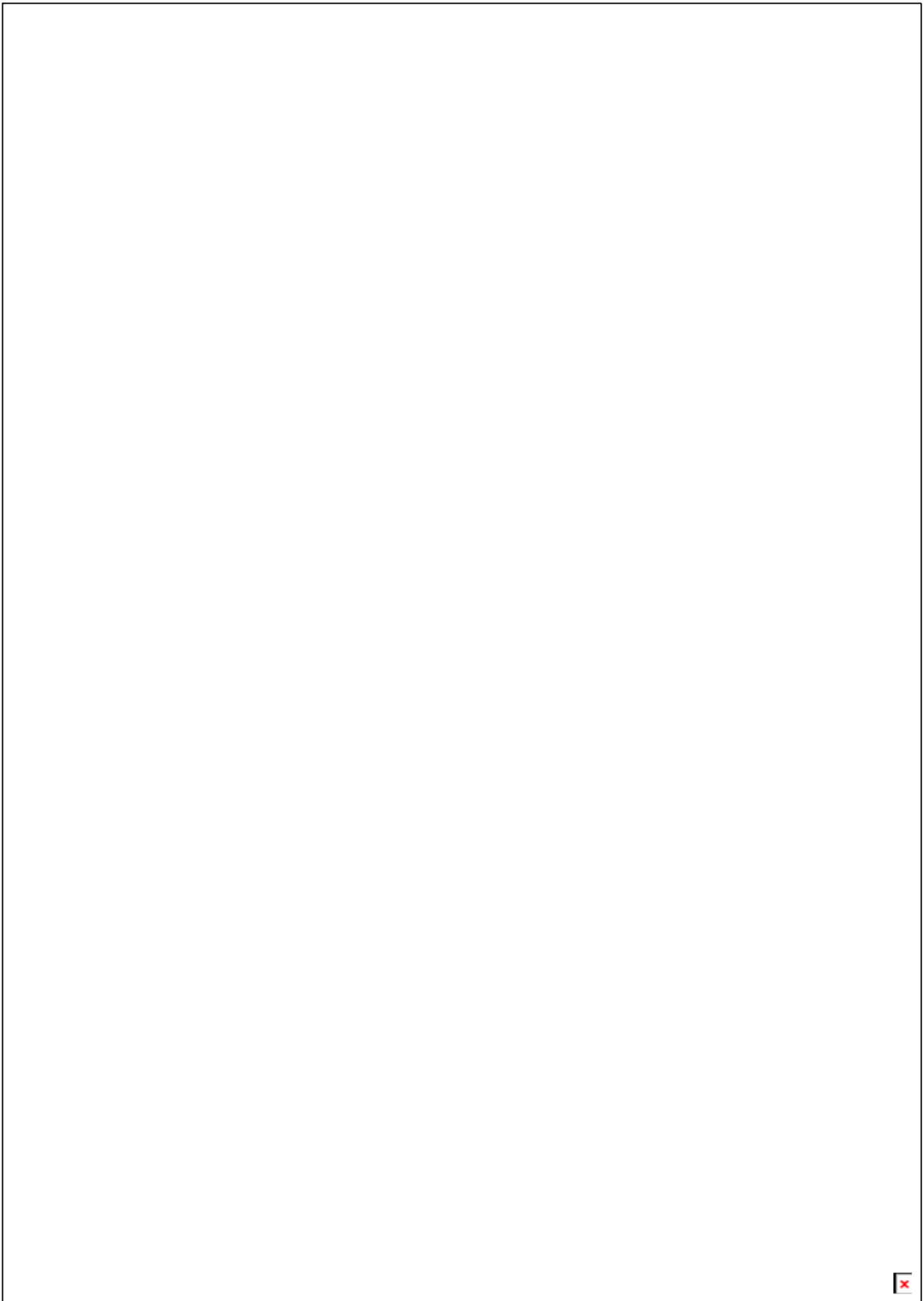




Figure 2 Site Map / Noise Receiver and Noise Measurements Locations



#### 4. ACTIVITIES TO BE CONDUCTED AND THE ASSOCIATED NOISE SOURCES

Demolition and recycling activities are based on the Demolition and Hoarding Management Plan (DHMP) developed by Incoll Management. This plan outlines the anticipated demolition and recycling programme; a summary description is presented in Section 3.

