Demolition Noise & Vibration Management Plan

Sydney Metro Project

Prepared for: Delta Pty Ltd

16 August 2017

Report number: 0116-041-01

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Report Revision History				
Rev no.	**Date**	**Description**	**Prepared by**	**Reviewed by**
A	25/01/2017	Initial Draft	Mark Della Sabina	Rauf Osterman
B	21/02/2017	General update and revision following review by Delta and AA	Mark Della Sabina	Rauf Osterman
C	31/03/2017	Updated to incorporate comments from ER dated 21/02/2017 and additional comments from Project AA dated 21/03/2017	Mark Della Sabina	Rauf Osterman
D	06/04/2017	Updated to incorporate additional comments from ER dated 04/04/2017 and phone conversation with AA 05/04/2017	Mark Della Sabina	Rauf Osterman
E	24/04/2017	Updated to incorporate DPE's Review Comments as presented in document *"17.04.11_CNVMP_DPE Review_Rev D_(11pp)"*	Mark Della Sabina	Rauf Osterman
F	11/05/2017	Updated to incorporate DPE's Review Comments as presented in document *"17.05.11_CNVMP_DPE Review_Rev E and Assessment_(18pp)"*	Mark Della Sabina	Rauf Osterman
G	28/05/2017	Updated to incorporate DPE's Review Comments as presented in document *"20170522 DPE comments on NV docs 19 May 2017_issue"*	Mark Della Sabina	Rauf Osterman
H	16/08/2017	Minor update to vibration criteria for heritage structures. Minor update to incorporate DPE comments dated 5/6/17.	Mark Della Sabina	Rauf Osterman

1. Introduction

1.1 Context

This Construction Noise and Vibration Management Plan (CNVMP) has been developed for Delta Group Pty Ltd (Delta) as an overarching document for the management of noise and vibration impacts associated with demolition and retention works across 6 sites on the Sydney Metro City & Southwest Project (the project). This CNVMP exists as a sub-plan to the Construction Environmental Management Plan (CEMP) developed for the project.

1.2 Project Overview

The Sydney Metro City & Southwest Project will extend metro rail from Sydney's booming North West region, beneath Sydney Harbour, through new underground central business district (CBD) stations and beyond to Bankstown.

Delta's scope of work for the project involves the demolition of approximately 60 buildings across six sites both within and outside the Sydney CBD. The types of buildings to be demolished include some significant high-rise commercial buildings, and a mixture of low-rise residential, retail, commercial, mixed-use and industrial buildings. Specific details are provided in Table 1.

Table 1. Work Sites

Demolition Site	Work Portion	Building Types
CH	Chatswood Dive Site	Low-rise commercial buildings
CN	Crows Nest Station Site	Low-rise commercial/industrial buildings
VC2	Victoria Cross Station Site	Low, medium and high-rise commercial buildings
PS	Pitt Street Station Site	Low and high-rise commercial buildings
WA	Waterloo Station Site	Low-rise industrial/commercial buildings
MA	Marrickville Dive Site	Low-rise industrial buildings

1.3 Objectives of the CNVMP

The principal objective of this CNVMP is to provide detailed and site-specific methodologies to effectively mitigate and manage the impacts of noise and vibration from demolition works on sensitive receivers surrounding the sites. This includes strategies for:

- minimising unreasonable noise and vibration impacts on sensitive receivers;
- avoiding cosmetic and structural damage to buildings from construction vibration;
- maintaining positive working relationships with surrounding businesses, schools and residents; and
- effective community consultation.

This CNVMP incorporates the findings of individual Construction Noise and Vibration Impact Statements (CNVIS's) developed for each of the six demolition sites.

1.4 Roles and Responsibilities

Roles and responsibilities of key personnel under this CNVMP are outlined in Table 2.

