

ENDORSEMENT

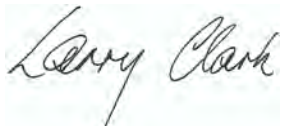
CITY & SOUTHWEST ACOUSTIC ADVISOR

Review of	Construction Noise and Vibration Impact Statement for Line-Wide works Portion 3 Martin Place and Pitt Street Stations	Document reference:	Construction Noise and Vibration Impact Statement Portion 3 – Martin Place and Pitt Street Stations Prepared by Renzo Tonin and Associates for Systems Connect.
Prepared by:	Larry Clark, Alternate Acoustics Advisor		<i>TK685-03-14F01 CNVIS C2S_P3 MPL_PIT (r5)</i>
Date of issue:	9 March 2021		<i>Dated 22 February 2021</i>

As approved Alternate Acoustics Advisor for the Sydney Metro City & Southwest project, I have reviewed the Construction Noise and Vibration Impact Statement (CNVIS) for Line-Wide works Portion 3 – Martin Place and Pitt Street Stations, as required under A27 (d) of the project approval conditions (SSI 15-7400).

I reviewed and provided comment on revisions of the CNVIS. Revision 5 of the document has been updated since the last endorsed version of the CNVIS (r3) to address EPA Notice of Variation requirements.

I am satisfied that revision 5 of the CNVIS is technically valid, and includes appropriate noise and vibration mitigation and management. On this basis I endorse revision 5 of the CNVIS for Line-Wide works in respect of the Martin Place and Pitt Street Station works.



Larry Clark, City & Southwest Alternate Acoustics Advisor

SYDNEY METRO CITY AND SOUTH WEST - LINE-WIDE WORKS

Construction Noise and Vibration Impact Statement Portion 3 - Martin Place and Pitt Street Stations

22 February 2021

Systems Connect

TK685-03-14F01 CNVIS C2S_P3 MPL_PIT (r5)

Document details

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Document control

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19.11.2020	Respond to AA/ER comments	-	2	T. Gowen	-	M. Tabacchi
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Important Disclaimers:

The work presented in this document was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian/New Zealand Standard AS/NZS ISO 9001.

This document is issued subject to review and authorisation by the suitably qualified and experienced person named in the last column above. If no name appears, this document shall be considered as preliminary or draft only and no reliance shall be placed upon it other than for information to be verified later.

This document is prepared for the particular requirements of our Client referred to above in the 'Document details' which are based on a specific brief with limitations as agreed to with the Client. It is not intended for and should not be relied upon by a third party and no responsibility is undertaken to any third party without prior consent provided by Renzo Tonin & Associates. The information herein should not be reproduced, presented or reviewed except in full. Prior to passing on to a third party, the Client is to fully inform the third party of the specific brief and limitations associated with the commission.

In preparing this report, we have relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

We have derived data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination and re-evaluation of the data, findings, observations and conclusions expressed in this report.

We have prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

The information contained herein is for the purpose of acoustics only. No claims are made and no liability is accepted in respect of design and construction issues falling outside of the specialist field of acoustics engineering including and not limited to structural integrity, fire rating, architectural buildability and fit-for-purpose, waterproofing and the like. Supplementary professional advice should be sought in respect of these issues.

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1 Introduction

This Construction Noise and Vibration Impact Statement (CNVIS) has been prepared on behalf of Systems Connect in accordance with the Construction Noise and Vibration Management Plan (CNVMP) [SMCSWLWC-SYC-1NL-PM-PLN-000032] [1], for the Design and Construction of the Line-Wide Works (LWW) of the Sydney Metro City & Southwest Project (the Project).

1.1 Relevant requirements and purpose of this CNVIS

As defined in the CNVMP, the works covered by this CNVIS are part of the Portion 3 – Chatswood to Sydenham LWW delivered under Critical State Significant Infrastructure Approval CSSI 7400. Condition E33 of CSSI-7400 requires that:

Construction Noise and Vibration Impact Statements must be prepared for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers.

This CNVIS applies to Martin Place Station (MPL) and Pitt Street Station (PIT) sites, and includes works to be undertaken on the site surface and within the caverns and tunnels. Works will be completed during standard construction hours as well as works outside of standard construction hours. The construction hours of work are defined by the Project Planning Approval conditions as outlined in the CNVMP.

This CNVIS forms part of the CNVMP for the Project.

1.2 Structure of this CNVIS

This CNVIS is structured as follows:

- **Section 2** - Description of construction works and hours
- **Section 3** - Nearest sensitive receivers
- **Section 4** - Construction noise and vibration objectives
- **Section 5** - Construction noise assessment
- **Section 6** - Construction vibration impacts
- **Section 7** - Ground-borne noise assessment
- **Section 8** – Traffic noise assessment
- **Section 9** – Cumulative impacts.

1.3 Quality assurance

The work documented in this report was carried out in accordance with the Renzo Tonin & Associates Quality Assurance System, which is based on Australian Standard / NZS ISO 9001. Appendix A contains a glossary of acoustic terms used in this report.

2 Description of construction works and hours

2.1 Summary of works addressed in this CNVIS

2.1.1 Construction activities

This CNVIS provides an assessment of noise and vibration impacts from activities associated with the C2S Martin Place Station (MPL) and Pitt Street Station (PIT) sites, more specifically the Bligh Street decline site to access Martin Place Station and the Pitt Street North site to access the Pitt Street Station. These activities include:

- Surface works
 - MPL - delivering and removing equipment, machinery and materials via the Bligh St decline and O'Connell Street
 - PIT – concrete deliveries to the Pitt Street North site via Pitt Street
 - Tunnel support systems – ventilation and dewatering
- Track works MPL & PIT (underground, within tunnels)
 - Material movement - movement of plant and materials through tunnels
 - Tunnel Track Deliveries - unloading deliveries coming in from Bligh Street decline
 - Tunnel Track Activities – track construction
- Tunnel fitout works MPL & PIT (underground, within tunnels)
 - Pour Concrete Upstands
 - FST Floating Slab installation - Installation of Slabs; bearers and concrete upstands
 - Rising main installation - Installation of pipes and pressure testing of rising main
 - Cross Passage Fitout - Base Slab and Blockwork Wall Construction
 - Tunnel fitout - Anchor drilling works; installation of walkway, handrail, combined services route (CSR), noise attenuation & overhead wiring (OHW).

The site location is identified on an aerial photograph located in APPENDIX B.

The proposed works, likely plant and equipment and indicative Project timing is presented in APPENDIX C.

2.1.2 Construction traffic

The Martin Place Station and Pitt Street Station construction works will generate additional traffic movements in the form of:

- Light vehicle movements generated by construction personnel travelling to and from work
- Heavy vehicle movements generated by delivery vehicles bringing materials, plant and equipment to the worksite

Construction traffic on-site (i.e. within the Project footprint) is included as part of the construction noise assessment of the works activities identified in Sections 5 and APPENDIX C. When construction related traffic moves onto the public road network, a different noise assessment methodology is appropriate as vehicle movements would be regarded as 'additional road traffic' rather than as part of the construction site's activities. Construction traffic noise is addressed in Section 7.

2.1.3 Cumulative construction impacts

CSSI 7400 Condition of Approval E39 requires Systems Connect to consult with proponents of other construction works in the vicinity of the worksite and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers. Further to this, Condition E40 requires works to be coordinated to provide the required respite periods identified in accordance with the terms of the CSSI 7400 approval.

All concurrent Sydney Metro construction site works have been considered and addressed in Section 9 of this CNVIS. Potentially concurrent construction activities within the vicinity of the Martin Place Station (MPL) and Pitt Street Station (PIT) sites have also been considered, as discussed in Section 9.

2.2 Construction hours

The construction hours for the Project are defined by Project Planning Approval (PPA) Conditions E36, E37, E38, E41, E42, E44 and E48. The Environment Protection Licence (EPL 21423), is consistent with these conditions.

2.2.1 Standard construction hours

The standard construction hours of work are defined by the CSSI-7400 Condition E36. The standard construction hours for the Project are summarised in the table below.

Table 2-1: Standard construction hours

Construction Activity	Monday to Friday	Saturday	Sunday/ Public holiday
Above ground activities: construction sites and construction traffic	7:00 am to 6:00 pm	8:00 am to 1:00 pm	No work

2.2.2 Out of hours work periods

CSSI-7400 Condition E44 and E48 allow standard construction hours to be varied under specific conditions (where justified). Condition E48 allows the following activities to be carried out 24 hours per day, 7 days per week:

- Station and tunnel fit out, and
- Haulage and delivery of spoil and materials.

PPA Condition E44 and Condition E46 allow OOHW where it is permitted or required by an EPL or the Sydney Metro Out of Hours Work Protocol. Systems Connect will not undertake OOHW until approved by an EPL or through the Out of Hours Work Protocol. Oversize deliveries may need to take place outside of standard construction hours in order to comply with RMS requirements for oversize vehicle movements.

The Transport for NSW (TfNSW) Construction Noise and Vibration Strategy (CNVS) [9] provides a hierarchy of Out of Hours (OOH) work periods. The impact of OOH works may be reduced by scheduling work and activities with greater impact during the preferred periods when receivers are likely to be less sensitive to noise and vibration, such as in the day out of hours (OOHD) and evening out of hours (OOHE) periods.

Table 2-2 presents the construction work periods as Standard Hours, Out of Hours Work (OOHW) Period 1 and OOHW Period 2.

Table 2-2: Construction hours

Day	12am	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	12pm	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday or Public Holiday																								

- Standard construction hours are defined in CSSI-7400 Condition E36 as: Monday to Friday 7:00am to 6:00pm and Saturdays from 8:00am to 1:00pm.
- Work outside of standard construction hours is defined as Out-of-Hours Work (OOHW) and has been divided by the CNVS into 2 periods of sensitivity:
 - OOHW Period 1** is the least sensitive OOH period and is defined as Monday to Friday 6:00pm to 10:00pm (evenings), Saturday 7:00am to 8:00am and 1:00pm to 10:00pm (day/ OOHD and evening/ OOHE) and Sunday and public holidays 8:00am to 6:00pm (day/ OOHD)
 - OOHW Period 2** is the most sensitive OOH period and is defined as Monday to Saturday 10:00pm to 7:00am (night/ OOHN) and Sundays and public holidays 6:00pm to 8:00am (evening/ OOHE and night/ OOHN).

2.2.3 Justification for OOHW

The track works are an essential component of the Project due to be completed and open to rail traffic in 2024. This completion date has been calculated assuming track work, tunnel systems works and fit out works within the tunnel will be undertaken 24 hours a day, seven days per week. Due to time and space constraints it will not be possible to lift all materials into the tunnels during standard hours only, to allow track works to continue 24 hours per day. The process will need to continue during the evening period (6pm to 10 pm) and night period (10 pm and 7am).

OOHW activity on the surface and in the tunnels, particularly after 10pm will be managed to minimise impacts on surrounding sensitive receivers.

At the Martin Place Station site, activities will be completed wholly within the acoustic shed at Bligh Street or underground, within the caverns and tunnels. This would reduce potential noise impact and manage noise from site to within the NMLs.

Systems Connect access to the Pitt Street Station North site is dictated by the integration of Systems Connect works with the station contractor. By necessity contractors will be sharing resources that cannot be duplicated, such as access routes, welfare amenities and material supply. Concrete deliveries would occur via concrete pump at road surface level, with concrete pumped into a concrete agitator at the bottom of the station shaft for delivery into the Pitt Street Station cavern and the tunnels north and south of the station. These works will need to be separated from the station construction so that contractors can maintain separation between people and plant. OOH concrete deliveries are required to ensure the works do not interfere with or cause a hazard for the over station development contractor. In addition, OOH concrete delivery will limit the impact on, and reduce potential safety risk to daytime pedestrian and vehicle traffic.

Allowing track works and tunnel and station fit out works to occur as OOHW will:

- Ensure key NSW Government program milestones are met.
- Ensure delivery of community and rail commuter user benefits.
- Allow increased project efficiency.
- Reduce the overall duration of the construction phase and in turn reduce the duration of impacts on the surrounding community.

The Project has been identified as Critical State Significant Infrastructure by the NSW Government and will provide an important commuter link connecting the existing Sydney Metro North West with the CBD and South West. There are considerable benefits to the Project, NSW Government and the community from the prompt completion of construction of the Project. For the community particularly, completion of construction works will allow restoration of amenity and, in many respects, an increase in the quality of this amenity.

Any work outside standard construction hours must be undertaken in accordance with the EPL or the Out of Hours Works Protocol and the CNVMP [1].

2.2.4 COVID-19 extended construction hours

The Environmental Planning and Assessment (COVID-19 Development – Infrastructure Construction Work Days) Order 2020 commenced on 9 April 2020 and will continue until 25 March 2021. The order permits construction hours on this project to be extended as follows:

- Saturday from 1pm to 6pm (no high noise work permitted)
- Sundays from 8am to 6pm (no high noise work permitted)
- Public holidays from 8am to 6pm (no high noise work permitted).

High noise work means activities such as rock breaking, rock hammering, sheet piling, pile driving or similar noisy activities, unless an existing consent or approval already allows these works to occur on any of the extended days.

The works that are the subject of this CNVIS are permitted 24 hours per day, 7 days per week under CSSI 7400 Condition E48 (see Section 2.2.2).

These activities will be carried out during standard construction hours and if required, during the COVID-19 extended construction hours. Appropriate noise management levels for the extended hours period (i.e. Sundays/ Public Holidays 8am to 6pm) are as outlined for the Day (D/ D(O)) period in Section 4.1.1.

3 Nearest sensitive receivers

3.1 Residential receivers

To assess and manage construction noise and vibration impacts, the residential areas surrounding the site have been divided into Noise Catchment Areas (NCAs) based on each area's similar acoustic environment prior to the start of construction work. The NCAs are based on those established in the EIS for the Project, with some modifications to allow for site specific characteristics.

All relevant residential sensitive receivers near the worksite are identified on an aerial photograph located in APPENDIX B.

3.2 Other sensitive receivers (PPA Condition E34)

Additional to residential receivers above, 'other' noise and vibration sensitive receivers such as passive recreation areas, recording studios and places of worship surrounding the construction area have been identified and are summarised on an aerial photograph located in APPENDIX B.

CSSI-7400 Condition E34 states:

Noise generating works in the vicinity of potentially-affected, religious, educational, community institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories and operating theatres) must not be timetabled within sensitive periods, unless other reasonable arrangements to the affected institutions are made at no cost to the affected institution or as otherwise approved by the Secretary.

Sydney Metro and Systems Connect have undertaken consultation with identified sensitive receivers to determine sensitive periods. This has been taken into consideration in finalising respite strategies for high noise impacts.

3.3 Commercial and industrial premises

All commercial and industrial premises near the worksite have been considered in this assessment.

3.4 Heritage receivers

Heritage receivers have been identified in the Land Use Survey in ANNEXURE A.2 of the CNVMP. Table 3-1 identifies the heritage-listed structures close to work areas.

Table 3-1: Assessment heritage receivers

Site	Item	Address	Significance
Bligh Street	Bennelong Stormwater Channel No 29	Along Elizabeth & Castlereagh Streets	State
	Richard Johnson Square including monument and plinth	Bligh Street	Local
	Wentworth Hotel	2 Bligh Street / 61-101 Phillip Street	Local
	Former "City Mutual Life Assurance" building	10 Bligh Street / 66 Hunter Street	Local
	Former "NSW Club" building	31 Bligh Street	State
	Former "QANTAS House"	68-96 Hunter Street	State
	Chifley Square	Chifley Square	Local
	Public Trust Office ¹	19-21 O'Connell Street	State
	Former "Wales House" (Radisson Hotel) ¹	64-66 Pitt Street	State
	Former "Perpetual Trustee" building ¹	33-39 Hunter Street	State
Pitt Street North	"Pilgrim House" Including Interior	264 Pitt St, Sydney	State
	Bennelong Stormwater Channel No 29	Bligh Street / Castlereagh Street / Pitt Street	State
	Former "Legion House" including interiors	161-163 Castlereagh Street	Local
	Community building "Masonic Club"	169-173 Castlereagh Street	Local
	Former "Manchester Unity" building	183-187 Elizabeth Street	Local
	The Great Synagogue	187A Elizabeth Street	State
	Former "Australian Consolidated Press" facade	189-197 Elizabeth Street	Local
	"National Building"	248A-250 Pitt Street	Local
	Criterion Hotel	258-260 Pitt Street	Local

4 Construction noise and vibration objectives

4.1 Noise goals

4.1.1 Noise management levels (NMLs)

Construction noise management levels (NMLs) have been determined using the Construction Environmental Management Framework (CEMF)[10], CSSI-7400 Conditions, in accordance with the Sydney Metro City & Southwest Construction Noise and Vibration Strategy (SMCSNVS) [8] and as set out in the CNVMP.

For the Martin Place Station (MPL) and Pitt Street Station (PIT) sites, external NMLs are derived from the Interim Construction Noise Guideline (ICNG)[3], as identified in Section 5.1.1 of the CNVMP[1] and summarised in Table 4-1 below. Internal NMLs are also applicable at residential receiver locations during the 7 am to 8 pm period through CSSI-7400 Conditions E37 and E38; and 8 pm to 7 am period per E41 and E42, as summarised in Table 4-1 below.