The A-weighted sound power levels for typical equipment/processes anticipated to be used during the demolition of the above-described activities are outlined in Table 1 below.

**Table 1 – Sound Power Levels**

EQUIPMENT /PROCESS	SOUND POWER LEVEL dB(A)
Excavator	114
Bulldozer	114
Scraper	116
Bobcat	105
Truck	108
Angle grinders	114
Electric Saw	111
Drilling	94
Hammering	120
Crane	105
Electric Hoist	92
Impact drill	105
Concrete Crusher	112
Air compressor	86

The noise levels presented in the above table are derived from the following sources, namely:

1. On-site measurements
2. Table D2 of Australian Standard 2436-1981
3. Data held by this office from other similar studies.

#### 4.1 DEMOLITION TRAFFIC

Demolition and recycling traffic access to the site will primarily occur from Abercrombie Street through the Irving Street gates. Kensington Street/Regent Street may also be used, as would Balfour Street onto Broadway subject to the installation of traffic signals at these intersections. Arrival and departure routes have been outlined in a Demolition and Recycling Traffic Management Plan. All these access points are from major roads that already carry significant traffic volumes of passenger and heavy vehicles.

Heavy vehicle traffic will include large rigid and articulated trucks. It is anticipated that the largest vehicle to be used will be a large semi-trailer as described in the RTA Guidelines (16.9m by 2.5m).

Heavy vehicle trips expected each day will vary and these will be distributed during the day without any peak hour period. During the early phase of demolition, this number is likely to be less as much of the work on site will be disassembly of the sheds and structures prior to loading onto trucks. It is anticipated that there would be an average of around 16 movements per day.

Given the existing number of vehicle and heavy vehicle movements on the existing road network, no adverse impacts are expected from the expected number of demolition vehicle movements.

Heavy vehicle routes within the site are indicated in the Construction Traffic Management Plan. Wherever possible, vehicle routes have been selected that are within the core of the site to minimise noise emissions to adjacent properties.

### 5. HOURS OF WORK

All work would be undertaken during daytime hours, being 7am to 6pm Monday to Fridays, and 8am to 5pm Saturdays except in emergency situations where required to ensure safety is maintained. With the exception of between 1pm and 5pm on Saturdays these hours are within EPA recommended construction times. The additional hours on Saturday is not incompatible with the urban setting of the site and would allow the overall demolition period to be shortened.

### 6. CONSTRUCTION NOISE AND VIBRATION OBJECTIVES

#### 6.1 NOISE

The applicable guidelines and standards are:

- EPA Noise Control Manual Construction Noise and Vibration Guideline. This guideline nominates acceptable levels of noise emissions above the background noise level depending on the total construction period. For periods up to 6 months the guideline recommends a noise level of 10 dB(A) above the background. The guideline does not state what is applicable for construction periods in excess of 6 months but this is typically taken as "background + 5 dB(A)".
- Australian Standard 2436-1981 "Guide to Noise Control on Construction Maintenance and Demolition Site". In particular, the requirements stipulated in Section 3 of the standard will be followed.

Section 3 of AS 2436 states that care shall be taken in applying criteria that normally would be used to regulate noise emitted from industrial, commercial and residential premises to construction, particularly

for those activities which are transitory and of short duration. For the control and regulation of noise from construction sites AS2436 nominates the following:

- That reasonable suitable noise criterion is established.
- That all practicable measures be taken on the building site to regulate noise emissions, including the siting on noisy static processes parts of the site where they can be shielded, selecting less noisy processes, and if required regulating construction hours
- The undertaking of noise monitoring where non-compliance occurs to assist in the management and control of noise emission from the building site.

Based on these the following procedure will be used to assess noise emissions:

- Predict noise levels produced by typical construction activities at the sensitive receivers.
- If noise levels exceed "background + 10 dB(A)" noise goal at sensitive receiver locations, investigate and implement all practical and cost effective techniques to limit noise emissions. A background + 10 dB(A) criterion has been applied because, due to the size of the whole site, impacts at any one sensitive receiver are unlikely to occur for a greater period than 6 months, even if the total demolition period is longer.
- If the noise goal is still exceeded after applying all practical engineering controls to limit noise emissions investigate management and other techniques to mitigate noise emissions.