Table 2. Roles and Responsibilities

Role	Proponent	Responsibilities
Project Assessment and Approval	NSW Department of Planning and Environment (DPE)	• Project Approval • Approval of CNVMP and CNVS • Issues Secretary's Environmental Assessment Requirements (SEARs)
Governing Environmental Authority	NSW Environmental Protection Authority (EPA)	• Enforcement of Environmental Protection Act • Issues Environmental Protection Licences where required • Environmental auditing and compliance checks
Acoustic Advisor (AA)	Acoustic Studios	• Endorsement of CNVMP and CNVIS documents • The regular monitoring of the implementation of the CNVMP • Notify the Secretary of any incidents relating to noise and vibration
Environmental Representative (ER)	Healthy Buildings International	• Endorsement of CNVMP and CNVIS documents
Noise & Vibration Management Consultant (pre-works)	Osterman Consulting	• Prepare and develop CNVMP and site-specific CNVIS documents
Noise & Vibration Management Consultant (during works)	Osterman Consulting	• Setup and operate noise and vibration monitoring. • Develop and prepare ongoing noise & vibration reports in accordance with the CNVMP
Heritage Consultant	AMBS Ecology and Heritage	• Provide advice on the methods and locations for installing noise and vibration monitoring equipment for heritage structures
Project Manager	Delta	• Ensure all works comply with the requirements stated in the CNVMP • Ensure that all stakeholder and community liaison specific to noise & vibration is communicated to the Principal Manager Project Communications as described in SMR C
Site Manager	Delta	• Ensure all plant and equipment coming to site and operated onsite complies with Sydney Metro Requirements – Environmental (SMR E) & CNVMP • Implement controls stated under the CNVMP

Table 2. Roles and Responsibilities		
Role	**Proponent**	**Responsibilities**
Place Manager - CH	Robin Baird	Liaison between the project and sensitive receivers
Place Manager - CN & VC	Jonathan Lloyd	Liaison between the project and sensitive receivers
Place Manager - PS & MA	Emily Smith	Liaison between the project and sensitive receivers
Place Manager - WA	Michael Lloyd	Liaison between the project and sensitive receivers

2. Environmental Requirements

2.1 Conditions of Approval

Table 3 highlights the Conditions of Approval that relate to noise and vibration management applicable to the Sydney Metro Project. Cross references are provided to the applicable section of the relevant document(s) that address each requirement.

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
C3	The following CEMP sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP sub-plan and be consistent with the CEMF and CEMP referred to in Condition C1. (a) Noise and vibration - Relevant Council(s)	Section 2.5
C11	The Noise and Vibration and Blast Monitoring Plan must include provision of real time noise and vibration monitoring data. The real time data must be available to the construction team, Proponent, ER and AA. The Department and EPA must be provided with access to the real time monitoring data.	Section 6.3
E28	The Proponent must ensure that vibration from construction activities does not exceed 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 groundborne vibration*	Section 4.3

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E29	Owners of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before construction that generates vibration commences in the vicinity of those properties. These properties must be considered in the Noise and Vibration management sub plan required by Condition C3.	Section 4.3.2 Relevant CNVIS
E30	The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.	Relevant CNVIS
E31	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.	Section 6.3.5
E33	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.	Section 5.3 Relevant CNVIS
E34	Noise generating works in the vicinity of potentially-affected community, religious, educational 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.	Section 6.4.1
E35	The Proponent must review alternative methods to rock hammering and blasting for excavation as part of the detailed construction planning with a view to adopting methods that minimise impacts on sensitive receivers. Construction Noise and Vibration Impact Statements must be updated for each location or activity to adopt the least impact alternative in any given location unless it can be demonstrated, to the satisfaction of the AA, why it should not be adopted.	Section 6.4.3

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E36	Construction, except as allowed by Condition E48 (excluding cut and cover tunnelling), must only be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; (b) 8:00am to 1:00pm Saturdays; and (c) at no time on Sundays or public holidays.	Section 3.2
E37	The Proponent must identify all receivers at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Central likely to experience internal noise levels greater than Leq(15 minute) 60 dB(A) inclusive of a 5 dB penalty, if rock breaking or any other annoying activity likely to result in regenerated (ground-borne) noise or a perceptible level of vibration is planned (including works associated with utility adjustments), between 7am – 8pm.	Relevant CNVIS