Table 4-1: Application of NMLs at CS2 Martin Place Station and Pitt Street Station (CSSI 7400 Conditions of Approval)

Time Period	Area	Receiver Type	Condition	Noise management level ³
ICNG				
Day ¹	All	All	CNV ³ Section 5.3	ICNG (see Table B1 in APPENDIX B)
Day ¹ OOHW Period 1	All	All	CNV ³ Section 5.3	ICNG (see Table B1 in APPENDIX B)
Evening ¹ OOHW Period 1	All	All	CNV ³ Section 5.3	ICNG (see Table B1 in APPENDIX B)
Night ¹ OOHW Period 2	All	All	CNV ³ Section 5.3	ICNG (see Table B1 in APPENDIX B)
CSSI-7400				
Day ¹ (D/ D(O))	Identified precincts (including Martin Place and Pitt Street Station sites)	All	CSSI-7400 E38	Internal noise levels are required to be less than $L_{Aeq(15\text{ minute})}$ 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below $L_{Aeq(15\text{ minute})}$ 55 dB(A). Noise equal to or above $L_{Aeq(15\text{ minute})}$ 60dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm. ⁴
Evening ¹ 6pm to 8pm (E1)				
Evening ¹ 8pm to 9pm (E2)	Non-residential zones ²	Residential	CSSI-7400 E41	$L_{Aeq(15\text{ minute})}$ 60 dB(A) (internal)
Evening ¹ 9pm to 10pm				$L_{Aeq(15\text{ minute})}$ 45 dB(A) (internal)
Night ¹ 10pm to 7am (N)				
Evening ¹ 8pm to 10pm (E2)	Residential zones ²	Residential	CSSI-7400 E42	$L_{Aeq(15\text{ minute})}$ 45 dB(A) (internal)
Night ¹ 10pm to 7am (N)				
All	All	All	CSSI-7400 E43	$L_{Aeq(8\text{ hour})}$ 85 dB(A) (external) near the CCSI

- Day refers to 7am to 6pm Monday to Friday and 8am to 6pm Saturday, Sunday & Public Holidays; Evening refers to Monday to Sunday 6:00pm to 10:00pm; Night refers to Monday to Friday 10:00pm to 7:00am, Saturdays, Sundays and public holidays 10:00pm to 8:00am.
- These are identified by the applicable Local Environmental Plan land zoning of the receiver.
- Sydney Metro City & South West Construction Noise and Vibration Strategy (Sydney Metro 2016)
- Criteria as described in SSI 7400 Condition E38

5. A 5 dB penalty shall be applied if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned

4.1.2 Sensitive receiver NMLs and respite for high noise impact works (CSSI-7400 Conditions E37 and E38)

Daytime works need to be assessed against the requirements of CSSI-7400 Conditions E37 and E38. Consultation will be undertaken with receivers predicted to experience internal noise levels greater than $L_{Aeq(15minute)} 60 \text{ dB(A)}$, between 7am and 8pm, to determine appropriate hours of respite in accordance with CSSI-7400 Conditions E37 and E38. Receivers have been identified using the following process:

- An NML equivalent to an internal noise level of $L_{Aeq(15minute)} 60 \text{ dB(A)}$ was established for all identified receivers:
 - For residential receivers, the equivalent external NML is based on a 10 dB(A) minimum (conservative) difference between external and internal noise levels (assuming windows open)
 - For non-residential receivers with light weight glazing, the equivalent external NML is based on a 20 dB(A) minimum (conservative) difference between external and internal noise levels (assuming windows closed)
 - For non-residential receivers with heavy glazing, the equivalent external NML is based on a 25 dB(A) minimum (conservative) difference between external and internal noise levels (assuming windows closed)
 - Where additional information is available (e.g. if residential or non-residential properties have been acoustically treated), alternative outdoor to indoor noise difference will be determined to establish the equivalent external noise threshold
- Receivers where noise is predicted to be above the equivalent external NML are identified in APPENDIX E as requiring consultation.

The adopted difference between external and internal noise levels is identified in APPENDIX E.

4.1.3 Residential receiver NMLs – 8pm to 7am (CSSI-7400 Conditions E41 and E42)

CSSI-7400 Conditions E41 and E42 require that residential receivers within non-residential zones or residential zones (respectively) are not above the internal noise levels identified in Table 4-1. In accordance with CSSI-7400 Conditions E41 and E42, if construction works are particularly annoying (as described in *ICNG NMLs* above) or include ground-borne noise or a perceptible level of vibration at the affected receiver, a 5 dB(A) penalty should be added to the predicted construction noise level.

Where the above internal noise levels cannot be achieved, additional mitigation in accordance with the *Sydney Metro City and South West Noise and Vibration Strategy (SMCSNVS)* [8] is to be offered.

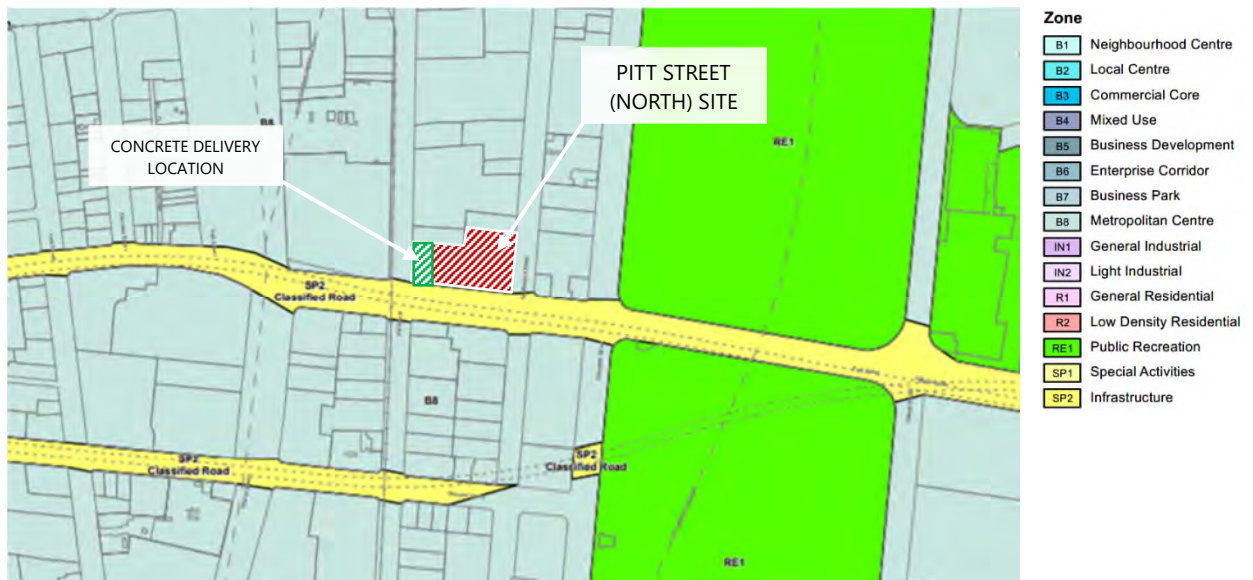
Addendum A of the SMCSNVS notes that the applicable Local Environmental Plan land zoning of the receiver be used to identify if residential receivers are located within residential or non-residential zones. An extract from the North Sydney Local Environmental Plan 2013 land zoning map LZN_002 is provided in Figure 4.1. Red and pink areas (R2, R3 and R4) indicate residential zones. The zoning map indicates

that the nearest residential receivers to the Martin Place Station (MPL) and Pitt Street Station (PIT) sites are in residential zones (zone R3 and R4 in Figure 4.1).

Figure 4.1: Extract from Sydney Local Environmental Plan 2012 land zoning map LZN_014



Figure 4.2: Extract from Sydney Local Environmental Plan 2012 land zoning map LZN_015



For this assessment, all residential receivers are conservatively assumed to be in residential zones, with a corresponding internal noise threshold level of $L_{Aeq(15\text{minute})}$ 45 dB(A) between 8pm and 7am. Based on a minimum (conservative) external to internal noise difference of 10 dB(A) (assuming windows open), an equivalent external noise threshold of $L_{Aeq(15\text{minute})}$ 55 dB(A) is applicable between 8pm and 7am for all receivers except for those that are receiving at-property treatments from TfNSW due to the operation of the rail corridor. In this case, a conservative external noise threshold of $L_{Aeq(15\text{minute})}$ 65 dB(A) is

considered. Where these external equivalent levels are above the external noise threshold, additional mitigation may be required in accordance with the SMCSNVS.

The assessment presented in Section 5.2 has assessed all receivers against the approach outlined in the SMCSNVS [8] and the CNVMP [1] which achieves the requirements of PPA Conditions E41 and E42, and is consistent with the ICNG [3] and the EIS [2].

4.1.4 Sleep disturbance

Consistent with Section 5.1.3 of the CNVMP [1], an initial screening level of $L_{Amax} \leq L_{A90(15min)} + 15 \text{ dB(A)}$ is used. In situations where this results in an external screening level of less than 55 dB(A), a minimum screening level of 55 dB(A) is set. Note that this is equivalent to a maximum internal noise level of 45 dB(A) with windows open.

Where noise events are found to be above the screening level, further analysis is made to identify:

- the likely number of events above 45 dB(A) (internal) that might occur during the night assessment period
- whether events are above an 'awakening reaction' level of 55 dB(A) L_{Amax} (internal) that equates to NML of L_{Amax} 65 dB(A) (assuming open windows).

The ICNG recommends that where construction works are planned to extend over more than two consecutive nights, maximum noise levels and the extent and frequency of maximum noise level events above the RBL should be considered.

During construction works at night, attended noise monitoring will be undertaken at representative residences most impacted by the works during night-time periods (see Section 5). The noise monitoring will follow the procedures outlined in APPENDIX E of the CNVMP [1], which includes measurement of L_{Amax} noise metrics. If maximum noise levels are found to be above the sleep NML of 45 dB(A), the responsible noise source(s) will be identified and further analysis undertaken to quantify the extent and frequency of events above the NML. Additional feasible and reasonable mitigation measures may need to be considered to reduce potential impacts.

4.1.5 National Standard for exposure to noise

In accordance with PPA Condition E43, Systems Connect worksites will be managed to ensure that noise generated by construction will not be above the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of $L_{Aeq,8h}$, of 85 dB(A) for any employee working at a location near a Systems Connect worksite.

4.1.6 Construction related road traffic noise objectives

On the roads immediately adjacent to construction sites, the community may associate heavy vehicle movements with the Martin Place Station (MPL) and Pitt Street Station (PIT) sites. Construction traffic

movements on public roads will aim to limit any increase in existing road traffic noise levels to no more than 2 dB(A). All feasible and reasonable noise mitigation and management measures will be implemented.

4.2 Construction vibration goals

As reported in Section 5.4 and 5.5 of the CNVMP [1], construction vibration goals have been determined using:

- for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) [4]
- for structural damage, the vibration limits set out in the
 - British Standard BS 7385-2:1993 Evaluation and measurement for vibration in buildings. Guide to damage levels from ground-borne vibration [5] and
 - German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures [6].

4.2.1 Disturbance to building occupants (human annoyance)

For disturbance to human occupants of buildings, we refer to '*Assessing Vibration; a technical guideline*' [4]. This document provides criteria which are based on the British Standard BS 6472-1992, '*Evaluation of human exposure to vibration in buildings (1-80Hz)*' [7].

Intermittent vibration is assessed using vibration dose values (VDVs). For the assessment of potential vibration at the nearest vibration sensitive receivers preferred and maximum VDV goals for the day period (7:00am to 10:00pm) are presented in Table 4-2.

Table 4-2: Construction vibration disturbance goals

Location	Assessment period ¹	Vibration Dose Value (VDV), m/s ^{1.75}	
		Preferred values	Maximum values
Critical areas ²	Day or Night	0.10	0.20
Residences	Day	0.20	0.40
	Night	0.13	0.26
Offices, schools, educational institutions and places of worship	Day or Night	0.40	0.80
Workshops	Day or Night	0.80	1.60

Notes: 1. Daytime is 7:00am to 10:00pm and night-time is 10:00pm to 7:00am

2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. These criteria are only indicative, and there may be a need to assess intermittent values against the continuous or impulsive criteria for critical areas. Source: BS 6472-1992

4.2.2 Structural damage to buildings

A conservative vibration damage screening level per receiver type is given below:

- Reinforced or framed structures (Line 1): 25.0 mm/s
- Unreinforced or light framed structures (Line 2): 7.5 mm/s

At locations where the predicted and/or measured vibration levels are greater than shown above (peak component particle velocity), a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be required to determine the applicable safe vibration level.

It is noted that vibration levels required to cause minor cosmetic damage are typically 10 x higher than levels that will cause disturbance to building occupants. Many building occupants assume that building damage is occurring when they feel vibration or observe rattling of loose objects, however the level of vibration at which people perceive vibration or at which loose objects may rattle is far lower than vibration levels that can cause damage to structures.

4.2.3 Heritage

Section 4.2.3 of the CNVMP [1] outlines the approach to manage potential vibration impacts on heritage items, where identified. The actions to be taken shall be to:

- 1) Identify heritage items where the 2.5 mm/s peak component particle velocity objective may be exceeded during specific construction activities
- 2) Structural engineering report to be undertaken on identified heritage items, to confirm structural integrity of the building and confirm if item is 'structurally sound'
- 3) If item confirmed as 'structurally sound', the screening criteria in Section 4.2.2 shall be adopted, or
- 4) If item confirmed as 'structurally unsound', the more conservative cosmetic damage objectives of 2.5 mm/s peak component particle velocity would be adopted.

4.2.4 Sensitive scientific and medical equipment

No sensitive scientific or medical equipment are known near the assessed works. If they are identified, relevant vibration criteria should be established for each item in line with Section 5.5.3 of the CNVMP [1], and any corresponding management or mitigation measures determined.

4.2.5 Utilities and other vibration sensitive structures

Where utilities or other vibration sensitive structures are identified, relevant vibration criteria will be established for each item per Section 5.5.4 of the CNVMP [1], and any corresponding management or mitigation measures determined.

5 Construction noise assessment

5.1 Noise prediction methodology

Modelling and assessment of airborne noise impacts from activities associated with the construction works were determined by modelling the noise sources, receiver locations, topographical features, and possible noise mitigation measures using a Cadna-A computer noise model developed for this project. The model calculates the contribution of each noise source at identified sensitive receiver locations and allows for the prediction of the total noise from a site for the various stages of the construction works.

The noise prediction models take into account:

- Location of noise sources and sensitive receiver locations.
- Height of sources and receivers referenced to one metre digital ground contours for the site area and surrounding area.
- Sound Power Levels (L_w) of plant and equipment likely to be used during the various construction activities (see Table C1 in APPENDIX C). Table C1 also identifies the plant and equipment that will operate during each assessment period and the likely timing of each activity/aspect.
- Separation distances between sources and receivers.
- Ground type between sources and receivers.
- Attenuation from barriers (natural and purpose built).

Key details regarding the construction site layout, the likely plant and equipment (including truck movements), and hours of operation were informed by the Design and Construction Teams. This information is presented in APPENDIX C and formed the basis for all modelling assumptions used in this assessment.

5.1.1 Detailed design outcomes

During the site design process, Renzo Tonin & Associates played a key role in assisting Systems Connect to determine the noise mitigation measures required to reduce the site's noise impact, incorporating existing mitigation measures from previous stages of the project. The key noise mitigation measures that have been included in the noise modelling results presented in this CNVIS are the following:

- Acoustic shed (existing) at Bligh Street for deliveries;
- 2 to 3 metre high boundary hoarding around the Martin Place and Pitt Street sites;
- Noise emission selection for plant/ equipment
- Heavy vehicle movements restricted to 4 per hour during E2 and night.

The above listed mitigation measures, include but are not limited to, all the existing measures that have previously been implemented for the TSE works which will remain on site and will not be altered from the existing configuration.

5.1.2 Construction activities

Table 5-1 presents a summary of the construction activities and aspects that are proposed to take place during the works. The Track Works and the Tunnel Fitout Works will be undertaken underground, completely within the tunnels and caverns. They are not expected to contribute to the noise emission generated by the Surface Works.

Table 5-1: Summary of construction activities

Site	Activity	Aspect	Assessment reference	Work period	Duration
MPL (Bligh Street)	Surface Activities	Delivering and removing equipment, machinery and materials	MPL_DE	Day, E1, E2 & Night	December 2020 to August 2022
PIT (North)	Surface Activities	Concrete deliveries	PIT_CD	Day, E1, E2 & Night	December 2020 to July 2022
MPL/ PIT (tunnels and caverns)	Track works (underground)	Material movement Tunnel Track Deliveries Tunnel Track Activities	N/A ¹	Day, E1, E2 & Night	December 2020 to April 2022
MPL/ PIT (tunnels and caverns)	Tunnel fitout (underground)	Tunnel Support Systems Pour Concrete Upstands FST Floating Slab installation Rising Main Installation Cross Passage Fitout Tunnel Fitout	N/A ¹	Day, E1, E2 & Night	December 2020 to December 2022

Notes: 1. Work located underground, inside tunnels

5.2 Predicted noise levels

Predicted L_{Aeq} noise levels from the worksite are assessed against the NMLs and summarised in the following sections, with colour coding to denote the highest level of exceedance of the NML. Detailed results for each receiver are given in APPENDIX D.

The noise predictions presented in this CNVIS represent a realistic worst-case scenario when construction occurs at work locations close to residences and other sensitive receivers. At each receiver, noise levels will vary during the construction period based on the position of equipment within the worksite, the distance to the receiver, the construction activities being undertaken and the noise levels of particular plant items and equipment. Actual noise levels will often be less than the predicted levels presented in this CNVIS.

5.2.1 ICNG NMLs

5.2.1.1 ICNG Standard construction hours

Table 5-2 presents the predicted worst-case construction noise levels for each of the construction stages identified in Table 5-1 at the most affected receiver in each NCA. The results are presented in terms of level above the ICNG standard daytime NMLs.

For **Standard Hours** construction noise impacts are presented as follows:

- Below NML
- < 10dB(A) above NML - construction noise clearly audible
- ◆ > 10dB(A) above NML - construction noise moderately intrusive
- > 75dB(A) - highly noise affected (for residential receivers)

Table 5-2: Summary of construction noise impacts at nearby receivers – standard hours

NCA	Construction scenario (see Table 5-1)	
	MPL_DE	PIT_CD
MP_02	●	●
MP_04	●	●
PS_01	●	●
PS_02	●	●
PS_03	●	●
PS_04	●	●
PS_05	●	●
OSR	◆	◆

Notes: OSR: this includes all commercial, industrial and other sensitive receivers

During the standard daytime period, works are predicted to be below the ICNG NMLs for assessed residential receivers for both the Pitt Street and Martin Place sites. Noise levels at the nearest other sensitive receivers are typically predicted to be within 10 dB(A) of the NMLs, with the following exceptions:

- Two other sensitive receivers near the Pitt Street site (264A and 303-305 Pitt Street Sydney)
- One other sensitive receiver near the Martin Place site (28-34 O'Connell Street, Sydney).

The exceedances are worst case scenario when the noisiest plant items are operating closest to the receiver. This would not occur for the full extent of the works.

All reasonable and feasible noise mitigation measures have been incorporated into the site design, as outlined in Section 5.1.1. Further mitigation measures that would be adopted, where practicable, are

identified in Section 5.3. Further, it is necessary to apply Planning Approval Conditions E37 and E38 in order to manage impacts (see Section 5.2.2).