## 6.2 VIBRATION

Department of Environment and Conservation NSW "Assessing Vibration: A Technical Guideline" (Feb 2006) will be used to assess human discomfort caused by vibration generated by demolition and recycling activities.

Vibration Criteria for building damage will be based on the following:

- Highly sensitive structures – 2mm/s PPV
- Sensitive structures – 10mm/s PPV
- Other non-sensitive or modern structures – 20mm/s (vibration in these structures would most likely be limited by human comfort criteria)

## 7. ASSESSMENT OF POTENTIAL NOISE EMISSIONS

### 7.1 POTENTIALLY AFFECTED RECEIVERS

A survey of potentially affected sensitive commercial and residential receivers has been conducted and identified the following locations which have been indicated in Figure 1.

**Table 2 – List of Nearest Residential Receivers**

Receiver Number	Description
1	Four storey residential building at No. 21 Abercrombie St with openable windows facing the project site.
2	Four storey residential building at No. 27-39 Abercrombie St with openable windows facing the project site
3	Two storey residential buildings located at No.41 to No.65 Abercrombie St with front yard facing the project site.
4	Two storey residential buildings located at No.65 to No.75 O' Connor St with openable windows facing the project site.
5	Two storey residential buildings located at No.30 to No.40 Dick St.
6	Two storey residential buildings located at No.13 to No.17 Wellington St with openable windows facing the project site.
7	Multi storey residential building Regent Apartment at No.71 to No.75 Regent St with balconies facing the project site.
8	Multi storey residential /commercial mixed use building at No. 69 Regent St with balconies facing the project site.
9	Residential buildings in Dwyer Street
10	5 storey Hotel located at No. 1 Dwyer St with openable windows
11	Multi storey residential apartments located at No.513 to No.519 Wattle St with balconies facing the project site.
12	Administration Building located at Block 10A and 10B of the project site
13	The Clare Hotel located at Block 38 of the project site.
14	The Australian Hotel located at Block 40 of the project site.
15	Railway Infrastructure located across Regent St.

## 7.2 NOISE ASSESSMENT

Noise generated by plant and equipment throughout the duration of the project will be managed to generally comply with the background + 10dB criterion, and where this noise goal may be exceeded noise will be managed in strict compliance with AS2436.

In order to establish noise goals, background noise levels were measured at locations representing the most sensitive receiver groups. Measurements were obtained using a Norsonic SA140 Sound Level Analyser, set to A-weighted fast response. The analyser was calibrated before and after the measurements using a Norsonic Type 1443 Sound Level Calibrator. No significant drift was noted.

Noise measurement locations have been indicated in Figure 1. The daytime background noise level at these locations obtained from the measurements are summarised in the following table. A number of 15 minute noise recordings were made at each location between 7am to 5pm weekdays, and the lowest of these recordings are presented.

**Table 3 – Measured Daytime Background Noise Levels and Corresponding Noise Goals**

No.	Location	Day Background Noise Level dB(A) L <sub>90</sub>	Construction Noise Goal dB(A) L <sub>10</sub>
a	Abercrombie St façade of No. 21	64	74
b	O' Connor St	52	62
c	Wellington St	48	58
d	Kensington St façade of Regent Apartment Building	56	66
e	External of Block 10A	56	66
f	General Office of 1 <sup>st</sup> Floor Block 10A	44	54
g	General Office of 1 <sup>st</sup> Floor Block 10B	44	54
h	External of The Clare Hotel	62	72
i	Ground Floor of The Clare Hotel	55	65
j	External of UTS Building	64	74
k	External of No.513-519 Wattle St Building	65	75
l	Broadway façade of Australian Hotel	67	77
m	Ground Floor of Australian Hotel	54	64

### 7.3 RESIDENTS ON ABERCROMBIE STREET

The following table presents a summary of noise levels which will occur at the residences located on Abercrombie Street, west of the demolition site.

It is noted that:

- many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 4 – Predicted Demolition Noise Levels – Residences on Abercrombie Street (1,2,3)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - 73	74
Bulldozer	45 - 73	
Scraper	47 - <b>75</b>	
Bobcat	36 - 64	
Truck	39 - 67	
Angle grinders	45 - 73	
Electric Saw	42 - 70	
Drilling	25 - 53	
Hammering	51 - <b>79</b>	
Crane	36 - 64	
Electric Hoist	23 - 51	
Impact drill	43 - 71	
Concrete Crusher	36 - 64	
Air Compressor	17 - 45	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals at the nearest residences. In these cases noise emissions should be minimised by adopting the processes recommended in the “Demolition and Recycling Noise and Vibration Management Plan” to ensure that noise emissions are managed.