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E38	The Proponent must consult with all receivers identified in accordance with Condition E37 with the objective of determining appropriate hours of respite so that construction noise (including ground-borne noise), does not exceed internal noise levels of: . (a) Leq(15 minute) 60 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 50 percent of the time; and . (b) Leq(15 minute) 55 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 25 percent of the time, unless an agreement is reached with those receivers. This condition does not apply to noise associated with the cutting surface of a TBM as it passes under receivers. Note This condition requires that noise levels be less than Leq(15 minute) 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below Laeq(15 minute) 55 dB(A). Noise equal to or above Leq(15 minutes) 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm.	Section 4.1.2
E39	The Proponent must consult with proponents of other construction works in the vicinity of the CSSI and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers.	Section 5.2
E40	The Proponent must ensure all works (including utility works associated with the CSSI where undertaken by third parties) are coordinated to provide the required respite periods identified in accordance with the terms of this approval.	Section 4.1.2

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E41	The Proponent must ensure that residential receivers, located in non-residential zones, likely to experience an internal noise level exceeding Leq(15 minute) 60 dB between 8pm and 9pm or Leq(15 minute) 45 dB between 9pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in regenerated noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the Sydney Metro City and South West Noise and Vibration Strategy referenced in Condition E32.	Section 3.3 Section 4.1.2
E42	The Proponent must ensure that residential receivers in residential zones likely to experience an internal noise level of Leq(15 minute) 45 dB or greater between 8pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the Sydney Metro City and South West Noise and Vibration Strategy referenced in Condition E32.	Section 3.3 Section 4.1.2
E43	At no time can noise generated by construction exceed the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of LAeq,8h, of 85dB(A) for any employee working at a location near the CSSI.	Section 4.1.2

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E44	Notwithstanding Condition E36 construction associated with the CSSI may be undertaken outside the hours specified under those conditions in the following circumstances: a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or c) where different construction hours are permitted or required under an EPL in force in respect of the construction; or d) construction that causes LAeq(15 minute) noise levels: i. no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009), and ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses, and iii. continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), and iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006); or e) where a negotiated agreement has been reached with a substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular construction, and the noise management levels and/or limits for ground-borne noise and vibration (human comfort) cannot be achieved. All agreements must be in writing and a copy	Section 3.2

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E44	e) forwarded to the Secretary at least one (1) week before the works commencing; or f) construction approved through an Out of Hours Work Protocol referred to in Condition E47, provided the relevant council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least five (5) days and no more than 14 days before the commencement of the works.	Section 3.2
E45	On becoming aware of the need for emergency construction in accordance with Condition E44(b), the Proponent must notify the AA, the ER and the EPA (if an EPL applies) of the need for those activities or work. The Proponent must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.	Section 3.2
E46	Notwithstanding Conditions E44 and E48, rock breaking and other particularly annoying activities are not permitted outside of standard construction hours, except at Central, unless the noise management level derived from the Interim Construction Noise Guideline can be achieved at sensitive receivers.	Section 3.3

Table 3. Conditions of Approval		
Condition	**Requirement**	**Relevant section of this CNVMP**
E47	An Out of Hours Work Protocol for the assessment, management and approval of work outside of standard construction hours, as defined in Condition E36 of this approval, must be prepared in consultation with the EPA and submitted to the Secretary for approval before construction commences for works not subject to an EPL. The protocol must include: (a) the identification of low and high risk construction activities; (b) a risk assessment process in which the AA reviews all proposed out of hours activities and identifies their risk levels; (c) a process for the endorsement of out of hours activities by the AA and approval by the ER for construction activities deemed to be of: i. low environmental risk; or ii. high risk where all construction works cease by 9pm. All other high risk out of hours construction must be submitted to the Secretary for approval unless otherwise approved through an EPL. The protocol must detail standard assessment, mitigation and notification requirements for high and low risk out of hours works, and detail a standard protocol for referring applications to the Secretary.	Section 3.3

2.2 Revised Environmental Mitigation Measures (REMMs)

The list of mitigation measures and performance outcomes presented in Chapter 27 of the Environmental Impact Statement have been revised on the basis of submissions received, the additional assessment work carried out and the preferred infrastructure report. In some cases new measures have been added, while in others, the wording of existing measures has been adjusted. Table 4 provides the REMMs applicable to the scope of this CNVMP.