5.2.1.2 ICNG OOHW

Table 5.3 presents the predicted worst-case construction noise levels for each of the construction stages identified in Table 5-1 at the most affected receiver in each NCA. The results are presented in terms of level above the ICNG NMLs for the OOHW period.

- Below NML
- < 5dB(A) above NML - construction noise noticeable
- ◆ 5 to 15dB(A) above NML - construction noise clearly audible
- > 15 to 25dB(A) above NML - construction noise moderately intrusive
- >25dB(A) above NML - construction noise highly intrusive

Table 5.3: Summary of construction noise impacts at nearby receivers - OOHW Period 1 and 2

NCA	Construction scenario (see Table 5-1)			
	Evening		Night	
	MPL_DE	PIT_CD	MPL_DE	PIT_CD
MP_02	●	●	●	●
MP_04	●	●	●	●
PS_01	●	●	●	●
PS_02	●	○	●	○
PS_03	●	●	●	●
PS_04	●	●	●	●
PS_05	●	●	●	●
OSR	◆	◆	◆	◆

Notes: Evening (E1/E2): Evening period from 6pm to 10pm
Night-time (N) period from 10pm to 7am Sunday to Thursday and 10pm to 8am Fridays, Saturdays and Public Holidays.

During the OOHW evening, predicted noise levels are typically below the ICNG NMLS for the Pitt Street and Martin Place sites at all residential receivers, with the exception of one receiver near the Pitt Street site (199 Pitt Street, Sydney).

During the OOHW night-time period, predicted noise levels are typically below the ICNG NMLS for the Pitt Street and Martin Place sites at all residential receivers, with the exception of two receivers near the Pitt Street site (189 and 199 Pitt Street, Sydney).

Noise levels at the nearest other sensitive receivers during the OOHW are typically predicted to be within 10 dB(A) of the NMLs, with the following exceptions:

- Two other sensitive receivers near the Pitt Street site (264A and 303-305 Pitt Street Sydney)
- One other sensitive receiver near the Martin Place site (28-34 O'Connell Street, Sydney).

It is noted that these receivers are unlikely to be occupied outside standard construction hours.

As the ICNG NMLs have not been achieved for all proposed activities on the site, all reasonable and feasible noise mitigation and management measures would be implemented. These mitigation and management measures are discussed in Section 5.1.1 and 5.3 of this report. Further, it is necessary to apply Planning Approval Conditions E41 and E42 in order to manage impacts (see Section 5.2.3).

5.2.2 CSSI-7400 Conditions E37 and E38

The following sections present the predicted worst-case construction noise levels for each of the construction stages identified in Table 5-1 at the most affected residential receiver in each NCA and other sensitive receivers (OSR). The results are compared with the internal NMLs in CSSI-7400 Conditions E37 and E38. Where the measured or predicted noise levels are above the equivalent external NML, consultation will be undertaken with affected receivers to determine appropriate hours of respite in accordance with PPA Conditions E37 and E38.

The impacts presented are as follows:

- ◆ Noise levels predicted to be below internal NMLs in PPA Conditions E37 and E38
- Noise levels predicted to be above internal NMLs in PPA Conditions E37 and E38.

Table 5-4: Summary of construction noise impacts – CSSI-7400 Conditions E37/ E38

NCA	Construction scenario (see Table 5-1)	
	Day / E1 (7am to 8 pm)	
	MPL_DE	PIT_CD
MP_02	◆	◆
MP_04	◆	◆
PS_01	◆	◆
PS_02	◆	◆
PS_03	◆	◆
PS_04	◆	◆
PS_05	◆	◆
OSR	◆	◆

Notes: Day: 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays; E1: Evening period from 6pm to 8pm.
OSR: this includes all commercial, industrial and other sensitive receivers.

Based on the results presented in Table 5-4 above, noise levels are predicted to be below the NMLs in PPA Conditions E37/E38 during the 7 am to 8 pm day/evening period at all locations.

Proposed measures to support managing potential noise generated by the works to within the NMLs are provided in Section 5.3. For more detailed predictions, see APPENDIX D.

5.2.3 PPA Conditions E41/42

Table 5-5 summarises the predicted noise impacts for each construction stage in each NCA compared with the internal NMLs in CSSI-7400 Conditions E41 and E42. Where predicted levels are above the E41/42 NMLs at residential receivers, additional mitigation measures will be implemented in accordance with the documented procedure in Addendum A of the SMCSNVS.

The impacts presented are as follow:

- ◆ Noise levels predicted to be below internal NMLs in PPA Conditions E41 and E42;
- Noise levels predicted to be above internal NMLs in PPA Conditions E41 and E42.

Table 5-5: Noise level summary for PPA Conditions E41/42 (residential only)

NCA	Construction scenario (see Table 5-1)			
	E2		N	
	MPL_DE	PIT_CD	MPL_DE	PIT_CD
MP_02	◆	◆	◆	◆
MP_04	◆	◆	◆	◆
PS_01	◆	◆	◆	◆
PS_02	◆	◆	◆	◆
PS_03	◆	◆	◆	◆
PS_04	◆	◆	◆	◆
PS_05	◆	◆	◆	◆

Notes: E2: Late evening period from 8pm to 10pm.

N: Night-time period from 10pm to 7am.

The results in Table 5-5 indicate that construction noise is predicted to comply with the internal noise threshold of PPA Conditions E41/E42 at the nearest residential receivers within all NCAs.

Proposed measures to support managing potential noise generated by the works to within the NMLs are provided in Section 5.3. For more detailed predictions, see APPENDIX D.

Based upon results presented in Section 5.2, additional noise mitigation is not required.

5.2.4 Sleep disturbance

Maximum noise levels associated with on-site heavy vehicle movements may potentially cause sleep disturbance at nearby residential receivers.

Maximum external noise levels from trucks entering and exiting the MPL Bligh Street site (off O'Connell Street) are predicted to be 82-84 dB(A) outside the windows of suites within the Radisson Blu Hotel. Based on an estimated external to internal noise reduction of 34 dB(A) (for double glazing consisting of 6.38 mm laminated glass, 200 mm airgap and 6 mm monolithic glass), maximum internal noise levels of 48-50 dB(A) are predicted. These levels are above the sleep disturbance screening level of 45 dB(A) L_{Amax} (internal), but below the sleep disturbance 'awakening reaction' level of 55 dB(A) L_{Amax} (internal) (see Section 4.1.4). The number of events will be 4 trucks per hour during peak tunnel fit out deliveries.

Maximum external noise levels from concrete trucks delivering concrete to the PIT (North) site at Pitt are predicted to be 63-67 dB(A) outside the windows of the residential building at 189 and 199 Castlereagh Street. Maximum internal noise levels of 43-47 dB(A) are predicted (assuming windows closed). These predicted internal noise levels are marginally above the sleep disturbance screening level of 45 dB(A) L_{Amax} (internal), but below the sleep disturbance 'awakening reaction' level of 55 dB(A) L_{Amax} (internal) (see Section 4.1.4). The number of these events will be up to 4 concrete trucks per hour during peak tunnel fitout works between 8pm and 7am.

Note that the residential building at 189 and 199 Castlereagh Street are surrounded by Park Street and Castlereagh Street, which are busy roads in the CBD. Hence the background noise at night would be generally high. This can be inferred by the representative background noise levels in noise catchment area PS_02 (which includes 189 and 199 Castlereagh Street). At the unattended noise logging location, the L_{A1} (1minute) noise levels (external) during night-time periods ranged from 68-73 dB(A).

Truck drivers would be instructed to minimise unnecessary acceleration, avoid vigorous slamming of truck doors, installing broadband reversing alarms on heavy vehicles, unloading material only within the acoustic shed and minimising heavy vehicle movements where practicable. The potential of loose items or plant/equipment that could generate metal-on-metal bangs will be identified and managed accordingly. Where practical the use of slings rather than chains will be utilised for lifts.

In addition, toolbox talks will be used to advise all personnel of the need to follow quiet work practices during OOHV periods and of the need to respect the residential receivers surrounding the work site. Other management measures are outlined in Section 5.3 to aid in providing additional noise reduction benefits where noise is above the criterion.

Noise monitoring should be undertaken to confirm that instantaneous construction noise levels are below the external equivalent sleep disturbance 'awakening reaction' level of 75 dB(A) L_{Amax} during the night period. If verification monitoring shows noise levels are consistently above the sleep disturbance NML (i.e. 2 or more consecutive verification monitoring events/ occasions that find the works to be the primary contributor to the L_{Amax} noise level), investigation will be undertaken to understand the cause of the exceedance and additional mitigation and management measures will be implemented in accordance with Sydney Metro City and South West Noise and Vibration Strategy.

5.3 Noise mitigation and management

5.3.1 Consultation with affected receivers (CSSI-7400 Condition E33)

CSSI-7400 Condition E33 requires consultation with affected receivers to assist in determining site-specific mitigation measures to be included in this CNVIS.

Systems Connect will continue consultation with potentially affected stakeholders including business and residential receivers regarding specific mitigation measures applicable to the construction works at the Martin Place Station (MPL) and Pitt Street Station (PIT) sites. Consultation is being undertaken to understand stakeholders' noise and vibration expectations and preferences for timing of high impact noise respite. This is consistent with the requirements in CSSI-7400 Conditions E34 and E38.

It is noted that there are no high impact works associated with the LWW at Martin Place Station (MPL) and Pitt Street Station (PIT) sites.

5.3.2 Site noise control measures

Table 5-6 shows the noise control measures recommended to reduce potential noise impacts.

Table 5-6: Site noise control measures

Control type	Control measure	Typical use
At-source control measures	Limit equipment in use	Only the equipment necessary during each stage of the works will be used.
	Timing of equipment in use	Where practicable, activities and plant will be limited as outlined in Table C1 (APPENDIX C).
	Limit activity duration	Any equipment not in use for extended periods shall be switched off. For example, heavy vehicles should switch engines off when not in use.
	Use and siting of plant	Avoid/ limit simultaneous operation of noisy plant and equipment within discernible range of a sensitive receiver. Direct noise-emitting plant away from sensitive receivers where practicable. Locate fixed location plant items as far from sensitive receivers as practicable.
	Equipment selection	Use quieter and less noise/ vibration emitting construction methods where feasible and reasonable.
	Truck movements	Where practicable, avoid the use of park air brakes at night. Set up relevant traffic management measures to minimise the use of air brakes when leaving site. Air brake silencers are to be correctly installed and fully operational for any heavy vehicles (as per CNVMP). Minimise unnecessary acceleration on site and avoid vigorous slamming of truck doors.
	Limit clangs and bangs at night	Identify potential of loose items or plant/equipment that could generate metal-on-metal bangs and managed accordingly.
	Non-tonal reversing alarms	Alternative reverse alarms, such as 'quackers' will be installed on all vehicles & mobile plant regularly used on site and on all vehicles & mobile plant required for OOHV.
Path mitigation measures	Temporary noise screens	Where practicable, temporary noise screens (e.g. Flexshield, Echo-barrier, or similar) would be used to provide additional noise reduction during works. Temporary noise screens can provide 5 to 10 dB noise reduction, where they can break line of sight.

Control type	Control measure	Typical use
Noise management measures	Site inductions & Toolbox Talks	All employees, contractors and subcontractors will receive a Project induction. The environmental component may be covered in toolboxes and should include: - location of nearest sensitive receivers - relevant project specific and standard noise and vibration mitigation measures; - permitted hours of work; - OOHW Procedure and Form - construction employee parking areas.
	Community consultation	Inform community of construction activity and potential impacts.
	Respite periods	Noise levels are required to be less than $L_{Aeq(15 \text{ minute})}$ 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below $L_{Aeq(15 \text{ minute})}$ 55 dB(A). Noise equal to or above $L_{Aeq(15 \text{ minute})}$ 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm.
	Behavioural practices	No swearing or unnecessary shouting or loud stereos/radios on site. No dropping of materials from height, throwing of metal items and slamming of doors.
	Noise monitoring	Noise monitoring is to be carried out as detailed in Section 0.

5.3.3 Additional noise mitigation measures

Table 5-7 below should be used to advise the appropriate additional noise mitigation during construction, based on the CNVS [9] and the CNVMP [1].

Table 5-7: Additional airborne noise mitigation measures

When is the work being undertaken?	Predicted $L_{Aeq, 15min}$ noise level above		Identify additional management measures to be implemented	
	Background (RBL)	Noise Management Level (NML)		
Standard Hours M-F 7am to 6pm Sat 8am to 1pm	0 to 10 dB(A)	-	-	-
	> 10 to 20 dB(A)	≤ 10 dB(A)	-	-
	> 20 to 30 dB(A)	> 10 to 20 dB(A)	LB, M	[MM2]
	> 30 dB(A)	> 20 dB(A)	LB, M	[MM2]
OOHW Period 1 M-F 6pm to 10pm Sat 1pm to 10pm Sun/ PH 8am to 10pm	0 to 10 dB(A)	≤ 5 dB(A)	-	-
	> 10 to 20 dB(A)	> 5 to 15 dB(A)	LB	[MM1]
	> 20 to 30 dB(A)	> 15 to 25 dB(A)	LB, M	[MM2]
	> 30 dB(A)	> 25 dB(A)	LB, M, IB, PC, RO, SN	[MM4]
OOHW Period 2 M-F 10pm to 7am Sat 10pm to 8am Sun/ PH 6pm to 8am	0 to 10 dB(A)	≤ 5 dB(A)	-	-
	> 10 to 20 dB(A)	> 5 to 15 dB(A)	LB, M	[MM2]
	> 20 to 30 dB(A)	> 15 to 25 dB(A)	LB, M, IB, PC, RO, SN	[MM4]
	> 30 dB(A)	> 25 dB(A)	LB, M, IB, PC, RO, SN, AA	[MM5]

Notes: Use the abbreviation codes in the table above to confirm management measures required
Code in square brackets [] refers to noise management code for affected receivers identified in each CNVS
LB = Letter box drops
M = Monitoring
IB = Individual briefings
SN = Specific notifications
PC = Phone calls and emails
RO = Project specific respite offer
AA = Alternative accommodation

Predicted noise levels in Section 5.2 indicate all receivers are expected to experience construction noise below E37/E38 NMLs and below E41/E42 NMLs. Additional mitigation measures are therefore not required.

5.3.4 Attended noise monitoring

Real time noise monitoring in accordance with CSSI-7400 Condition C11 is not proposed to be undertaken for the Martin Place Station (MPL) and Pitt Street Station (PIT) sites. Attended noise monitoring will be undertaken as required by this CNVIS. Noise monitoring is subject to obtaining the property owner/occupier's consent to access the property (where required). If consent to access property is denied, monitoring will be done on public land on the property boundary, provided it is safe to do so.

Attended noise monitoring will be undertaken during works at one of the representative residential receivers identified in the table below. Nominated attended measurement locations have been selected with the best opportunity to validate the predicted noise levels.

Table 5-8: Nominated verification monitoring locations

Site	NCA	Nominated receiver address	Monitoring location at 1 m from
MPL	MP_03	27 O'CONNELL ST, SYDNEY (Radisson Blu)	Outside hotel reception
PIT	PS_02	189 CASTLEREAGH STREET SYDNEY	Footpath on Castlereagh Street (30m from the Park Street intersection, in front of the CommBank ATM) On the northern balcony of one of the residences on sixth to ninth floor. This is subject to gaining permission to access private property
		199 CASTLEREAGH STREET SYDNEY	On the northern balcony of one of the residences on sixth to twelfth floor. This is subject to gaining permission to access private property

Notes: Monitoring on private property is subject to owner consent and where relevant, occupier consent. If consent to access property is denied, monitoring will be done on public land on the property boundary, provided it is safe to do so.

Noise monitoring will be undertaken to determine if the construction noise levels are higher than the external equivalent NML specified in CSSI-7400 Conditions E37/38 and E41/E42. If verification monitoring shows that the external noise levels are consistently above the predicted (or required) noise levels (i.e. 2 or more consecutive verification monitoring events/ occasions that find the works to be the primary contributor noise above the E37/E38 and E41/E42 NML) presented in Section 5.2, investigation will be undertaken to understand the cause of the exceedance and additional mitigation and management measures will be implemented in accordance with Sydney Metro City and South West Noise and Vibration Strategy.

5.3.5 Complaints Handling

Noise complaints received and responded to will be managed in accordance with the CNVMP and the Community Consultation Strategy.

Transport for NSW operate a 24-hour construction complaints line (1800 171 386).

Enquiries/ complaints may also be received through the Sydney Metro project email (LinewideMetro@transport.nsw.gov.au).

6 Construction vibration impacts

6.1 Minimum working distances for vibration intensive plant

From the plant and equipment listed in APPENDIX C, there are no significant vibration generating plant proposed for these works.

The risk of annoyance or damage due to vibration is therefore considered low to negligible and has not been addressed further in this CNVIS.

7 Ground-borne noise assessment

7.1 Ground-borne noise prediction methodology

Due to the nature of the works at the Martin Place Station (MPL) and Pitt Street Station (PIT) sites, there are no vibration significant plant propose to complete the works.

The risk of annoyance due to ground-borne noise is therefore considered low and has not been addressed further in this CNVIS.

8 Traffic noise assessment

8.1 Traffic sources

At the Martin Place Station (MPL) Bligh Street site, all heavy vehicles will access the site via Bent Street and O'Connell Street and will exit the site via O'Connell Street and Hunter Street. These are sub-arterial roads in the CBD with high traffic flows. During the day and night-time periods, materials will be transported by up to four trucks per hour during the tunnel fitout activities. Details of heavy vehicle movements associated with the construction works were provided by construction team and described in APPENDIX C Table C1-1.

At the Pitt Street Station (PIT) North site, all heavy vehicles will access the worksite via Pitt Street and Castlereagh Street, which are sub-arterial roads in the CBD with high traffic flows. During the day and night-time periods, concrete will be delivered by up to 4 trucks per hour during the tunnel fitout activities. Details of heavy vehicle movements associated with the construction works were provided by construction team and described in APPENDIX C Table C1-2.

To predict road traffic noise levels on the existing road network, the most recent available existing traffic data for O'Connell, Bent Street, Hunter Street, Pitt Street and Castlereagh Street within the project area was provided by Austraffic (for the period 10/12/2017 to 16/12/2017). Existing traffic and project volumes are detailed in Table 8-1 for the day-time and night-time assessment periods.