#### 7.4 RESIDENTS ON CORNER OF O'CONNOR STREET AND BALFOUR STREETS

The following table presents a summary of noise levels which will occur at the residential flat building located on the corner of O'Connor and Balfour Streets.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 5 – Predicted Demolition Noise Levels – Residences on Corner of O'Connor Street and Balfour Streets (4)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - <b>75</b>	62
Bulldozer	45 - <b>75</b>	
Scraper	47 - <b>77</b>	
Bobcat	36 - <b>66</b>	
Truck	39 - <b>69</b>	
Angle grinders	45 - <b>75</b>	
Electric Saw	42 - <b>72</b>	
Drilling	25 - 55	
Hammering	51 - <b>81</b>	
Crane	36 - <b>66</b>	
Electric Hoist	23 - 53	
Impact drill	43 - <b>73</b>	
Concrete Crusher	36 - <b>66</b>	
Air Compressor	17 - 47	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals at the nearest residences. In these cases noise emissions should be minimised by adopting the processes recommended in the "Demolition and Recycling Noise and Vibration Management Plan" to ensure that noise emissions are managed.

## 7.5 RESIDENTS ON DICK STREET

The following table presents a summary of noise levels which will occur at the residential buildings located on Dick Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 6 – Predicted Demolition Noise Levels – Residences on Dick Street (5)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - <b>66</b>	62
Bulldozer	45 - <b>66</b>	
Scraper	47 - <b>68</b>	
Bobcat	36 - 57	
Truck	39 - 60	
Angle grinders	45 - <b>66</b>	
Electric Saw	42 - <b>63</b>	
Drilling	25 - 46	
Hammering	51 - <b>72</b>	
Crane	36 - 57	
Electric Hoist	23 - 44	
Impact drill	43 - <b>64</b>	
Concrete Crusher	36 - 57	
Air Compressor	17 - 38	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals at the nearest residences. In these cases noise emissions should be minimised by adopting the processes recommended in the “Demolition and Recycling Noise and Vibration Management Plan” to ensure that noise emissions are managed.

## 7.6 RESIDENTS ON WELLINGTON STREET

The following table presents a summary of noise levels which will occur at the residential buildings located on Wellington Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 7 – Predicted Demolition Noise Levels – Residences on Wellington Street (6)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - <b>77</b>	58
Bulldozer	45 - <b>77</b>	
Scraper	47 - <b>79</b>	
Bobcat	36 - <b>68</b>	
Truck	39 - <b>71</b>	
Angle grinders	45 - <b>77</b>	
Electric Saw	42 - <b>74</b>	
Drilling	25 - 57	
Hammering	51 - <b>83</b>	
Crane	36 - <b>68</b>	
Electric Hoist	23 - 55	
Impact drill	43 - <b>75</b>	
Concrete Crusher	36 - 68	
Air Compressor	17 - 49	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals at the nearest residences. In these cases noise emissions should be minimised by adopting the processes recommended in the “Demolition and Recycling Noise and Vibration Management Plan” to ensure that noise emissions are managed.

## 7.7 RESIDENTS ON REGENT STREET

The following table presents a summary of noise levels which will occur at the residential buildings located on Regent Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.

- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 8 – Predicted Demolition Noise Levels – Residences on Regent Street (7 & 8)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - 77	66
Bulldozer	45 - 77	
Scraper	47 - 79	
Bobcat	36 - 68	
Truck	39 - 71	
Angle grinders	45 - 77	
Electric Saw	42 - 74	
Drilling	25 - 57	
Hammering	51 - 83	
Crane	36 - 68	
Electric Hoist	23 - 55	
Impact drill	43 - 75	
Concrete Crusher	36 - 68	
Air Compressor	17 - 49	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals at the nearest residences. In these cases noise emissions should be minimised by adopting the processes recommended in the "Demolition and Recycling Noise and Vibration Management Plan" to ensure that noise emissions are managed.