Table 4. Revised Environmental Mitigation Measures		
ID	**Requirement**	**Relevant section of this CNVMP**
NV1	The Construction Noise and Vibration Strategy would be implemented with the aim of achieving the noise management levels where feasible and reasonable. This would include the following example standard mitigation measures where feasible and reasonable: • Provision of noise barriers around each construction site • Provision of acoustic sheds at Chatswood dive site, Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo and Marrickville dive site • The coincidence of noisy plant working simultaneously close together would be avoided • Offset distances between noisy plant and sensitive receivers would be increased • Residential grade mufflers would be fitted to all mobile plant • Dampened rock hammers would be used • Non-tonal reversing alarms would be fitted to all permanent mobile plant • High noise generating activities would be scheduled for less sensitive period considering the nearby receivers • The layout of construction sites would consider opportunities to shield receivers from noise. This would also include carrying out the requirements in relation to construction noise and vibration monitoring.	Section 2.4 (CNVS Requirements) Section 6.3 (Monitoring) Section 6.4.1 (Mitigation Measures)

Table 4. Revised Environmental Mitigation Measures		
ID	**Requirement**	**Relevant section of this CNVMP**
NV2	Unless compliance with the relevant traffic noise criteria can be achieved, night time heavy vehicle movements at the Chatswood dive site, Crows Nest Station, and Victoria Cross Station and Waterloo Station sites would be restricted to: • The Pacific Highway and Mowbray Road at the Chatswood dive site • The Pacific Highway, Hume Street and Oxley Street at the Crows Nest Station construction site • McLaren Street, Miller Street and Berry Street at the Victoria Cross Station construction site • Botany Road and Raglan Street at the Waterloo Station construction site.	Section 6.4.1
NV3	Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure. For heritage items, the more detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.	Section 4.3.2
NV4	Feasible and reasonable measures would be implemented to minimise ground borne noise where exceedences are predicted.	Section 6.4.1 Relevant CNVIS
NV6	Transport for NSW would engage an Independent Acoustic Advisor to act independently of the design and construction teams and provide oversight of construction methods, construction noise and vibration planning, management and mitigation, and construction noise and vibration monitoring and reporting. The key responsibilities of the Independent Acoustic Advisor would include : • Assurance of contractor noise and vibration planning, modelling, management and monitoring practices • Verification of compliance with relevant guidelines and approval requirements • Audit noise and vibration management practices.	Section 1.4 Section 7

Table 4. Revised Environmental Mitigation Measures		
ID	**Requirement**	**Relevant section of this CNVMP**
NV7	Alternative demolition techniques that minimise noise and vibration levels would be investigated and implemented where feasible and reasonable. This would include consideration of: • The use of hydraulic concrete shears in lieu of hammers/rock breakers • Sequencing works to shield noise sensitive receivers by retaining building wall elements • Locating demolition load out areas away from the nearby noise sensitive receivers • Providing respite periods for noise intensive works • Methods to minimise structural-borne noise to adjacent buildings including separating the structural connection prior to demolition through saw-cutting and propping, using hand held splitters and pulverisers or hand demolition • Installing sound barrier screening to scaffolding facing noise sensitive neighbours • Modifying demolition works sequencing / hours to minimise impacts during peak pedestrian times and / or adjoining neighbour outdoor activity periods.	Section 6.4 and relevant CNVIS

2.3 Sydney Metro Requirement - Environment - Demolition

The Sydney Metro Requirement - Environment - Demolition (SMR E) outlines the minimum requirements for a Construction Noise and Vibration Management Plan. These requirements are outlined in Table 5. Cross references are provided to the applicable section(s) of this CNVMP that address each requirement.