Table 8-1: Traffic noise modelling data - existing road network

Site	Road	Road category (RNP)	15-hour day period (7am-10pm)				9-hour night period (10pm-7am)			
			Existing		Project		Existing		Project	
			TOTAL	HV	TOTAL	HV	TOTAL	HV	TOTAL	HV
Martin Place Station (MPL) Bligh Street	O'Connell	Sub-arterial	1802	179	120	60	493	55	72	36
	Bent Street	Sub-arterial	12359	448	120	60	2906	150	72	36
	Hunter Street	Sub-arterial	8620	547	120	60	2589	199	72	36
Pitt Place Station (PIT) North	Pitt Street	Sub-arterial	6851	257	120	60	2377	166	72	36
	Castlereagh Street	Sub-arterial	6800	889	120	60	1715	280	72	36

Note: Heavy vehicle (HV) movements.

8.2 Predicted construction traffic noise

The potential impact of construction road traffic noise to nearby residential receivers has been estimated using the United Kingdom Department of Environment's 'Calculation of Road Traffic Noise' (1988) method. The method uses the average 1-hour traffic volume for the 'assessment period' (i.e. day or night) to predict the $L_{10, 1\text{hour}}$ noise levels. A correction of -3dB(A) is applied to obtain the $L_{eq, 1\text{ hour}}$ noise levels which equate to the L_{Aeq} noise levels for the 'assessment period'.

For this assessment, the model has taken into account:

- traffic volume and heavy vehicle forecasts;
- posted vehicle speed;
- road gradient;
- ground reference levels of the road and receivers;
- separation distances of the road to receivers;
- ground type between the road and receivers; and
- angles of view of the road from the receiver's position.

For assessment purposes, residential receivers along O'Connell, Bent Street, Hunter Street, Pitt Street and Castlereagh Street are assumed to be a typical worst-case distance of 10m from the road.

Table 8.2 summarises the predicted construction traffic noise levels during day and night periods.

Table 8.2: Predicted traffic noise levels (with/ without construction)

Site	Road	Predicted noise level, dB(A)					
		Day period (7am to 10pm)			Night period (10pm to 7am)		
		Noise descriptor	No construction	With construction	Noise descriptor	No construction	With construction
Martin Place Station (MPL) Bligh Street	O'Connell Street	L _{Aeq} (15h)	61.3	62.1	L _{Aeq} (9h)	58.2	59.8
	Bent Street	L _{Aeq} (15h)	65.4	65.6	L _{Aeq} (9h)	61.9	62.3
	Hunter Street	L _{Aeq} (15h)	64.8	65.0	L _{Aeq} (9h)	62.2	62.6
Pitt Place Station (PIT) North	Pitt Street	L _{Aeq} (15h)	63.0	63.4	L _{Aeq} (9h)	61.7	62.2
	Castlereagh Street	L _{Aeq} (15h)	65.5	65.7	L _{Aeq} (9h)	62.4	62.4

Note: Bold text indicates more than 2dB(A) increase in traffic noise levels resulting from construction traffic.

The predicted road traffic noise levels indicate a less than 2dB(A) increase in overall day L_{Aeq}(15h) and night L_{Aeq}(9h) noise on the proposed heavy vehicle routes and so construction traffic is predicted to have minimal impact on the roads used to access/exit the site.

Predicted noise levels therefore comply with the traffic NMLs identified in Section 4.1.6.

8.3 Sleep disturbance

As presented in APPENDIX C Table C1, there are up to 4 heavy vehicle and 4 light vehicle movements per hour during the night. Although maximum noise levels associated with heavy vehicle movements along O'Connell, Bent Street, Hunter Street, Pitt Street and Castlereagh Street are expected to be above the sleep disturbance screening criterion, the predicted L_{Amax} levels would be similar to other heavy vehicles using these roads in the CBD.

8.4 Traffic noise mitigation and management

No additional mitigation or management measures are required when construction vehicles are on public roads, provided hourly traffic movements associated with construction are consistent with the assumptions outlined above.

9 Cumulative impacts

All concurrent Sydney Metro construction works have been considered and addressed in this CNVIS.

Other unrelated construction activities may occur within the vicinity of Sydney Metro works during standard construction hours.

The Sydney Metro Bligh Street site, along with the Martin Place North and South sites are occupied by Lendlease Group for the Integrated Station Development (ISD) works. The addition of the Systems Connect works to the workings being undertaken by Lendlease Group is unlikely to have a substantial cumulative impact as the site would only be used by Systems Connect as an access point for up to four heavy vehicles per hour, mostly outside standard construction hours so as not to conflict with the ISD works. The acoustic shed at Bligh Street has been designed to manage noise to within the NMLs for the site. Consequently, there would not be cumulative noise impact at receivers in between the Bligh Street site and Martin Place North site. The remainder of Systems Connect works at the Martin Place Station site are underground within the caverns and tunnels, with no resultant cumulative noise impact.

The Sydney Metro Pitt Street North and South sites are occupied by CPB Contractors for the Integrated Station Development (ISD) works. The concrete deliveries will be coordinated with the Pitt Street ISD contractor. Due to the space constraints the Systems Connect Linewide concreting works will not be occur concurrently with Pitt Street ISD contractors concreting works.

Predicted noise levels from the Pitt Street Station surface works during standard construction hours are more than 10 dB below the E37/E38 internal NMLs. Should concrete deliveries occur during standard hours, it is unlikely that there would be a substantial cumulative impact on noise generated by construction works associated with the Pitt Street North ISD. There are limited OOH activities associated with the Pitt Street ISD. The likelihood of OOH cumulative impact is low.

Systems Connect will endeavour to take all reasonable steps to collaborate with other Projects, including Martin Place ISD and Pitt Street ISD, to minimise cumulative noise and vibration impact where Systems Connect are above management levels and coordinate respite for affected sensitive receivers, whenever practicable.

10 Conclusion

Works associated with the C2S Martin Place Station and Pitt Street Station works have been identified and described in this report. Potentially affected noise and vibration sensitive receivers and relevant construction noise and vibration objectives have been identified and discussed to allow the assessment of potential construction impacts.

Construction noise

Expected construction noise levels have been predicted and presented in Section 5.2 and APPENDIX D. The expected duration of construction activities is outlined in Table C1 of APPENDIX C.

During the daytime/evening period (from 7am to 8pm), construction noise associated with the works is predicted to comply with Condition E38 at all sensitive receivers, as demonstrated in Section 5.2.1 and APPENDIX D.

During the evening/night time period (8pm to 7am), construction noise is predicted to comply with Conditions E41 and E42 at all assessed residential receivers, as demonstrated in Section 5.2.2 and APPENDIX D.

Noise mitigation and management measures have been presented in Section 5.3 to aid in managing noise impacts from the works.

Construction ground-borne noise and vibration

The risk of impact from construction generated ground-borne noise or vibration associated with the works at the Martin Place Station and Pitt Street Station sites is assessed as low to negligible.

Construction traffic

Construction traffic has been assessed, indicating compliance with construction-related road traffic noise objectives at all residential receiver locations.

References

- [1] Sydney Metro City & Southwest – Line Wide Works Contract Construction Noise and Vibration Management Plan (SMCSWLWC-SYC-1NL-PM-PLN-000032-A-CNVMP-C2B)
- [2] SLR Consulting Australia Pty Ltd 2016 Sydney Metro Chatswood to Sydenham - Technical Paper 2: Noise and Vibration Report Number 610.14718R1 – 28 April 2016
- [3] Department of Environment and Climate Change 2009 NSW Interim Construction Noise Guideline
- [4] Department of Environment Conservation NSW 2006 Assessing Vibration; a technical guideline
- [5] British Standard BS 7385 Part 2 1993, Evaluation and measurement for vibration in buildings. Guide to damage levels from groundborne vibration
- [6] German Standard DIN 4150-3:2016-12 Vibration in buildings – Part 3: Effects on structures
- [7] British Standard BS 6472-2008, Evaluation of human exposure to vibration in buildings (1-80Hz)
- [8] Transport for NSW Sydney Metro City & Southwest Construction Noise Strategy (ref: 610.14213-R3) 08 August 2016
- [9] Transport for NSW Construction Noise and Vibration Strategy (ref: 7TP-ST-157/4.0) May 2018
- [10] Transport for NSW Sydney Metro Construction Environmental Management Framework August 2016
- [11] Department of Environment, Climate Change and Water 2011 NSW Road Noise Policy
- [12] NSW Department of Planning – Development near rail corridors and busy road – interim guideline 2008
- [13] Eric Schreurs, Lex Browns and Deanna Tomerini – Maximum pass-by noise levels from vehicles in real road traffic streams: comparison to modelled levels and measurement protocol issues. Internoise 2011, Osaka Japan, September 4-7

APPENDIX A Glossary of terminology

The following is a brief description of the technical terms used to describe noise to assist in understanding the technical issues presented.

Adverse weather	Weather effects that enhance noise (that is, wind and temperature inversions) that occur at a site for a significant period of time (that is, wind occurring more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of the nights in winter).
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Assessment period	The period in a day over which assessments are made.
Assessment point	A point at which noise measurements are taken or estimated. A point at which noise measurements are taken or estimated.
Background noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation, when extraneous noise is removed. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L90 noise level (see below).
Decibel [dB]	The units that sound is measured in. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear 30dB A quiet library or in a quiet location in the country 45dB Typical office space. Ambience in the city at night 60dB CBD mall at lunch time 70dB The sound of a car passing on the street 80dB Loud music played at home 90dB The sound of a truck passing on the street 100dB The sound of a rock band 115dB Limit of sound permitted in industry 120dB Deafening
dB(A)	A-weighted decibels. The A-weighting noise filter simulates the response of the human ear at relatively low levels, where the ear is not as effective in hearing low frequency sounds as it is in hearing high frequency sounds. That is, low frequency sounds of the same dB level are not heard as loud as high frequency sounds. The sound level meter replicates the human response of the ear by using an electronic filter which is called the "A" filter. A sound level measured with this filter switched on is denoted as dB(A). Practically all noise is measured using the A filter.
dB(C)	C-weighted decibels. The C-weighting noise filter simulates the response of the human ear at relatively high levels, where the human ear is nearly equally effective at hearing from mid-low frequency (63Hz) to mid-high frequency (4kHz), but is less effective outside these frequencies.
Frequency	Frequency is synonymous to pitch. Sounds have a pitch which is peculiar to the nature of the sound generator. For example, the sound of a tiny bell has a high pitch and the sound of a bass drum has a low pitch. Frequency or pitch can be measured on a scale in units of Hertz or Hz.
Impulsive noise	Having a high peak of short duration or a sequence of such peaks. A sequence of impulses in rapid succession is termed repetitive impulsive noise.
Intermittent noise	The level suddenly drops to that of the background noise several times during the period of observation. The time during which the noise remains at levels different from that of the ambient is one second or more.
L _{Max}	The maximum sound pressure level measured over a given period.
L _{Min}	The minimum sound pressure level measured over a given period.

L ₁	The sound pressure level that is exceeded for 1% of the time for which the given sound is measured.
L ₁₀	The sound pressure level that is exceeded for 10% of the time for which the given sound is measured.
L ₉₀	The level of noise exceeded for 90% of the time. The bottom 10% of the sample is the L90 noise level expressed in units of dB(A).
L _{eq}	The "equivalent noise level" is the summation of noise events and integrated over a selected period of time.
Reflection	Sound wave changed in direction of propagation due to a solid object obscuring its path.
SEL	Sound Exposure Level (SEL) is the constant sound level which, if maintained for a period of 1 second would have the same acoustic energy as the measured noise event. SEL noise measurements are useful as they can be converted to obtain L _{eq} sound levels over any period of time and can be used for predicting noise at various locations.
Sound	A fluctuation of air pressure which is propagated as a wave through air.
Sound absorption	The ability of a material to absorb sound energy through its conversion into thermal energy.
Sound level meter	An instrument consisting of a microphone, amplifier and indicating device, having a declared performance and designed to measure sound pressure levels.
Sound pressure level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone.
Sound power level	Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power.
Tonal noise	Containing a prominent frequency and characterised by a definite pitch.

APPENDIX B **Nearest sensitive receivers and noise management levels**

Table B1: Noise sensitive receivers and construction noise management levels

MARTIN PLACE AND PITT STREET

NCA	work area	Receiver Type	Reference RBL	Existing Noise Levels, dB(A)			Residential NMLs based on ICNG (external)				Sleep Dist. L _{Amax}		Comments
Portion 2 & 3	Chatswood to Sydenham (C2S)												
MP_01	Martin Place Station	Residential CBD	C2S EIS B.11	61	56	52	71	66	61	57	67	65	
MP_02	Martin Place Station	Residential CBD	C2S EIS B.11	61	56	52	71	66	61	57	67	65	
MP_03	Martin Place Station	Residential CBD	C2S EIS B.11	61	56	52	71	66	61	57	67	65	
MP_04	Martin Place Station	Residential CBD	C2S EIS B.11	61	56	52	71	66	61	57	67	65	
PS_01	Pitt Street Shaft	Residential CBD	RTA TH208	59	57	53	69	64	62	58	68	65	
PS_02	Pitt Street Shaft	Residential CBD	RTA TH208	59	57	53	69	64	62	58	68	65	
PS_03	Pitt Street Shaft	Residential CBD	RTA TH208	59	57	53	69	64	62	58	68	65	
PS_04	Pitt Street Shaft	Residential CBD	RTA TH208	59	57	53	69	64	62	58	68	65	
PS_05	Pitt Street Shaft	Residential CBD	RTA TH208	59	57	53	69	64	62	58	68	65	
Other sensitive receivers													
Studio building (music recording studio)							45	45	45	45	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Studio building (film or television studio)							50	50	50	50	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Cinema space, theatre, auditorium							55	55	55	55	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Hotel (Sleeping areas: Hotels near major roads)							60	60	60	60	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Classrooms at schools and other educational institutions							55	55	55	55	Source: ICNG, assuming a conservative façade loss of 10 dB(A)		
Chilcare centre (internal play and sleeping areas)							50	50	50	50	Source: AAAC - guideline for Child Care Centre Acoustic Assessment, assuming a conservative façade loss of 10 dB(A)		
Hospital wards and operating theatres							65	65	65	65	Source: ICNG, assuming a conservative façade loss of 20 dB(A)		
Places of worship							55	55	55	55	Source: ICNG, assuming a conservative façade loss of 10 dB(A)		
Library (reading areas)							65	65	65	65	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Office building (general office areas)							65	65	65	65	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Hotel (bars and lounges)							70	70	70	70	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Community centres – Municipal Buildings							60	60	60	60	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 10 dB(A)		
Restaurant, bar (Bars and lounges/ Restaurant)							70	70	70	70	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Railway platform and concourse areas							75	75	75	75	Source: AS2107 ‘maximum’, assuming a conservative façade loss of 20 dB(A)		
Café/ Restaurant/ Bar (outdoors)							60	60	60	60	Source: AS2107 ‘maximum1’		
Passive recreation areas (e.g. area used for reading, meditation)							60	60	60	60	Source: ICNG		
Active recreation areas (e.g. sports fields)							65	65	65	65	Source: ICNG		
Commercial premises (including offices and retail outlets)							70	70	70	70	Source: ICNG		
Industrial premises							75	75	75	75	Source: ICNG		

Notes:

1 - Levels are estimated assuming an open windows (i.e. 10dBA façade loss)

D(S): standard construction hours from 7 am to 6 pm Monday to Friday and from 8 am to 6 pm Saturday

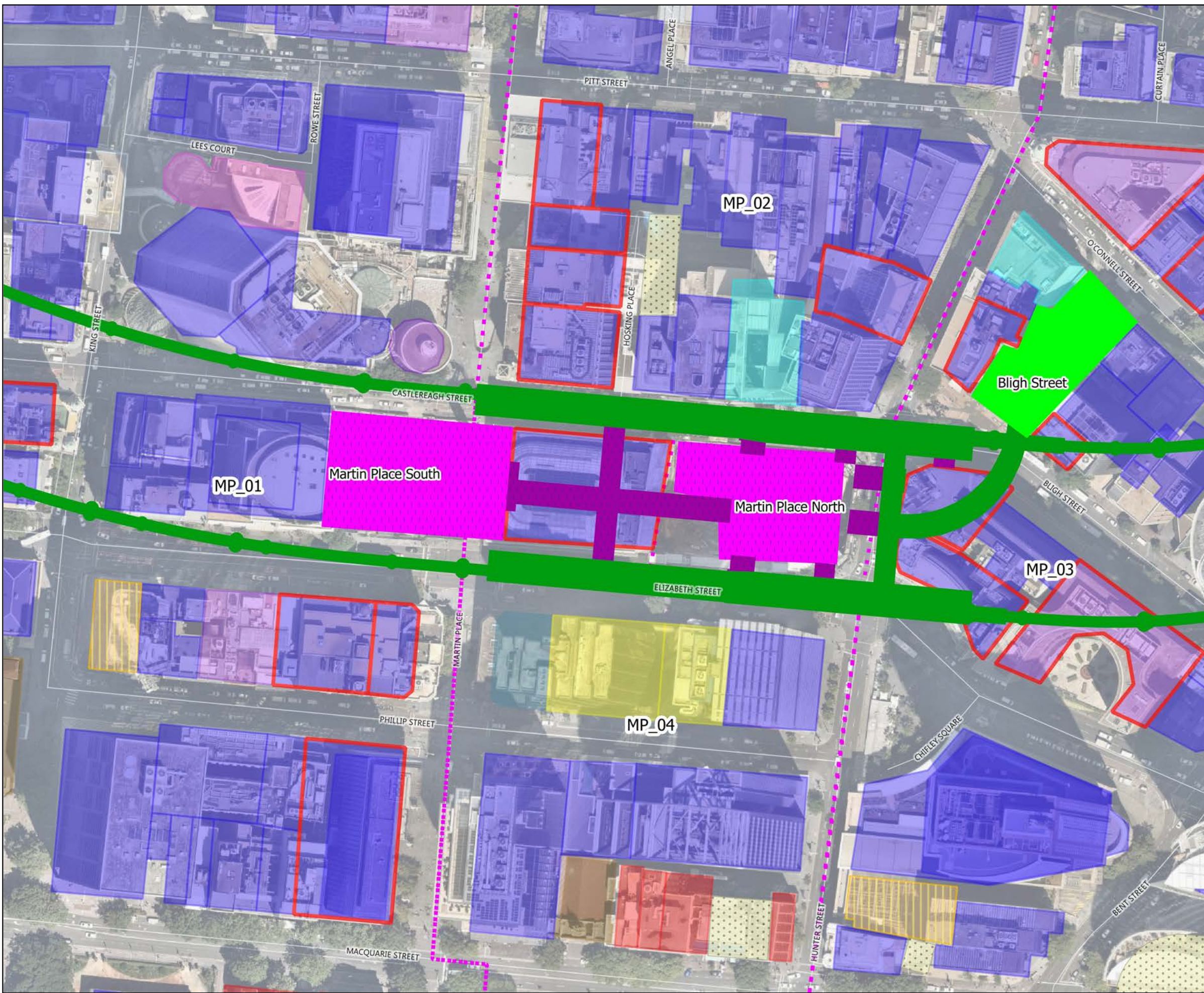
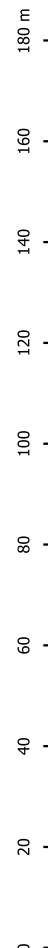
D(O): out-of-hours day period from 8 am to 6 pm Sunday and Public holidays - OOHW P1