## 7.8 RESIDENTS ON DWYER STREET

The following table presents a summary of noise levels which will occur at the residential buildings located on Dwyer Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 9 – Predicted Demolition Noise Levels – Residences on Dwyer Street (9)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	38 - 60	66
Bulldozer	38 - 60	
Scraper	40 - 62	
Bobcat	29 - 51	
Truck	32 - 54	
Angle grinders	38 - 60	
Electric Saw	35 - 57	
Drilling	18 - 40	
Hammering	44 - 66	
Crane	29 - 51	
Electric Hoist	16 - 38	
Impact drill	36 - 58	
Concrete Crusher	29 - 51	
Air Compressor	10 - 32	

The predictions indicate that the construction activities are not likely to adversely impact these residences.

## 7.9 RESIDENTS ON WATTLE STREET

The following table presents a summary of noise levels which will occur at the residential buildings located on Wattle Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 10 – Predicted Demolition Noise Levels – Residences on Wattle Street (10)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	40 - 61	75
Bulldozer	50 - 51	
Scraper	52 - 53	
Bobcat	41 - 42	
Truck	44 - 45	
Angle grinders	50 - 51	
Electric Saw	47 - 48	
Drilling	30 - 31	
Hammering	56 - 57	
Crane	41 - 42	
Electric Hoist	28 - 29	
Impact drill	48 - 49	
Concrete Crusher	41 - 42	
Air Compressor	22 - 23	

The predictions indicate that the construction activities are not likely to adversely impact these residences.

#### 7.10 HOTEL AT DWYER STREET

The following table presents a summary of noise levels which will occur at the hotel building at Dwyer Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 11 – Predicted Demolition Noise Levels – External - at 1 Dwyer Street (12)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	45 - 77	72
Bulldozer	45 - 77	
Scraper	47 - 79	
Bobcat	36 - 68	
Truck	39 - 71	
Angle grinders	45 - 77	
Electric Saw	42 - 74	
Drilling	25 - 57	
Hammering	51 - 83	
Crane	36 - 68	
Electric Hoist	23 - 55	
Impact drill	43 - 75	
Concrete Crusher	36 - 68	
Air Compressor	17 - 49	

**Table 12 – Predicted Demolition Noise Levels – Inside - at 1 Dwyer Street (12)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	30 - 62	66
Bulldozer	30 - 62	
Scraper	32 - 64	
Bobcat	21 - 53	
Truck	24 - 56	
Angle grinders	30 - 62	
Electric Saw	27 - 59	
Drilling	10 - 42	
Hammering	36 - 68	
Crane	21 - 53	
Electric Hoist	8 - 40	
Impact drill	28 - 60	
Concrete Crusher	21 - 53	
Air Compressor	2 - 34	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals. In these cases noise emissions should be minimised by adopting the processes recommended in the "Demolition and Recycling Noise and Vibration Management Plan" to ensure that noise emissions are managed.

### 7.11 ADMINISTRATION BUILDINGS 10A NAD 10B ON SUBJECT SITE

The administration building would be occupied by office staff of the former owners of the site until 27<sup>th</sup> June 2008.

The following table presents a summary of noise levels which will occur inside this building.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 13 – Predicted Case Noise Levels – Inside – Buildings 10A and B (11)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	20 - 47	54
Bulldozer	20 - 47	
Scraper	22 - 49	
Bobcat	11 - 38	
Truck	14 - 41	
Angle grinders	20 - 47	
Electric Saw	17 - 44	
Drilling	0 - 27	
Hammering	26 - 53	
Crane	11 - 38	
Electric Hoist	-2 - 25	
Impact drill	18 - 45	
Concrete Crusher	11 - 38	
Air Compressor	-8 - 19	

The predictions indicate that even in worst case situations noise emissions would not adversely impact commercial receivers within air conditioned buildings with closed windows.

## 7.12 HOTELS NEAR THE CORNER OF ABERCROMBIE STREET AND BROADWAY

The following table presents a summary of noise levels which will occur at the hotel building at Dwyer Street.

It is noted that:

- Many of the noise sources are present over a small period of the day or may be present for a few days with a significant intervening period before the activity occurs again.
- Predictions include barrier attenuation based on the proposed demolition methodology which involves demolishing structures around the boundaries as late as possible to maintain barrier screening.