Table 5. SMR-E Requirements

Requirement	Relevant section of this CNVMP
Identification of work areas, site compounds and access points,	Section 5.3 Relevant CNVIS
Identification of sensitive receivers and relevant construction noise and vibration goals	Relevant CNVIS Section 4 Appendix B
Be consistent with and include the requirements of the noise and vibration mitigation measures as detailed in the environmental approval documentation and the Sydney Metro Construction Noise and Vibration Strategy (CNVS).	Section 2.3
Details of construction activities and an indicative schedule for construction works, including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios) that have the potential to generate noise or vibration impacts on surrounding sensitive receivers, in particular residential areas.	Relevant CNVIS & Section 3.1
Identification of feasible and reasonable procedures and mitigation measures to ensure relevant vibrations and blasting criteria are achieved, including a suitable blast program.	Section 6.4
Community notification provisions specifically in relation to blasting.	N/A
The requirements of any applicable EPL conditions.	This CNVMP does not contain any requirements from an EPL
Additional requirements in relation to activities undertaken 24 hours of the day, 7 days per week.	N/A
Pre-construction compliance requirements and hold points.	Section 3.3 Section 5.8
The responsibilities of key project personnel with respect to the implementation of the plan.	Section 1.4
Noise monitoring requirements.	Section 6.3
Compliance record generation and management.	Section 6.3
Community consultation requirements.	Section 6.1

Table 5. SMR-E Requirements	
Requirement	**Relevant section of this CNVMP**
An Out of Hours Works Protocol applicable to all construction methods and sites.	Section 3.3

2.4 Sydney Metro Construction Noise and Vibration Strategy

The Sydney Metro Construction Noise and Vibration Strategy provides additional guidelines for the structure and content of this CNVMP. These requirements are outlined in Table 6. Cross references are provided to the applicable section(s) of this CNVMP that address each requirement.

Table 6. Construction Noise and Vibration Strategy Requirements	
Requirement	**Relevant section of this CNVMP**
Acoustic Terminology / Glossary	Appendix A
Overview of the Project / Works	Section 1 & Relevant CNVIS
EPL conditions (if applicable)	None as of 20/1/2017
Site Plan and Sensitive Receivers	Appendix B
Ambient Noise Monitoring: methodology, locations, analysis and results	4.1.1
Construction Noise and Vibration Criteria	Section 4
- Construction Airborne Noise Criteria	Section 4.1
- Construction Tunnelling Ground-borne Noise Criteria (if applicable)	N/A
- Construction Ground-borne Noise Criteria	Section 4.2
- Construction Vibration Criteria	Section 4.3
Construction Noise and Vibration Assessment	Section 5
- Construction Airborne Noise Methodology / Predictions	Section 5.2 & relevant CNVIS
- Construction Tunnelling Ground-borne Noise Methodology / Predictions (if applicable)	N/A
- Construction Ground-borne Noise Methodology / Predictions	Section 5.2 & relevant CNVIS
- Construction Vibration Methodology / Predictions	Section 5.2 & relevant CNVIS

Table 6. Construction Noise and Vibration Strategy Requirements	
Requirement	**Relevant section of this CNVMP**
Summary of Noise and Vibration Impacts	Section 5
Summary of all Standard and Additional Mitigation Measures considering the applicable Revised Environmental Mitigation Measures as outlined in Chapter 11 of the Preferred Infrastructure Report	Section 2.2 Section 6.4
References	Section 8

2.5 Council Requirements

Condition of Approval C3 requires that this CNVMP is prepared in consultation with the relevant local Councils. A list of councils and their specific representative consulted during this process is provided in Table 7. It shall be noted that no councils passed any comments during the consultation process that required amendment of this CNVMP. Refer to the Delta Stakeholder Comment Tracker for specific details of comments made by the respective councils.