E: evening period from 6 pm to 10 pm Monday to Sunday - OOHW P1

NS: night shoulder period from 10 pm to 12 am Monday to Sunday - OOHW P1

N: night-time period from 10 pm to 7 am Monday to Friday, from 10 pm am to 8 am Saturday, Sunday and Public holidays - OOHW P2

MS: morning shoulder period from 5 am to 7 am Monday to Friday, from 6 am to 8 am Saturday, Sunday and Public holidays - OOHW P1



LEGEND

Noise sensitive receivers

- | | | | |
|---|------------------------|---|---------------------|
|  | Childcare |  | Theatre/Auditorium |
|  | Commercial |  | Mixed use |
|  | Educational |  | Project acquisition |
|  | Hotel/Motel/Hostel |  | Film/TV studio |
|  | Industrial |  | Cinema |
|  | Medical |  | Community centre |
|  | Place of Worship |  | Library |
|  | Recording studio |  | Laboratory |
|  | Recreational - Active |  | Other |
|  | Recreational - Passive |  | Heritage |
|  | Residential | | |

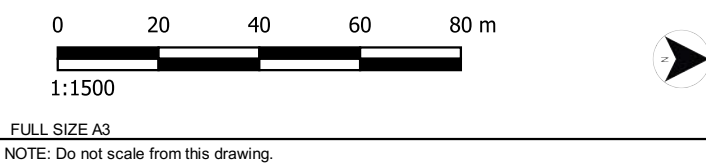


Sites

- | | |
|---|---|
|  | Martin Place ISD |
|  | Martin Place ISD (Adit) |
|  | Systems Connect surface access via Bligh Street decline - entry at O'Connell Street |
|  | Systems Connect tunnel access / Work area |



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CLIENT



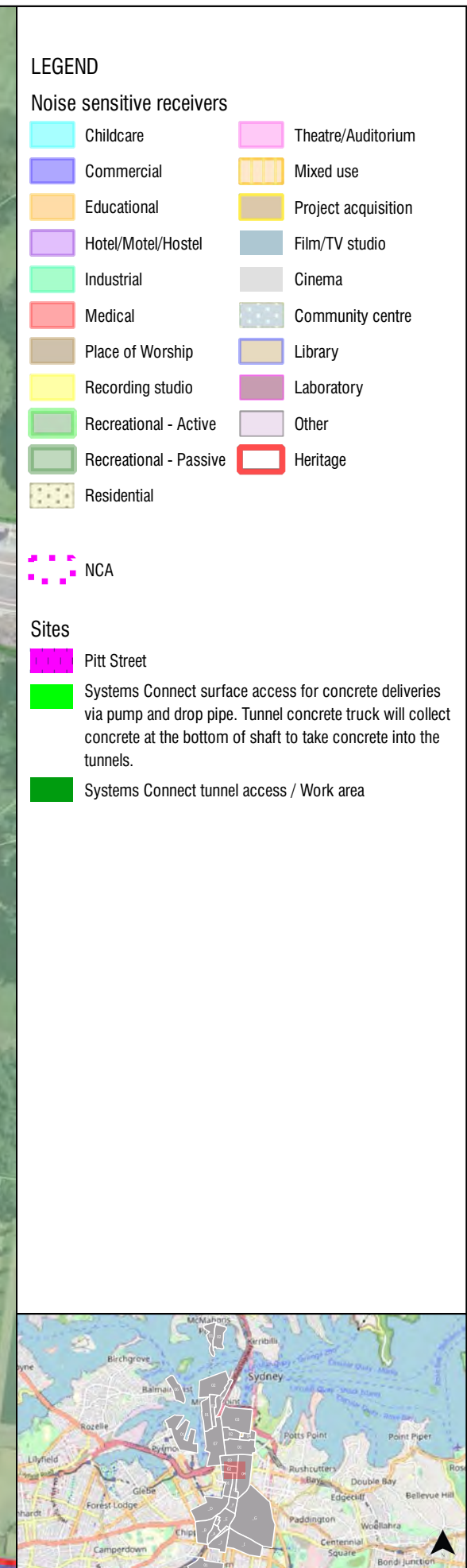
ACOUSTIC CONSULTANT



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	SYDNEY METRO
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Martin Place Station site
Land Use, NCAs



SYDNEY METRO	
Pit Street Station site Land Use, NCAs	
Sheet 1 of 1	

APPENDIX C **Construction details**

C.1 Construction timetable/ activities/ management

Table C1-1: Construction Timetable/ Activities/ Equipment MARTIN PLACE

Work acitvity	Details	Indicative timing/ duration	Modelling ID	Plant/ Equipment	Plant/ Equipment (as provided by client)	Day	Evening	Night	Sound Power Level (Lw re: 1pW) in Noise Model, dB(A)			High noise plant (EPL E1)	Vibration intensive plant	Notes	
						7am - 6pm	6pm - 10pm	10pm - 7am	L _{Aeq}	Penalty	L _{Amax}				
MARTIN PLACE STATION - access via the Bligh St decline and O'Connell St.															
Surface activities	Delivering and removing equipment, machinery and materials	December 2020 to August 2022		Delivery truck	Delivery truck	4 p.h.	4 p.h.	4 p.h.	106	-	111	-	-		
				Concrete Aqi	Concrete truck				108	-	111	-	-		
				Light vehicles / traffic control utes	Traffic control utes				89	-	100	-	-		
Tunnel Support Systems (surface)	Ventilation	December 2020 to August 2022		Ventilation fan (Zitron ZVN 1-22-315/6) with silencer/treatment	Vent Fan	2	2	2	Discharge: 98 Case-radiated: 106			-	-	Inside acoustic shed with intakes through dampened acoustic louvers	
TRACK WORKS - underground, within cavern and tunnels															
Material movement	Movement of plant and materials through tunnels	December 2020 to January 2021		Truck and Dog	Truck	4 p.h.	4 p.h.	4 p.h.	106	-	111	-	-		
				Front end loader	Front end loader	1	1	1	110	-	115	-	-		
				Excavator w bucket (25t)	Excavator 20T	1	1	1	103	-	108	-	-		
Tunnel Track Deliveries	Unloading deliveries coming in from Bligh St decline	January 2021 to April 2022		Truck and Dog	Truck	1	1	1	106	-	111	-	-		
				Telehandler / Franna crane (20t)	Mobile crane (Franna)	1	1	1	99	-	103	-	-		
				Telehandler / Franna crane (20t)	Telehandler	2	2	2	99	-	103	-	-		
				Handtool - hammer	Hand held tools	1	1	1	105	-	118	HN	-		
				Excavator w bucket (25t)	Excavator 20T	1	1	1	103	-	108	-	-		
Tunnel Track Activities	Track Construction	January 2021 to April 2022		Works train	Rail set (train)	Various	Various	Various	115	-	118	-	-		
				Telehandler / Franna crane (20t)	Telehandler	2	2	2	99	-	103	-	-		
				Excavator w bucket (25t)	Rubber tyre Excavator 20T	4 p.h.	4 p.h.	4 p.h.	103	-	108	-	-		
				Front end loader	Front end loader	1	1	1	110	-	115	-	-		
				-	Rail trolley	1	1	1	-	-	-	-	-		
		April 2022		Hand tools	Hand tools	2	2	2	105	-	111	-	-	-	
				Hand tools - Electric saw	Hand held saw	2	2	2	107	-	118	HN	-	-	
				Concrete Aqi	Hi-Ab Truck (Hi-Rail)/concrete truck	4 p.h.	4 p.h.	4 p.h.	108	-	111	-	-		
				Concrete pump	Concrete pump	1	1	1	103	-	107	-	-		
				Welding tools /oxy	Exothermic welding set-up	1	1	1	102	-	105	-	-		
				Handtool - grinder	Grinder	2	2	2	107	-	118	HN	-		
				Light vehicles / traffic control utes	Light vehicle	4 p.h.	4 p.h.	4 p.h.	89	-	100	-	-		
TUNNEL FITOUT WORKS - underground, within tunnels															
Tunnel Drilling		November 2021 to January 2022		Gantry crane (electric) 50T	Drill Gantry	1	1	1	90	-	96	-	-		
Pour Concrete Upstands (inside Tunnels)		April 2021 to May 2022		Light vehicles / traffic control utes	Light vehicle	2	2	2	-	-	-	-	-		
				Concrete Aqi	Concrete truck deliveries	4 per day	4 per day	4 per day	108	-	111	-	-		
				Concrete pump	Concrete pump	1	1	1	103	-	107	-	-		
				Concrete vibrator	Concrete vibrator	2	2	2	97	-	100	-	-		
				Handtool - hammer	Hand held tools	Various	Various	Various	105	-	118	HN	-		
				Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-		
				Pump	Sump Pump	2	2	2	104	-	107	-	-		
				FST Floating Slab installation (inside Tunnels)	Installation of Slabs; bearers and concrete upstands	May 2021 to June 2022		Truck and Dog	Rigid truck deliveries	4 per day	4 per day	4 per day	106	-	111
Rising Main Installation (inside Tunnels)	Installation of Pipes	September 2020 to December 2022		Mobile crane (20t-250t)	Mobile Crane	1	1	1	104	-	108	-	-		
				Hand tools	Hand tools	Various	Various	Various	105	-	111	-	-		
				Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-		
				Pump	Sump Pump	2	2	2	104	-	107	-	-		
				Light vehicles / traffic control utes	Light vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-		
				EWP (Hi-Rail)	EWP (Hi-Rail)	2	2	2	95	-	98	-	-		
				Welding tools /oxy	Butt Fusion Welding Rig	1	1	1	102	-	105	-	-		
	Pressure Testing of Rising Main	September 2020 to December 2022		Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-		
				Pump	Sump Pump	2	2	2	104	-	107	-	-		
				Lighting tower	Lighting Tower	4	1	1	99	-	102	-	-		
				Light vehicles / traffic control utes	Light vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-		
				Pump	Sump Pump	2	2	2	104	-	107	-	-		
				Cross Passage Fitout (inside Tunnels)	Base Slab and Blockwork Wall Construction	January 2021 to April 2021		Hand tools - Electric saw	Electric Saw	6	6	6	107		-
Hand tools	Hand Tools	6	6	6	105	-	111	-	-						
Handtool - grinder	Grinder	6	6	6	107	-	118	HN	-						
Crane (Grove GMK5130)	Mobile Crane 25t	2	2	2	105	-	103	-	-						
Concrete truck and pump	Concrete truck and pump	1	1	1	111	-	114	-	-						
Concrete vibrator	Concrete vibrator	6	6	6	97	-	100	-	-						
Hiab	Hiab Truck	4	4	4	98	-	102	-	-						
Light vehicles / traffic control utes	Light Vehicle	6	6	6	89	-	100	-	-						
Handtool - drill	Drill	1	1	1	107	-	118	-	-						
Tunnel Fitout (inside Tunnels)	Anchor Drilling Works	April 2021 to July 2022		Vacuum truck	Vacuum	6	6	6	107	-	111	-	-		
Walkway, Handrail, CSR, Noise Attenuation & OHW Installation	April 2021 to July 2022		Generator	Generator	6	6	6	94	-	95	-	-			
			Compressor	Compressor	1	1	1	102	-	103	-	-			
			Light vehicles / traffic control utes	Light Vehicle	1	1	1	89	-	100	-	-			
			Hand tools - Electric saw	Electric Saw	4	4	4	107	-	118	HN	-			
			Hand tools	Hand Tools	Various	Various	Various	105	-	111	-	-			
			Handtool - grinder	Grinder	4	4	4	107	-	118	HN	-			
			Crane (Grove GMK5130)	Mobile Crane 25t	1	1	1	105	-	103	-	-			
			Hiab	Hiab Truck (Hi-Rail)	4 per hour	4 per hour	4 per hour	98	-	102	-	-			
			Light vehicles / traffic control utes	Light Vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-			
			EWP (Hi-Rail)	EWP (Hi-Rail)	4	4	4	95	-	98	-	-			