**Table 14 – Predicted Demolition Noise Levels – Internal – Clare and Australian Hotels (13)**

EQUIPMENT /PROCESS	RECEIVER SOUND LEVEL dB(A)	RECEIVER GOAL NOISE LEVEL dB(A)
Excavator	35 - 63	64 Clare 65 Australian
Bulldozer	35 - 63	
Scraper	37 - 65	
Bobcat	26 - 54	
Truck	29 - 57	
Angle grinders	35 - 63	
Electric Saw	32 - 60	
Drilling	15 - 43	
Hammering	41 - <b>69</b>	
Crane	26 - 54	
Electric Hoist	13 - 41	
Impact drill	33 - 61	
Concrete Crusher	26 - 54	
Air Compressor	7 - 35	

The predictions indicate that in worst case situations some of the demolition activities would exceed the noise goals. In these cases noise emissions should be minimised by adopting the processes recommended in the “Demolition and Recycling Noise and Vibration Management Plan” to ensure that noise emissions are managed.

### **7.13 RAILWAY ASSETS**

The old Mortuary Station is located approximately 50m from the subject site on the opposite side of Regent Street.

Due to the distance separation, the high levels of ambient noise and the infrequent use of the building it is unlikely that the building would be adversely impacted.

All other railway assets in the vicinity are not noise sensitive.

## **8. ASSESSMENT OF VIBRATION**

### **8.1 SENSITIVE RECEIVERS**

#### **8.1.1 Surrounding Properties**

In many cases the surrounding properties are separated from the site by local streets and are unlikely to be impacted by vibration from the proposed activities. For example the nearest existing rail line is approximately 100m from the site and the old Mortuary Building is approximately 50m from the site. These distances are sufficient to prevent any excessive vibration that is produced by demolition activities.

A number of properties have been identified that are closer to the site. An assessment of vibration impacts will be carried out for these structures and, where necessary, safeguards will be recommended to protect the structures.

#### **8.1.2 On the Frasers Site**

A number of structures on the Frasers site are being retained and have been identified as requiring protection from potential damage from construction activities. An assessment of vibration impacts will be carried out for these structures and, where necessary, safeguards will be recommended to protect the structures. These are identified in Figure 3.

## **8.2 VIBRATION PRODUCING ACTIVITIES**

Activities that have the potential to produce significant ground vibration include:

- Dropping of heavy structures.
- Demolition of floor slabs by hammering with excavator mounted hydraulic hammers.
- Demolition of footings and other masonry walls by hammering with excavator mounted hydraulic hammers.

## **8.3 SAFEGUARDS TO PROTECT SENSITIVE STRUCTURES**

In order to protect the sensitive structures identified above mitigative measures and safeguards have would be implemented as described in the “Demolition and Recycling Noise and Vibration Management Plan”. Adoption of this plan would ensure that these structures would be protected.

## 9. CONCLUSION

A noise and vibration assessment has been undertaken of the proposed demolition and recycling activities to identify whether these activities would impact sensitive receivers around the site.

The assessment of demolition and recycling noise and vibration indicates that:

- For at least part of the demolition and recycling period, some processes are likely to generate noise levels that will require additional management according to the procedures outlined in the Management Plan. Adoption of the elements of this Demolition and Recycling Noise and Vibration Management Plan will ensure that noise and vibration impacts will be minimised.
- Ground vibration generated by demolition and recycling activities is unlikely to adversely impact nearby railway infrastructure. Recommendations are made to safeguard existing structures on the Frasers Broadway site that are to be retained and other structures immediately adjacent to the site.

A Demolition and Recycling Noise and Vibration Management Plan has been developed that will be used by the demolition and recycling contractor to manage impacts from these activities.

The management plan outlines the development of controls and safeguards that would be applied to all activity on the site. The objective of these controls is to ensure that all work is carried out in a highly controlled and predictable manner that will minimise emissions and protect the amenity of the sensitive receivers surrounding the site.

The controls and safeguards implemented as a result of the analysis recommended in the Plan would be reviewed at a number of stages including when the actual demolition and recycling contractor selected determines the actual demolition and recycling processes and equipment to be used. Further reviews would be undertaken through the demolition period, as required, in response to revised methods and equipment, as well as in response to the monitoring and evaluation of actual impacts. This management plan outlines the procedures that would be adopted during the detailed demolition/recycling planning and execution phases by the contractor.

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## **APPENDIX 1**

# **DEMOLITION AND RECYCLING NOISE AND VIBRATION MANAGEMENT PLAN**