Table 7. Council Consultation			
Stakeholder	**Representative**	**Role**	**Date**
North Sydney Council	Brad Stafford	Executive Planner Metro Project	24/03/2017
Willoughby Council	David Sung	Design Services Manager	13/03/2017
City of Sydney Council	Bryony Cooper	Executive Manager City Access & Transport	31/03/2017
Inner West Council	Ryan Hawken	Coordinator Asset Planning	31/03/2017

3. Hours of Work

3.1 Indicative Construction Program

	2017								2018
	May	June	July	August	September	October	November	December	January
Chatswood									
Crows Nest									
Victoria Cross 2									
Pitt Street									
Waterloo									
Marrickville									

Figure 1: Construction Program

3.2 Hours of Work

In general, construction activities shall be undertaken during the following standard construction hours:

(a) 7:00am to 6:00pm Mondays to Fridays, inclusive;

(b) 8:00am to 1:00pm Saturdays; and

(c) at no time on Sundays or public holidays.

Condition of Approval E37 provides allowance for extended construction hours at the Crows Nest, Victoria Cross and Pitt Street sites where appropriate respite periods are negotiated with affected sensitive receivers. This is outlined further in Section 4.1.2.

In accordance with CoA E44, construction associated with the CSSI may be undertaken outside the hours specified under those conditions in the following circumstances:

a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or

b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or

c) where different construction hours are permitted or required under an EPL in force in respect of the construction; or

d) construction that causes LAeq(15 minute) noise levels:

   i. no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009), and

ii. no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses, and

iii. continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), and

iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006); or

e) where a negotiated agreement has been reached with a substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular construction, and the noise management levels and/or limits for ground-borne noise and vibration (human comfort) cannot be achieved. All agreements must be in writing and a copy forwarded to the Secretary at least one (1) week before the works commencing; or

f) construction approved through an Out of Hours Work Protocol referred to in Condition E47, provided the relevant council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least five (5) days and no more than 14 days before the commencement of the works.

Where works do not fall into the above categories, they shall be subject to the Out of Hours Work Protocol.

On becoming aware of the need for emergency construction in accordance with Condition E44(b), the AA, the ER and the EPA (if an EPL applies) shall be notified of the need for those activities or work. Best endeavours shall be used to notify all affected sensitive receivers of the likely impact and duration of those works.

3.3 Out of Hours Works (OOHW)

At the time of writing, Out of Hours Works are not planned however are being considered in light of the potential to minimise impacts on some sensitive receivers e.g. Child care centre adjacent to VC2. Where Out of Hours Works are required, the Sydney Metro Out of Hours Works Protocol shall be followed, as outlined in Appendix C. An overview of the OOHW process is presented in Figure 2.

In accordance with the CEMF, a detailed Construction Noise and Vibration Impact Statement will be prepared for works proposed to be undertaken outside of standard construction hours prior to works commencing. **(HOLD POINT)**

Note that, in accordance with CoA E46, and notwithstanding Conditions E44 and E48, rock breaking and other particularly annoying activities are not permitted outside of standard construction hours unless the noise management level derived from the Interim Construction Noise Guideline can be achieved at sensitive receivers.