Figure C1-1: Site Layout

MARTIN PLACE

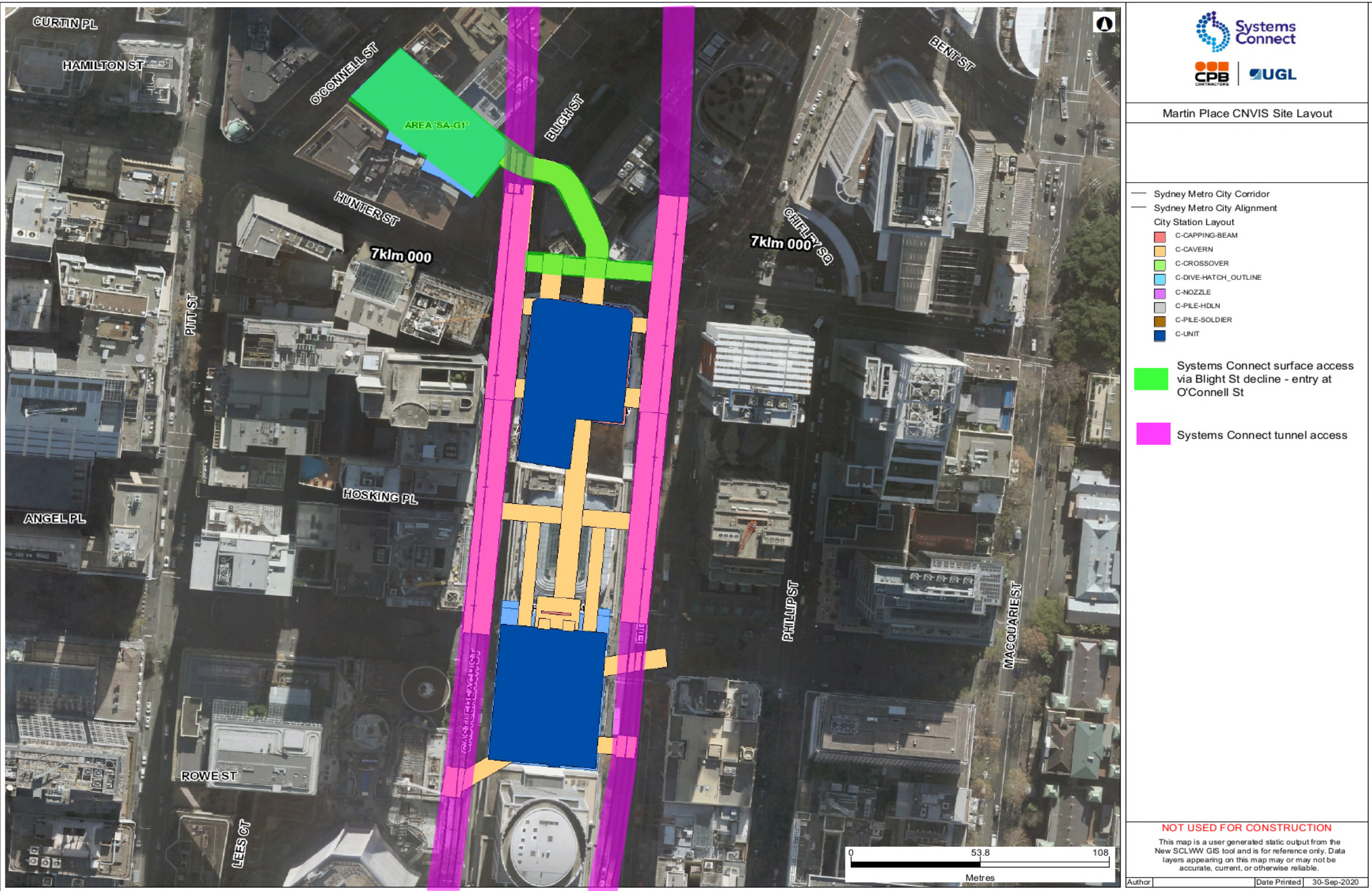


Table C1-2: Construction Timetable/ Activities/ Equipment PITT STREET

Work acitivity	Details	Indicative timing/ duration	Modelling ID	Plant/ Equipment	Plant/ Equipment (as provided by client)	Day	Evening	Night	Sound Power Level (Lw re: 1pW) in Noise Model, dB(A)			High noise plant (EPL E1)		Vibration intensive plant	Notes			
						7am - 6pm	6pm - 10pm	10pm - 7am	L _{Aeq}	Penalty	L _{Amax}							
PITT STREET STATION																		
Surface activities	Concrete deliveries	December 2020 to July 2022		Concrete pump	Concrete pump	1	1	1	103	-	107	-	-					
				Concrete Aqi	Concrete truck	4 p.h.	4 p.h.	4 p.h.	108	-	111	-	-					
				Light vehicles / traffic control utes	Traffic control utes	4	4	4	89	-	100	-	-					
	Bottom of station shaft	December 2020 to July 2022		Concrete Aqi	Tunnel concrete truck	4 p.h.	4 p.h.	4 p.h.	108	-	111	-	-					
Tunnel Support Systems (surface)	Ventilation	December 2020 to August 2022		Light vehicles / traffic control utes	Light vehicle	2	2	2	89	-	100	-	-					
				Ventilation fan (AVH-R160.160.8) with silencer	Vent Fan	2	2	2	95	-	96	-	-	inlet/ outlet				
							91	-	92	-	-	Case radiated						
TRACK WORKS - underground, within tunnels																		
Material movement	Movement of plant and materials through tunnels	December 2020 to January 2021		Truck and Dog	Truck	4 p.h.	4 p.h.	4 p.h.	106	-	111	-	-					
				Front end loader	Front end loader	1	1	1	110	-	115	-	-					
				Excavator w bucket (25t)	Excavator 20T	1	1	1	103	-	108	-	-					
Tunnel Track Activities	Track Construction	February 2021 to April 2022		Works train	Rail set (train)	1	1	1	115	-	118	-	-					
				Telehandler / Franna crane (20t)	Telehandler	1	1	1	99	-	103	-	-					
				Excavator w bucket (25t)	Rubber tyre Excavator 20T	2	2	2	103	-	108	-	-					
				Front end loader	Front end loader	1	1	1	110	-	115	-	-					
				-	Rail trolley	1	1	1	-	-	-	-	-					
				Hand tools	Hand tools	Various	Various	Various	105	-	111	-	-					
				Hand tools - Electric saw	Hand held saw	2	2	2	107	-	118	HN	-					
				Concrete Aqi	Hi-Ab Truck (Hi-Rail)/concrete truck	4 p.h.	4 p.h.	4 p.h.	108	-	111	-	-					
				Concrete pump	Concrete pump	1	1	1	103	-	107	-	-					
				Welding tools /oxy	Exothermic welding set-up	1	1	1	102	-	105	-	-					
				Handtool - grinder	Grinder	2	2	2	107	-	118	HN	-					
				Light vehicles / traffic control utes	Light vehicle	4 p.h.	4 p.h.	4 p.h.	89	-	100	-	-					
TUNNEL FITOUT WORKS - underground, within tunnels																		
Tunnel Drilling		November 2021 to January 2022		Gantry crane (electric) 50T	Drill Gantry	1	1	1	90	-	96	-	-					
Pour Concrete Upstands (inside Tunnels)		April 2021 to May 2022		Light vehicles / traffic control utes	Light vehicle	2	2	2	-	-	-	-	-					
				Concrete Aqi	Concrete truck deliveries	4 per day	4 per day	4 per day	108	-	111	-	-					
				Concrete pump	Concrete pump	1	1	1	103	-	107	-	-					
				Concrete vibrator	Concrete vibrator	2	2	2	97	-	100	-	-					
				Handtool - hammer	Hand held tools	Various	Various	Various	105	-	118	HN	-					
				Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-					
				Pump	Sump Pump	2	2	2	104	-	107	-	-					
FST Floating Slab installation (inside Tunnels)	Installation of Slabs; bearers and concrete upstands	May 2021 to June 2022		Truck and Dog	Rigid truck deliveries	4 per day	4 per day	4 per day	106	-	111	-	-					
				Mobile crane (20t-250t)	Mobile Crane	1	1	1	104	-	108	-	-					
				Hand tools	Hand tools	Various	Various	Various	105	-	111	-	-					
				Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-					
				Pump	Sump Pump	2	2	2	104	-	107	-	-					
				Light vehicles / traffic control utes	Light vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-					
Rising Main Installation (inside Tunnels)	Installation of Pipes	September 2020 to December 2022		EWP (Hi-Rail)	EWP (Hi-Rail)	2	2	2	95	-	98	-	-					
				Welding tools /oxy	Butt Fusion Welding Rig	1	1	1	102	-	105	-	-					
				Hand Tool - Nail Gun	Explosive Power Tools	4	4	4	106	5	116	HN	-					
				Pump	Sump Pump	2	2	2	104	-	107	-	-					
	Pressure Testing of Rising Main	September 2020 to December 2022		Lighting tower	Lighting Tower	4	1	1	99	-	102	-	-					
				Light vehicles / traffic control utes	Light vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-					
				Pump	Sump Pump	2	2	2	104	-	107	-	-					
				Hand tools - Electric saw	Electric Saw	6	6	6	107	-	118	HN	-					
Cross Passage Fitout (inside Tunnels)	Base Slab and Blockwork Wall Construction	January 2021 to April 2021		Hand tools	Hand Tools	6	6	6	105	-	111	-	-					
				Handtool - grinder	Grinder	6	6	6	107	-	118	HN	-					
				Crane (Grove GMK5130)	Mobile Crane 25t	2	2	2	105	-	103	-	-					
				Concrete truck and pump	Concrete truck and pump	1	1	1	111	-	114	-	-					
				Concrete vibrator	Concrete vibrator	6	6	6	97	-	100	-	-					
				Hiab	Hiab Truck	4	4	4	98	-	102	-	-					
				Light vehicles / traffic control utes	Light Vehicle	6	6	6	89	-	100	-	-					
				Drill	Drill	1	1	1	107	-	118	-	-					
				Tunnel Fitout (inside Tunnels)	Anchor Drilling Works	April 2021 to July 2022		Vacuum truck	Vacuum	6	6	6	107	-	111	-	-	
								Generator	Generator	6	6	6	94	-	95	-	-	
Compressor	Compressor	1	1					1	102	-	103	-	-					
Light vehicles / traffic control utes	Light Vehicle	1	1					1	89	-	100	-	-					
Walkway, Handrail, CSR, Noise Attenuation & OHW Installation	April 2021 to July 2022		Hand tools - Electric saw		Electric Saw	4	4	4	107	-	118	HN	-					
			Hand tools		Hand Tools	Various	Various	Various	105	-	111	-	-					
			Handtool - grinder		Grinder	4	4	4	107	-	118	HN	-					
			Crane (Grove GMK5130)		Mobile Crane 25t	1	1	1	105	-	103	-	-					
			Hiab		Hiab Truck (Hi-Rail)	4 per hour	4 per hour	4 per hour	98	-	102	-	-					
			Light vehicles / traffic control utes		Light Vehicle	4 per hour	4 per hour	4 per hour	89	-	100	-	-					
EWP (Hi-Rail)	EWP (Hi-Rail)	4	4	4	95	-	98	-	-									

Figure C1-2: Site Layout

PITT STREET



APPENDIX D Detailed predicted noise levels

The detailed predicted levels have been provided to Systems Connect in a spreadsheet table in order to more adequately mitigate and manage potential noise impacts.

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
MP_01	36 YORK STREET SYDNEY	Residential	71	-	61	-	57	-
MP_02	5 HOSKING PLACE SYDNEY	Residential	71	36	61	36	57	36
MP_03	2 BOND STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	4 BRIDGE STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	38-42 BRIDGE STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	127-131 MACQUARIE STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	155 MACQUARIE STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	171-173 MACQUARIE STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	42-44 MARGARET STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	2-4 PHILLIP STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	2 YORK STREET SYDNEY	Residential	71	-	61	-	57	-
MP_03	5020 CAHILL EXPRESSWAY THE ROCKS	Residential	71	-	61	-	57	-
MP_03	182B CUMBERLAND STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	184 CUMBERLAND STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	184A CUMBERLAND STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	186 CUMBERLAND STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	186A CUMBERLAND STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	96-118 GLOUCESTER STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	96-118 GLOUCESTER STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	185 GLOUCESTER STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	195 GLOUCESTER STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	129-135 HARRINGTON STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_03	137 HARRINGTON STREET THE ROCKS	Residential	71	-	61	-	57	-
MP_04	185 MACQUARIE STREET SYDNEY	Residential	71	-	61	-	57	-
OSR	5010 ABERCROMBIE LANE SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 ALFRED STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	31 ALFRED STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	33 ALFRED STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 ANGEL PLACE SYDNEY	Theatre/Auditorium	50	-	50	-	50	-
OSR	1A ASH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1B ASH STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	1 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	2-6 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	3 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5-7 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	11 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	16-20 BARRACK STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	21 BENT STREET SYDNEY	Commercial	70	50	70	50	70	50
OSR	25 BENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5001 BENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 BLIGH STREET SYDNEY	Commercial	70	51	70	51	70	51
OSR	2 BLIGH STREET SYDNEY	Hotel/Motel/Hostel	60	54	60	54	60	54
OSR	4-6 BLIGH STREET SYDNEY	Commercial	70	58	70	58	70	58
OSR	27 BLIGH STREET SYDNEY	Commercial	70	45	70	45	70	45
OSR	29 BLIGH STREET SYDNEY	Commercial	70	63	70	63	70	63
OSR	37 BLIGH STREET SYDNEY	Commercial	70	62	70	62	70	62
OSR	10-20 BOND STREET SYDNEY	Commercial	70	37	70	37	70	37
OSR	5-11 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	6 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	10 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	13-15A BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	17-19 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	20 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	21 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	23-33 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	35-39 BRIDGE STREET SYDNEY	Commercial	70	49	70	49	70	49
OSR	MACQUARIE PLACE PARK	Recreational - Passive	60	-	60	-	60	-
OSR	41 BRIDGE STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	44 BRIDGE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	50 BRIDGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	6-8 BULLETIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	10-14 BULLETIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	16-18 BULLETIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	2-12 CARRINGTON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	30-32 CARRINGTON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	34-36 CARRINGTON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	50 CARRINGTON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	54-62 CARRINGTON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1-7 CASTLEREAGH STREET SYDNEY	Commercial	70	52	70	52	70	52
OSR	9 CASTLEREAGH STREET SYDNEY	Childcare	55	48	55	48	55	48
OSR	15 CASTLEREAGH STREET SYDNEY	Childcare	55	38	55	38	55	38
OSR	17 CASTLEREAGH STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	27-39 CASTLEREAGH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	41-45 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	44-62 CASTLEREAGH STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	64 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	67-71 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	70 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	73-75 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	84-110 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	2 CHIFLEY SQUARE SYDNEY	Commercial	70	49	70	49	70	49
OSR	8-12 CHIFLEY SQUARE SYDNEY	Commercial	70	52	70	52	70	52
OSR	26-38 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	56 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	60-62 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	64 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	66-74 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	76-80 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	100-102 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	142 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	152-156 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	158-166 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	187-191 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	193-195 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	197 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	199 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	201-203 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	205 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	207 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	209-211 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	213 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	215-217 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	225-233 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	235-239 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 COUNCIL PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 COUNCIL PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 CURTIN PLACE SYDNEY	Commercial	70	35	70	35	70	35
OSR	6 DALLEY STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	8-14 DALLEY STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 DALLEY STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 DALLEY STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	5010 DE MESTRE PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	60-70 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	75-85 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	82-88 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	87-105 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	102 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	107-111 ELIZABETH STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	1 FARRER PLACE SYDNEY	Commercial	70	48	70	48	70	48
OSR	9 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	174-176A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	178-186 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	178A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	210-214 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	218-232 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	234-242 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	243-257 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	244-246 GEORGE STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	248-252 GEORGE STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	261 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	263 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	264-278 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	265-273 GEORGE STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	275-281 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	280-288 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	283 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	285-287 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs

MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-307 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	296 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	298-302 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	301 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	309-315 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	312 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	314-318 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	317 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	319-321 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	320-328 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	323-325 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	327-329 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	328A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	330 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	331 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	331-339 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	333-339 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	339A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	341 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	343 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	343A GEORGE STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	345-355 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	350 GEORGE STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	354-360 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	357-363 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	365 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	369-373 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	375-377 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	387 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	388 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	389 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	391-393 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	395 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	396 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	397 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	399-411 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	400 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	412-414A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	420 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	423-427 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	424-430 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	429-481 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	432-450 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	450A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	24A GROSVENOR STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5 HUNTER STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5 HUNTER STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	7-13 HUNTER STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	10-14 HUNTER STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	15-17 HUNTER STREET SYDNEY	Hotel/Motel/Hostel	60	37	60	37	60	37
OSR	16-28 HUNTER STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	19-21 HUNTER STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	23 HUNTER STREET SYDNEY	Commercial	70	56	70	56	70	56
OSR	30-32 HUNTER STREET SYDNEY	Hotel/Motel/Hostel	60	34	60	34	60	34
OSR	33-39 HUNTER STREET SYDNEY	Commercial	70	52	70	52	70	52
OSR	44-48 HUNTER STREET SYDNEY	Commercial	70	55	70	55	70	55
OSR	50-58 HUNTER STREET SYDNEY	Commercial	70	47	70	47	70	47

Table D.1: Predicted construction noise levels assessed to ICNG NMLs

MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	66 HUNTER STREET SYDNEY	Commercial	70	62	70	62	70	62
OSR	68-96 HUNTER STREET SYDNEY	Commercial	70	51	70	51	70	51
OSR	11-19 JAMISON STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	16-32 JAMISON STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	364-372 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	44 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	46-52 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	58-68 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	69-75 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	77 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	77A KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	106 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	119 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	129 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	135 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	147 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	148-160 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	153 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	155-159 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	173 KING STREET SYDNEY	Place of Worship	55	-	55	-	55	-
OSR	5070 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	LANG PARK	Recreational - Passive	60	-	60	-	60	-
OSR	106 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	2-10 LOFTUS STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	12-14 LOFTUS STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	16-20 LOFTUS STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	31A LOFTUS STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	1 MACQUARIE PLACE SYDNEY	Educational	55	-	55	-	55	-
OSR	6 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	7-15 MACQUARIE PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	8 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	10 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	10 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	10A MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	12 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	12 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	27-31 MACQUARIE PLACE SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs

MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	89-91 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	93-97 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	93-97 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	97A MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	99-113 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	115-119 MACQUARIE STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	133 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	135-137 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	139-141 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	143 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	145 MACQUARIE STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	147 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	151-153 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	167 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	175 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	183 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	187-191 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	193 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	195 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	197 MACQUARIE STREET SYDNEY	Place of Worship	55	-	55	-	55	-
OSR	225 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	229-231 MACQUARIE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	233 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	235 MACQUARIE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	237-241 MACQUARIE STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	50 MARGARET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5040 MARGARET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	22 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	30-32 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	68 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	2A MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	4-10 MARTIN PLACE SYDNEY	Commercial	70	36	70	36	70	36
OSR	5 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	10A-16 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	18-30A MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	19 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs

MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	19 MARTIN PLACE SYDNEY (Outdoor eating	Café/ Restaurant	70	-	70	-	70	-
OSR	19 MARTIN PLACE SYDNEY (Underground fo	Café/ Restaurant	70	-	70	-	70	-
OSR	38-46 MARTIN PLACE SYDNEY	Commercial	70	34	70	34	70	34
OSR	50 MARTIN PLACE SYDNEY	Commercial	70	45	70	45	70	45
OSR	52-56 MARTIN PLACE SYDNEY	Recording studio	50	34	50	34	50	34
OSR	52-56 MARTIN PLACE SYDNEY	Commercial	70	49	70	49	70	49
OSR	53-63 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	58-60 MARTIN PLACE SYDNEY	Commercial	70	35	70	35	70	35
OSR	65 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	1-15 O'CONNELL STREET SYDNEY	Educational	55	60	55	60	55	60
OSR	6-10 O'CONNELL STREET SYDNEY	Commercial	70	53	70	53	70	53
OSR	12-14 O'CONNELL STREET SYDNEY	Commercial	70	62	70	62	70	62
OSR	16 O'CONNELL STREET SYDNEY	Commercial	70	68	70	68	70	68
OSR	19-21 O'CONNELL STREET SYDNEY	Commercial	70	65	70	65	70	65
OSR	23-25 O'CONNELL STREET SYDNEY	Commercial	70	69	70	69	70	69
OSR	28-34 O'CONNELL STREET SYDNEY	Childcare	55	66	55	66	55	66
OSR	4 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	14 PHILLIP LANE SYDNEY	Commercial	70	-	70	-	70	-
OSR	50 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	52-54 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	56-70 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	88 PHILLIP STREET SYDNEY	Commercial	70	47	70	47	70	47
OSR	126 PHILLIP STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	132-144 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	165 PHILLIP STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	169-171 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	170-172 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	174-176 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	178-180 PHILLIP STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	18A PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	19-31 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	31A PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	33-35 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	37-49 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	38-40 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	42-44 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	46-54 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	49A-57 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	58 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	60 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	62 PITT STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	64-66 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	67	60	67	60	67
OSR	68 PITT STREET SYDNEY	Commercial	70	55	70	55	70	55
OSR	69-73 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	70 PITT STREET SYDNEY	Commercial	70	47	70	47	70	47
OSR	72 PITT STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	74 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	75-77 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	76-78 PITT STREET SYDNEY	Commercial	70	42	70	42	70	42
OSR	80-82A PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	84 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	86-88 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	87-95 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	90 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	92-94 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	97-99 PITT STREET SYDNEY	Commercial	70	42	70	42	70	42
OSR	103-105 PITT STREET SYDNEY	Commercial	70	53	70	53	70	53
OSR	107 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	109 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	109 PITT STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	109 PITT STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	115 PITT STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	115A PITT STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	122-122B PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	123 PITT STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	124-136 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	125 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	138-140 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	142-144 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	158-160 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	159 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	165 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	173-179 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	181 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	182 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	4030 PITT STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	1 PRINCE ALBERT ROAD SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 SHAKESPEARE PLACE SYDNEY	Educational	55	-	55	-	55	-
OSR	5030 SHAKESPEARE PLACE SYDNEY	Educational	55	-	55	-	55	-
OSR	3 SPRING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	8 SPRING STREET SYDNEY	Commercial	70	53	70	53	70	53
OSR	10-14 SPRING STREET SYDNEY	Commercial	70	58	70	58	70	58
OSR	16 SPRING STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	6-8 UNDERWOOD STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	4-6 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	11-17 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	14-16 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	18-20 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	19 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	22-26 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	30 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	32-34 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	33-35A YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	37 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	38-40 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	39-41 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	43 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	45-47 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	46-48 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	49-51 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	50-54 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	55 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	56-58 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	60-62 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	61 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	63 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	65-69 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	68 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	71 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	73 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	75 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs

MARTIN PLACE STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Land Use	NML	MPL_DE	NML	MPL_DE	NML	MPL_DE
OSR	77-79 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	81 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	83-87 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	89-89B YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	91-91A YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	93 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5A YOUNG STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	9-13 YOUNG STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	15-17 YOUNG STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	36-38 YOUNG STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	40-42 YOUNG STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	46C YOUNG STREET SYDNEY	Commercial	70	47	70	47	70	47
OSR	176 CUMBERLAND STREET THE ROCKS	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	182-182A CUMBERLAND STREET THE ROCKS	Educational	55	-	55	-	55	-
OSR	165-203 GEORGE STREET THE ROCKS	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	205-227 GEORGE STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	229-235 GEORGE STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	96-118 GLOUCESTER STREET THE ROCKS	Recreational - Passive	60	-	60	-	60	-
OSR	120A GLOUCESTER STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	157-169 GLOUCESTER STREET THE ROCKS	Educational	55	-	55	-	55	-
OSR	171 GLOUCESTER STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	16-18 GROSVENOR STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	20-22 GROSVENOR STREET THE ROCKS	Place of Worship	55	-	55	-	55	-
OSR	111 HARRINGTON STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	117-119 HARRINGTON STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	121-127 HARRINGTON STREET THE ROCKS	Commercial	70	-	70	-	70	-
OSR	5015 HARRINGTON STREET THE ROCKS	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	32 MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	2-4 BULLETIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	95-99 YORK STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	9 HUNTER STREET SYDNEY	Commercial	70	41	70	41	70	41
OSR	17 O'CONNELL STREET SYDNEY	Commercial	70	63	70	63	70	63
OSR	25 BLIGH STREET SYDNEY	Commercial	70	53	70	53	70	53
OSR	144-146 PHILLIP STREET, SYDNEY	Commercial	70	50	70	50	70	50
OSR	18-30A MARTIN PLACE SYDNEY	Commercial	70	-	70	-	70	-
OSR	102-104 KING STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	WYNYARD PARK	Recreational - Passive	60	-	60	-	60	-

Table D.1: Predicted construction noise levels assessed to Planning Approval NMLs MARTIN PLACE STATION

Receiver			Assumed façade loss	Predicted noise levels, dB(A)			
NCA	Address	Land Use	dB	External equivalent NML (E37/E38)	MPL_DE	External equivalent NML (E41/E42)	MPL_DE
MP_02	5 HOSKING PLACE SYDNEY	Residential	20	80	36	65	36
OSR	1B ASH STREET SYDNEY	Commercial	20	80	39	-	-
OSR	21 BENT STREET SYDNEY	Commercial	20	80	50	-	-
OSR	1 BLIGH STREET SYDNEY	Commercial	20	80	51	-	-
OSR	2 BLIGH STREET SYDNEY	Hotel/Motel/Hostel	20	80	54	65	54
OSR	4-6 BLIGH STREET SYDNEY	Commercial	20	80	58	-	-
OSR	27 BLIGH STREET SYDNEY	Commercial	20	80	45	-	-
OSR	29 BLIGH STREET SYDNEY	Commercial	20	80	63	-	-
OSR	37 BLIGH STREET SYDNEY	Commercial	20	80	62	-	-
OSR	10-20 BOND STREET SYDNEY	Commercial	20	80	37	-	-
OSR	35-39 BRIDGE STREET SYDNEY	Commercial	20	80	49	-	-
OSR	41 BRIDGE STREET SYDNEY	Commercial	20	80	48	-	-
OSR	1-7 CASTLEREAGH STREET SYDNEY	Commercial	25	85	52	-	-
OSR	9 CASTLEREAGH STREET SYDNEY	Childcare	35	95	48	-	-
OSR	15 CASTLEREAGH STREET SYDNEY	Childcare	30	90	38	-	-
OSR	17 CASTLEREAGH STREET SYDNEY	Commercial	20	80	36	-	-
OSR	44-62 CASTLEREAGH STREET SYDNEY	Commercial	20	80	36	-	-
OSR	2 CHIFLEY SQUARE SYDNEY	Commercial	25	85	49	-	-
OSR	8-12 CHIFLEY SQUARE SYDNEY	Commercial	25	85	52	-	-
OSR	5010 CURTIN PLACE SYDNEY	Commercial	20	80	35	-	-
OSR	1 FARRER PLACE SYDNEY	Commercial	20	80	48	-	-
OSR	244-246 GEORGE STREET SYDNEY	Commercial	20	80	34	-	-
OSR	248-252 GEORGE STREET SYDNEY	Commercial	20	80	34	-	-
OSR	343A GEORGE STREET SYDNEY	Commercial	20	80	35	-	-
OSR	350 GEORGE STREET SYDNEY	Commercial	20	80	35	-	-
OSR	15-17 HUNTER STREET SYDNEY	Hotel/Motel/Hostel	20	80	37	65	37
OSR	19-21 HUNTER STREET SYDNEY	Commercial	20	80	39	-	-
OSR	23 HUNTER STREET SYDNEY	Commercial	20	80	56	-	-
OSR	30-32 HUNTER STREET SYDNEY	Hotel/Motel/Hostel	20	80	34	65	34
OSR	33-39 HUNTER STREET SYDNEY	Commercial	20	80	52	-	-
OSR	44-48 HUNTER STREET SYDNEY	Commercial	20	80	55	-	-
OSR	50-58 HUNTER STREET SYDNEY	Commercial	20	80	47	-	-
OSR	66 HUNTER STREET SYDNEY	Commercial	20	80	62	-	-
OSR	68-96 HUNTER STREET SYDNEY	Commercial	25	85	51	-	-
OSR	237-241 MACQUARIE STREET SYDNEY	Commercial	20	80	34	-	-
OSR	4-10 MARTIN PLACE SYDNEY	Commercial	20	80	36	-	-
OSR	38-46 MARTIN PLACE SYDNEY	Commercial	20	80	34	-	-
OSR	50 MARTIN PLACE SYDNEY	Commercial	20	80	45	-	-
OSR	52-56 MARTIN PLACE SYDNEY	Recording studio	42	102	34	-	-
OSR	52-56 MARTIN PLACE SYDNEY	Commercial	30	90	49	-	-
OSR	58-60 MARTIN PLACE SYDNEY	Commercial	20	80	35	-	-
OSR	1-15 O'CONNELL STREET SYDNEY	Educational	25	85	60	-	-
OSR	6-10 O'CONNELL STREET SYDNEY	Commercial	20	80	53	-	-
OSR	12-14 O'CONNELL STREET SYDNEY	Commercial	20	80	62	-	-
OSR	16 O'CONNELL STREET SYDNEY	Commercial	20	80	68	-	-

Table D.1: Predicted construction noise levels assessed to Planning Approval NMLs

MARTIN PLACE STATION

Receiver			Assumed façade loss	Predicted noise levels, dB(A)			
NCA	Address	Land Use	dB	External equivalent NML (E37/E38)	MPL_DE	External equivalent NML (E41/E42)	MPL_DE
OSR	19-21 O'CONNELL STREET SYDNEY	Commercial	20	80	65	-	-
OSR	23-25 O'CONNELL STREET SYDNEY	Commercial	20	80	69	-	-
OSR	28-34 O'CONNELL STREET SYDNEY	Childcare	25	85	66	-	-
OSR	88 PHILLIP STREET SYDNEY	Commercial	20	80	47	-	-
OSR	126 PHILLIP STREET SYDNEY	Commercial	20	80	48	-	-
OSR	62 PITT STREET SYDNEY	Commercial	20	80	34	-	-
OSR	64-66 PITT STREET SYDNEY	Hotel/Motel/Hostel	30	90	67	75	67
OSR	68 PITT STREET SYDNEY	Commercial	20	80	55	-	-
OSR	70 PITT STREET SYDNEY	Commercial	20	80	47	-	-
OSR	72 PITT STREET SYDNEY	Commercial	20	80	36	-	-
OSR	74 PITT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	76-78 PITT STREET SYDNEY	Commercial	20	80	42	-	-
OSR	87-95 PITT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	97-99 PITT STREET SYDNEY	Commercial	20	80	42	-	-
OSR	103-105 PITT STREET SYDNEY	Commercial	20	80	53	-	-
OSR	109 PITT STREET SYDNEY	Commercial	20	80	39	-	-
OSR	109 PITT STREET SYDNEY	Commercial	20	80	40	-	-
OSR	115 PITT STREET SYDNEY	Commercial	20	80	36	-	-
OSR	115A PITT STREET SYDNEY	Commercial	20	80	40	-	-
OSR	123 PITT STREET SYDNEY	Commercial	20	80	34	-	-
OSR	4030 PITT STREET SYDNEY	Commercial	20	80	40	-	-
OSR	8 SPRING STREET SYDNEY	Commercial	20	80	53	-	-
OSR	10-14 SPRING STREET SYDNEY	Commercial	20	80	58	-	-
OSR	16 SPRING STREET SYDNEY	Commercial	20	80	39	-	-
OSR	46C YOUNG STREET SYDNEY	Commercial	20	80	47	-	-
OSR	9 HUNTER STREET SYDNEY	Commercial	20	80	41	-	-
OSR	17 O'CONNELL STREET SYDNEY	Commercial	20	80	63	-	-
OSR	25 BLIGH STREET SYDNEY	Commercial	20	80	53	-	-
OSR	144-146 PHILLIP STREET, SYDNEY	Commercial	30	90	50	-	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs **PITT STREET STATION**

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
PS_01	101 BATHURST STREET SYDNEY	Residential	69	50	62	50	58	50
PS_01	485 GEORGE STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	531-535 GEORGE STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	551A GEORGE STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	680 GEORGE STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	486 KENT STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	488 KENT STREET SYDNEY	Residential	69	46	62	46	58	46
PS_01	518-520 KENT STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	528-534 KENT STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	111 LIVERPOOL STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	343-357 PITT STREET SYDNEY	Residential	69	49	62	49	58	49
PS_01	359-361 PITT STREET SYDNEY	Residential	69	49	62	49	58	49
PS_01	393 PITT STREET SYDNEY	Residential	69	-	62	-	58	-
PS_01	343-357 PITT STREET SYDNEY	Residential	69	51	62	51	58	51
PS_02	197 CASTLEREAGH STREET SYDNEY	Residential	69	58	62	58	58	58
PS_02	199 CASTLEREAGH STREET SYDNEY	Residential	69	63	62	63	58	63
PS_02	189 CASTLEREAGH STREET SYDNEY	Residential	69	62	62	62	58	62
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	69	41	62	41	58	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	69	41	62	41	58	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	69	41	62	41	58	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	69	41	62	41	58	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	69	41	62	41	58	41
PS_03	19-25 MARKET STREET SYDNEY	Residential	69	39	62	39	58	39
PS_04	135-137C ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	141 ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	141-143 ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	148A ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	148 ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	281-283 ELIZABETH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_04	157-167 LIVERPOOL STREET SYDNEY	Residential	69	-	62	-	58	-
PS_05	317-321 CASTLEREAGH STREET HAYMARKET	Residential	69	-	62	-	58	-
PS_05	398-408 PITT STREET HAYMARKET	Residential	69	-	62	-	58	-
PS_05	410 PITT STREET HAYMARKET	Residential	69	-	62	-	58	-
PS_05	412 PITT STREET HAYMARKET	Residential	69	-	62	-	58	-
PS_05	420-426 PITT STREET HAYMARKET	Residential	69	-	62	-	58	-
PS_05	137-139 BATHURST STREET SYDNEY	Residential	69	-	62	-	58	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs **PITT STREET STATION**

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
PS_05	209 CASTLEREAGH STREET SYDNEY	Residential	69	36	62	36	58	36
PS_05	267-277 CASTLEREAGH STREET SYDNEY	Residential	69	-	62	-	58	-
PS_05	308 PITT STREET SYDNEY	Residential	69	52	62	52	58	52
OSR	552A-570 GEORGE STREET SYDNEY	Commercial	70	45	70	45	70	45
OSR	310-322 PITT STREET SYDNEY	Commercial	70	42	70	42	70	42
OSR	201-217 ELIZABETH STREET SYDNEY	Childcare	55	-	55	-	55	-
OSR	16 CAMPBELL STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	18 CAMPBELL STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	20 CAMPBELL STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	22 CAMPBELL STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	24-28 CAMPBELL STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	301A CASTLEREAGH STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	10 CUNNINGHAM STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	694-696 GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	698-704 GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	704A GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	706-706A GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	708 GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	710 GEORGE STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	43-49 GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	51-57 GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	59-69 GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	91 GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	97-99 GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	99A GOULBURN STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	390-396 PITT STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	403-427 PITT STREET HAYMARKET	Commercial	70	-	70	-	70	-
OSR	428 PITT STREET HAYMARKET	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	429-429A PITT STREET HAYMARKET	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	429B PITT STREET HAYMARKET	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	431-439 PITT STREET HAYMARKET	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	11-15 ALBERTA STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	11 ALBERTA STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	11 ALBERTA STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	17-19 ALBERTA STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	21 ALBERTA STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	93 BATHURST STREET SYDNEY	Commercial	70	38	70	38	70	38
OSR	95 BATHURST STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	103 BATHURST STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	110-110A BATHURST STREET SYDNEY	Under construction	999	35	999	35	999	35
OSR	112-118 BATHURST STREET SYDNEY	Under construction	999	35	999	35	999	35
OSR	339 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	53	60	53	60	53
OSR	114-120 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	122 CASTLEREAGH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	133-145 CASTLEREAGH STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	147-153 CASTLEREAGH STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	155 CASTLEREAGH STREET SYDNEY	Commercial	70	37	70	37	70	37
OSR	163 CASTLEREAGH STREET SYDNEY	Commercial	70	68	70	68	70	68
OSR	167B CASTLEREAGH STREET SYDNEY	Commercial	70	44	70	44	70	44
OSR	169-173 CASTLEREAGH STREET SYDNEY	Hotel/Motel/Hostel	60	62	60	62	60	62
OSR	201A CASTLEREAGH STREET SYDNEY	Place of Worship	55	41	55	41	55	41
OSR	201 CASTLEREAGH STREET SYDNEY	Place of Worship	55	41	55	41	55	41
OSR	203 CASTLEREAGH STREET SYDNEY	Commercial	70	37	70	37	70	37
OSR	211-217 CASTLEREAGH STREET SYDNEY	Fire Brigade	60	-	60	-	60	-
OSR	219-223 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	225-227 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	238-240 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	241-243 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	245-247 CASTLEREAGH STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	249-253 CASTLEREAGH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	255-255A CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	262-266 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	263 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	279-283 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	285 CASTLEREAGH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 CENTRAL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	204-206 CLARENCE STREET SYDNEY	Commercial	70	43	70	43	70	43
OSR	206A-208 CLARENCE STREET SYDNEY	Commercial	70	43	70	43	70	43
OSR	210-216 CLARENCE STREET SYDNEY	Commercial	70	43	70	43	70	43
OSR	222 CLARENCE STREET SYDNEY	Commercial	70	44	70	44	70	44
OSR	230 CLARENCE STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	235-239 CLARENCE STREET SYDNEY	Commercial	70	40	70	40	70	40

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	236 CLARENCE STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	251-255A CLARENCE STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	257 CLARENCE STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	263 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	275 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	277 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	281 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	283-285 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	287-289 CLARENCE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	9-25 COMMONWEALTH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	27 COMMONWEALTH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	29 COMMONWEALTH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	48-58 DRUITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	66 DRUITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	68 DRUITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	70-72 DRUITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	80 DRUITT STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	HYDE PARK	Recreational - Passive	60	-	60	-	60	-
OSR	HYDE PARK	Recreational - Passive	60	-	60	-	60	-
OSR	ANZAC MEMORIAL	Recreational - Passive	60	-	60	-	60	-
OSR	130-134 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	136-140 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	150-152 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	154-158 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	160-162 ELIZABETH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	161 ELIZABETH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	164-182 ELIZABETH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	179 ELIZABETH STREET SYDNEY	Commercial	70	53	70	53	70	53
OSR	179 ELIZABETH STREET SYDNEY	Commercial	70	50	70	50	70	50
OSR	183-187 ELIZABETH STREET SYDNEY	Place of Worship	55	52	55	52	55	52
OSR	184-196 ELIZABETH STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	187A ELIZABETH STREET SYDNEY	Commercial	70	58	70	58	70	58
OSR	189-195 ELIZABETH STREET SYDNEY	Commercial	70	60	70	60	70	60
OSR	201-217 ELIZABETH STREET SYDNEY	Commercial	70	59	70	59	70	59
OSR	219-227 ELIZABETH STREET SYDNEY	Commercial	70	40	70	40	70	40
OSR	227B ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	229-249 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	251-253 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	255-269 ELIZABETH STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	271-279 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	287 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	289-299 ELIZABETH STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	423-427 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	429-481 GEORGE STREET SYDNEY	Commercial	70	39	70	39	70	39
OSR	450A GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	458-466 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	468-472 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	478 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	478-480 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	505-523 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	525-529 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	532-540 GEORGE STREET SYDNEY	Educational	55	66	55	66	55	66
OSR	542-544 GEORGE STREET SYDNEY	Commercial	70	50	70	50	70	50
OSR	546-552 GEORGE STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	552A-570 GEORGE STREET SYDNEY	Commercial	70	46	70	46	70	46
OSR	553-555 GEORGE STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	580 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	580 GEORGE STREET SYDNEY	Medical	55	-	55	-	55	-
OSR	600-612 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	614-628 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	630-634 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	636-638 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	640-642 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	644 GEORGE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1400 GEORGE STREET SYDNEY	Place of Worship	55	-	55	-	55	-
OSR	66 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	86-90 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	90B GOULBURN STREET SYDNEY	Place of Worship	55	-	55	-	55	-
OSR	92 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	94 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	96 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	98-104 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	110 GOULBURN STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	400 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	414-418 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	420 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	422-424 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	426-430 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	432-434 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	436-450 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	447 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	453-463 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	464-480 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	464 KENT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	482 KENT STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	484 KENT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	86 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	88 LIVERPOOL STREET SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	92 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	94 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	96 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	98 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	114-120 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	126 LIVERPOOL STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	127 LIVERPOOL STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	128 LIVERPOOL STREET SYDNEY	Educational	55	-	55	-	55	-
OSR	130 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	133-141 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	133-141 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	143-147 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	169-183 LIVERPOOL STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	1 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	2 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	22 MARKET STREET SYDNEY	Commercial	70	38	70	38	70	38
OSR	26-28 MARKET STREET SYDNEY	Commercial	70	41	70	41	70	41
OSR	30-32 MARKET STREET SYDNEY	Commercial	70	44	70	44	70	44
OSR	31 MARKET STREET SYDNEY	Commercial	70	47	70	47	70	47
OSR	49-51 MARKET STREET SYDNEY	Theatre/Auditorium	50	-	50	-	50	-

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	49-51 MARKET STREET SYDNEY	Theatre/Auditorium	50	-	50	-	50	-
OSR	55 MARKET STREET SYDNEY	Commercial	70	38	70	38	70	38
OSR	61-63 MARKET STREET SYDNEY	Commercial	70	54	70	54	70	54
OSR	65-77 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	68 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	83-87 MARKET STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	26 NITHSDALE STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5-7 PARK STREET SYDNEY	Hotel/Motel/Hostel	60	67	60	67	60	67
OSR	50-52 PARK STREET SYDNEY	Commercial	70	61	70	61	70	61
OSR	60 PARK STREET SYDNEY	Commercial	70	49	70	49	70	49
OSR	192-192A PITT STREET SYDNEY	Commercial	70	56	70	56	70	56
OSR	194 PITT STREET SYDNEY	Commercial	70	56	70	56	70	56
OSR	196-204 PITT STREET SYDNEY	Commercial	70	54	70	54	70	54
OSR	226-230 PITT STREET SYDNEY	Commercial	70	37	70	37	70	37
OSR	239 PITT STREET SYDNEY	Commercial	70	44	70	44	70	44
OSR	248A-250 PITT STREET SYDNEY	Commercial	70	75	70	75	70	75
OSR	249-251 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	253 PITT STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	258-260 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	69	60	69	60	69
OSR	488 George St, Sydney NSW	Commercial	70	60	70	60	70	60
OSR	259B PITT STREET SYDNEY	Commercial	70	66	70	66	70	66
OSR	262-264 PITT STREET SYDNEY	Place of Worship	55	62	55	62	55	62
OSR	264A PITT STREET SYDNEY	Place of Worship	55	66	55	66	55	66
OSR	266-274 PITT STREET SYDNEY	Commercial	70	62	70	62	70	62
OSR	275 PITT STREET SYDNEY	Commercial	70	74	70	74	70	74
OSR	276-278 PITT STREET SYDNEY	Commercial	70	61	70	61	70	61
OSR	280-282 PITT STREET SYDNEY	Educational	55	60	55	60	55	60
OSR	284-292 PITT STREET SYDNEY	Commercial	70	58	70	58	70	58
OSR	294-294B PITT STREET SYDNEY	Hotel/Motel/Hostel	60	54	60	54	60	54
OSR	295-301 PITT STREET SYDNEY	Commercial	70	68	70	68	70	68
OSR	303-305 PITT STREET SYDNEY	Educational	55	67	55	67	55	67
OSR	307 PITT STREET SYDNEY	Commercial	70	63	70	63	70	63
OSR	309-313 PITT STREET SYDNEY	Medical	55	60	55	60	55	60
OSR	310-322 PITT STREET SYDNEY	Commercial	70	50	70	50	70	50
OSR	315-321 PITT STREET SYDNEY	Educational	55	61	55	61	55	61
OSR	324-330 PITT STREET SYDNEY	Commercial	70	49	70	49	70	49

Table D.1: Predicted construction noise levels assessed to ICNG NMLs **PITT STREET STATION**

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	332-336 PITT STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	338-348 PITT STREET SYDNEY	Educational	55	44	55	44	55	44
OSR	350-360 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	362-370 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	363-367 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	369 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	371 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	372-374 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	372B PITT STREET SYDNEY	Commercial	70	36	70	36	70	36
OSR	373-375 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	376 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	377 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	378 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	379-383 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	380 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	382 PITT STREET SYDNEY	Commercial	70	35	70	35	70	35
OSR	382A PITT STREET SYDNEY	Hotel/Motel/Hostel	60	35	60	35	60	35
OSR	385 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	386 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	35	60	35	60	35
OSR	388 PITT STREET SYDNEY	Commercial	70	34	70	34	70	34
OSR	391-395 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5060 PITT STREET SYDNEY	Commercial	70	58	70	58	70	58
OSR	5100 PITT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	200-202 SUSSEX STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	230-234 SUSSEX STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	27-33 WENTWORTH AVENUE SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	35-45 WENTWORTH AVENUE SYDNEY	Commercial	70	-	70	-	70	-
OSR	47 WENTWORTH AVENUE SYDNEY	Commercial	70	-	70	-	70	-
OSR	49-53 WENTWORTH AVENUE SYDNEY	Commercial	70	-	70	-	70	-
OSR	55-57 WENTWORTH AVENUE SYDNEY	Commercial	70	-	70	-	70	-
OSR	59 WENTWORTH AVENUE SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	61-65 WENTWORTH AVENUE SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	61-65 WENTWORTH AVENUE SYDNEY	Hotel/Motel/Hostel	60	-	60	-	60	-
OSR	7-9 WILMOT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	5010 WILMOT STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	117 YORK STREET SYDNEY	Commercial	70	50	70	50	70	50

Table D.1: Predicted construction noise levels assessed to ICNG NMLs PITT STREET STATION

Receiver			Predicted noise levels, dB(A)					
			Day (Standard)		Evening (OOHW)		Night (OOHW)	
NCA	Address	Receiver type	NML	PIT_CD	NML	PIT_CD	NML	PIT_CD
OSR	119-123 YORK STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	125 YORK STREET SYDNEY	Commercial	70	50	70	50	70	50
OSR	127-127A YORK STREET SYDNEY	Commercial	70	47	70	47	70	47
OSR	129 YORK STREET SYDNEY	Educational	55	48	55	48	55	48
OSR	131-137 YORK STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	139 YORK STREET SYDNEY	Commercial	70	48	70	48	70	48
OSR	141 YORK STREET SYDNEY	Commercial	70	49	70	49	70	49
OSR	143-145 YORK STREET SYDNEY	Commercial	70	49	70	49	70	49
OSR	161 CASTLEREAGH STREET SYDNEY	Commercial	70	43	70	43	70	43
OSR	201-217 ELIZABETH STREET SYDNEY	Commercial	70	52	70	52	70	52
OSR	108 BATHURST STREET SYDNEY	Commercial	70	-	70	-	70	-
OSR	201/233 CASTLEREAGH STREET	Under construction	999	55	999	55	999	55
OSR	SYDNEY TOWNHALL	Theatre/Auditorium	50	57	50	57	50	57
OSR	CITYGROUP CENTRE, SYDNEY	Commercial	70	76	70	76	70	76
OSR	189 CASTLEREAGH STREET SYDNEY (carpark)	Commercial	70	60	70	60	70	60
OSR	325 PITT STREET SYDNEY	Commercial	70	59	70	59	70	59
OSR	329 PITT STREET SYDNEY	Hotel/Motel/Hostel	60	59	60	59	60	59

Table D.1: Predicted construction noise levels assessed to Planning Approval NMLs PITT STREET STATION

Receiver			Assumed façade loss	Predicted noise levels, dB(A)			
				Day / E1 (7am to 8 pm)		E2 / Night (8pm to 7am) - residential only	
NCA	Address	Land Use	dB	External equivalent NML (E37/E38)	PIT_CD	External equivalent NML (E41/E42)	PIT_CD
PS_01	101 BATHURST STREET SYDNEY	Residential	20	80	50	65	50
PS_01	488 KENT STREET SYDNEY	Residential	20	80	46	65	46
PS_01	343-357 PITT STREET SYDNEY	Residential	20	80	49	65	49
PS_01	359-361 PITT STREET SYDNEY	Residential	20	80	49	65	49
PS_01	343-357 PITT STREET SYDNEY	Residential	20	80	51	65	51
PS_02	197 CASTLEREAGH STREET SYDNEY	Residential	20	80	58	65	58
PS_02	199 CASTLEREAGH STREET SYDNEY	Residential	20	80	63	65	63
PS_02	189 CASTLEREAGH STREET SYDNEY	Residential	20	80	62	65	62
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	20	80	41	65	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	20	80	41	65	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	20	80	41	65	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	20	80	41	65	41
PS_03	259-261 CLARENCE STREET SYDNEY	Residential	20	80	41	65	41
PS_03	19-25 MARKET STREET SYDNEY	Residential	20	80	39	65	39
PS_05	209 CASTLEREAGH STREET SYDNEY	Residential	20	80	36	65	36
PS_05	308 PITT STREET SYDNEY	Residential	20	80	52	65	52
OSR	552A-570 GEORGE STREET SYDNEY	Commercial	20	80	45	-	-
OSR	310-322 PITT STREET SYDNEY	Commercial	25	85	42	-	-
OSR	93 BATHURST STREET SYDNEY	Commercial	20	80	38	-	-
OSR	95 BATHURST STREET SYDNEY	Commercial	20	80	36	-	-
OSR	339 PITT STREET SYDNEY	Hotel/Motel/Hostel	30	90	53	75	53
OSR	133-145 CASTLEREAGH STREET SYDNEY	Commercial	20	80	34	-	-
OSR	147-153 CASTLEREAGH STREET SYDNEY	Commercial	20	80	35	-	-
OSR	155 CASTLEREAGH STREET SYDNEY	Commercial	20	80	37	-	-
OSR	163 CASTLEREAGH STREET SYDNEY	Commercial	20	80	68	-	-
OSR	167B CASTLEREAGH STREET SYDNEY	Commercial	20	80	44	-	-
OSR	169-173 CASTLEREAGH STREET SYDNEY	Hotel/Motel/Hostel	20	80	62	65	62
OSR	201A CASTLEREAGH STREET SYDNEY	Place of Worship	20	80	41	65	41
OSR	201 CASTLEREAGH STREET SYDNEY	Place of Worship	20	80	41	65	41
OSR	203 CASTLEREAGH STREET SYDNEY	Commercial	20	80	37	-	-
OSR	204-206 CLARENCE STREET SYDNEY	Commercial	20	80	43	-	-
OSR	206A-208 CLARENCE STREET SYDNEY	Commercial	20	80	43	-	-
OSR	210-216 CLARENCE STREET SYDNEY	Commercial	20	80	43	-	-
OSR	222 CLARENCE STREET SYDNEY	Commercial	20	80	44	-	-
OSR	230 CLARENCE STREET SYDNEY	Commercial	20	80	35	-	-
OSR	235-239 CLARENCE STREET SYDNEY	Commercial	20	80	40	-	-
OSR	251-255A CLARENCE STREET SYDNEY	Commercial	20	80	40	-	-
OSR	257 CLARENCE STREET SYDNEY	Commercial	20	80	40	-	-
OSR	80 DRUITT STREET SYDNEY	Commercial	20	80	39	-	-
OSR	179 ELIZABETH STREET SYDNEY	Commercial	25	85	53	-	-
OSR	179 ELIZABETH STREET SYDNEY	Commercial	20	80	50	-	-
OSR	183-187 ELIZABETH STREET SYDNEY	Place of Worship	20	80	52	65	52
OSR	187A ELIZABETH STREET SYDNEY	Commercial	20	80	58	-	-
OSR	189-195 ELIZABETH STREET SYDNEY	Commercial	25	85	60	-	-
OSR	201-217 ELIZABETH STREET SYDNEY	Commercial	25	85	59	-	-
OSR	219-227 ELIZABETH STREET SYDNEY	Commercial	20	80	40	-	-
OSR	429-481 GEORGE STREET SYDNEY	Commercial	20	80	39	-	-

Table D.1: Predicted construction noise levels assessed to Planning Approval NMLs PITT STREET STATION

Receiver			Assumed façade loss	Predicted noise levels, dB(A)			
				Day / E1 (7am to 8 pm)		E2 / Night (8pm to 7am) - residential only	
NCA	Address	Land Use	dB	External equivalent NML (E37/E38)	PIT_CD	External equivalent NML (E41/E42)	PIT_CD
OSR	532-540 GEORGE STREET SYDNEY	Educational	20	80	66	-	-
OSR	542-544 GEORGE STREET SYDNEY	Commercial	20	80	50	-	-
OSR	546-552 GEORGE STREET SYDNEY	Commercial	20	80	35	-	-
OSR	552A-570 GEORGE STREET SYDNEY	Commercial	20	80	46	-	-
OSR	482 KENT STREET SYDNEY	Commercial	20	80	36	-	-
OSR	484 KENT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	22 MARKET STREET SYDNEY	Commercial	20	80	38	-	-
OSR	26-28 MARKET STREET SYDNEY	Commercial	20	80	41	-	-
OSR	30-32 MARKET STREET SYDNEY	Commercial	20	80	44	-	-
OSR	31 MARKET STREET SYDNEY	Commercial	20	80	47	-	-
OSR	55 MARKET STREET SYDNEY	Commercial	20	80	38	-	-
OSR	61-63 MARKET STREET SYDNEY	Commercial	20	80	54	-	-
OSR	5-7 PARK STREET SYDNEY	Hotel/Motel/Hostel	20	80	67	65	67
OSR	50-52 PARK STREET SYDNEY	Commercial	20	80	61	-	-
OSR	60 PARK STREET SYDNEY	Commercial	20	80	49	-	-
OSR	192-192A PITT STREET SYDNEY	Commercial	20	80	56	-	-
OSR	194 PITT STREET SYDNEY	Commercial	20	80	56	-	-
OSR	196-204 PITT STREET SYDNEY	Commercial	20	80	54	-	-
OSR	226-230 PITT STREET SYDNEY	Commercial	20	80	37	-	-
OSR	239 PITT STREET SYDNEY	Commercial	20	80	44	-	-
OSR	248A-250 PITT STREET SYDNEY	Commercial	20	80	75	-	-
OSR	249-251 PITT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	253 PITT STREET SYDNEY	Commercial	20	80	34	-	-
OSR	258-260 PITT STREET SYDNEY	Hotel/Motel/Hostel	20	80	69	65	69
OSR	488 George St, Sydney NSW	Commercial	20	80	60	-	-
OSR	259B PITT STREET SYDNEY	Commercial	20	80	66	-	-
OSR	262-264 PITT STREET SYDNEY	Place of Worship	20	80	62	65	62
OSR	264A PITT STREET SYDNEY	Place of Worship	20	80	66	65	66
OSR	266-274 PITT STREET SYDNEY	Commercial	25	85	62	-	-
OSR	275 PITT STREET SYDNEY	Commercial	20	80	74	-	-
OSR	276-278 PITT STREET SYDNEY	Commercial	20	80	61	-	-
OSR	280-282 PITT STREET SYDNEY	Educational	20	80	60	-	-
OSR	284-292 PITT STREET SYDNEY	Commercial	20	80	58	-	-
OSR	294-294B PITT STREET SYDNEY	Hotel/Motel/Hostel	20	80	54	65	54
OSR	295-301 PITT STREET SYDNEY	Commercial	20	80	68	-	-
OSR	303-305 PITT STREET SYDNEY	Educational	20	80	67	-	-
OSR	307 PITT STREET SYDNEY	Commercial	20	80	63	-	-
OSR	309-313 PITT STREET SYDNEY	Medical	20	80	60	-	-
OSR	310-322 PITT STREET SYDNEY	Commercial	20	80	50	-	-
OSR	315-321 PITT STREET SYDNEY	Educational	20	80	61	-	-
OSR	324-330 PITT STREET SYDNEY	Commercial	20	80	49	-	-
OSR	332-336 PITT STREET SYDNEY	Commercial	20	80	48	-	-
OSR	338-348 PITT STREET SYDNEY	Educational	20	80	44	-	-
OSR	372-374 PITT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	372B PITT STREET SYDNEY	Commercial	20	80	36	-	-
OSR	376 PITT STREET SYDNEY	Commercial	20	80	35	-	-
OSR	378 PITT STREET SYDNEY	Commercial	20	80	35	-	-

Table D.1: Predicted construction noise levels assessed to Planning Approval NMLs PITT STREET STATION

Receiver				Assumed façade loss	Predicted noise levels, dB(A)			
					Day / E1 (7am to 8 pm)		E2 / Night (8pm to 7am) - residential only	
NCA	Address	Land Use	dB	External equivalent NML (E37/E38)	PIT_CD	External equivalent NML (E41/E42)	PIT_CD	
OSR	380 PITT STREET SYDNEY	Commercial	20	80	35	-	-	
OSR	382 PITT STREET SYDNEY	Commercial	20	80	35	-	-	
OSR	382A PITT STREET SYDNEY	Hotel/Motel/Hostel	20	80	35	65	35	
OSR	386 PITT STREET SYDNEY	Hotel/Motel/Hostel	20	80	35	65	35	
OSR	388 PITT STREET SYDNEY	Commercial	20	80	34	-	-	
OSR	5060 PITT STREET SYDNEY	Commercial	20	80	58	-	-	
OSR	117 YORK STREET SYDNEY	Commercial	20	80	50	-	-	
OSR	119-123 YORK STREET SYDNEY	Commercial	20	80	48	-	-	
OSR	125 YORK STREET SYDNEY	Commercial	20	80	50	-	-	
OSR	127-127A YORK STREET SYDNEY	Commercial	20	80	47	-	-	
OSR	129 YORK STREET SYDNEY	Educational	20	80	48	-	-	
OSR	131-137 YORK STREET SYDNEY	Commercial	20	80	48	-	-	
OSR	139 YORK STREET SYDNEY	Commercial	20	80	48	-	-	
OSR	141 YORK STREET SYDNEY	Commercial	20	80	49	-	-	
OSR	143-145 YORK STREET SYDNEY	Commercial	20	80	49	-	-	
OSR	161 CASTLEREAGH STREET SYDNEY	Commercial	20	80	43	-	-	
OSR	201-217 ELIZABETH STREET SYDNEY	Commercial	20	80	52	-	-	
OSR	SYDNEY TOWNHALL	Theatre/Auditorium	20	80	57	65	57	
OSR	CITYGROUP CENTRE, SYDNEY	Commercial	25	85	76	-	-	
OSR	189 CASTLEREAGH STREET SYDNEY (carpark)	Commercial	20	80	60	-	-	
OSR	325 PITT STREET SYDNEY	Commercial	20	80	59	-	-	
OSR	329 PITT STREET SYDNEY	Hotel/Motel/Hostel	25	85	59	70	59	

APPENDIX E Consultation required under conditions E37/E38

Consultation is not required