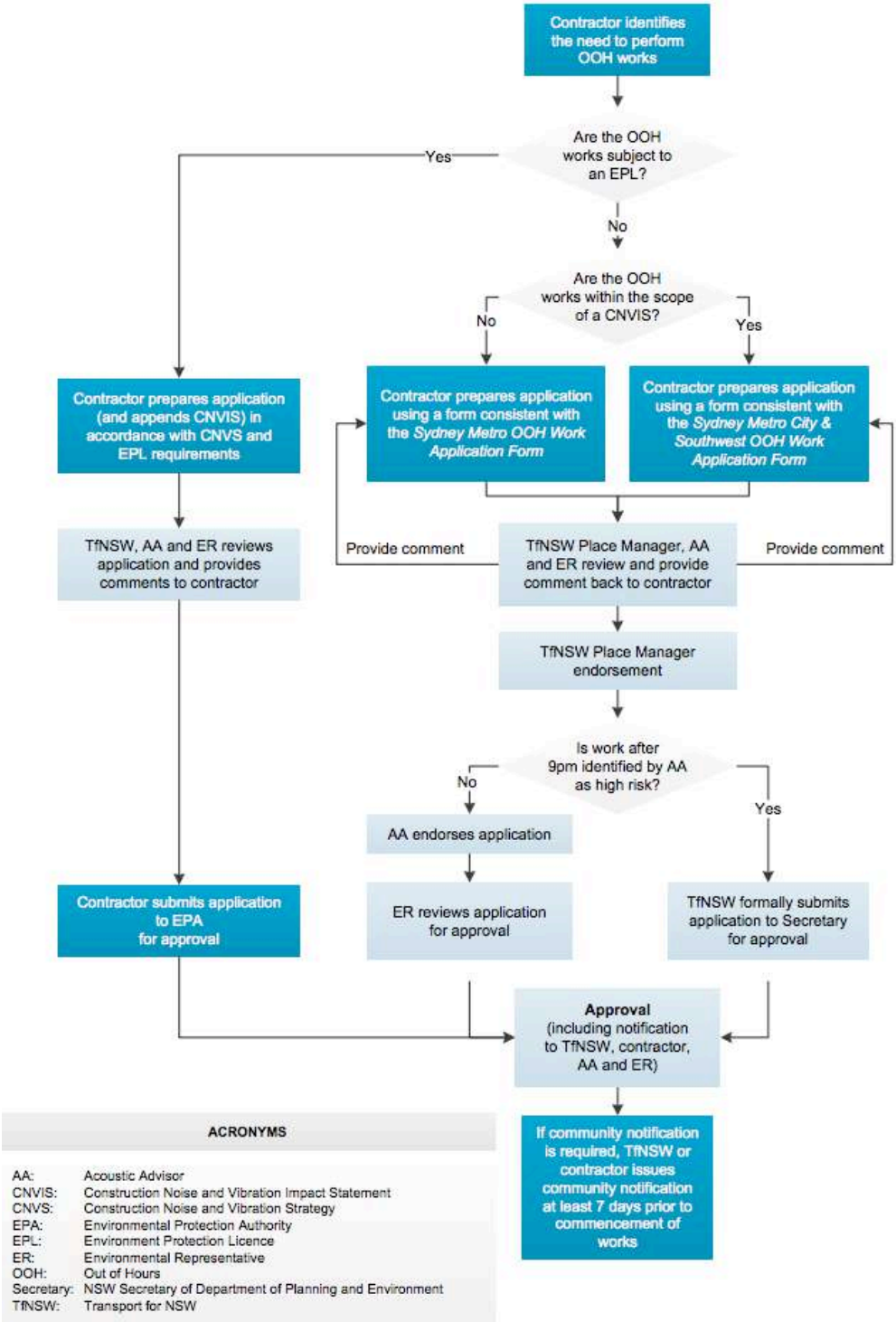

Figure 2: Out of Hours Works Protocol

4. Construction Noise and Vibration Criteria

4.1 Airborne Noise Management Levels

4.1.1 Interim Construction Noise Guideline

The Construction Noise and Vibration Strategy for the project refers to Noise Management Levels as outlined in the DECC's *Interim Construction Noise Guideline (ICNG)*. The ICNG stipulates NML's that are based on the Rating Background Level (RBL) plus an additional allowance dependent on the time of day. This data is reproduced in Table 8.

Table 8. ICNG Noise Criteria

Time of Day	Management Level $L_{Aeq\ (15\ min)}$*	How to apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays / Public Holidays	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. • Where the predicted or measured $L_{Aeq\ (15\ min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. • The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. • Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences 2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	• A strong justification would typically be required for works outside the recommended standard hours. • The proponent should apply all feasible and reasonable work practices to meet the noise affected level. • Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community. • For guidance on negotiating agreements see section 7.2.2.

*Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m of the residence. Noise levels may be higher at upper floors of the noise affected residence.

For the purpose of establishing construction Noise Management Levels in accordance with Table 8, RBL's have been sourced from initial noise monitoring conducted as part of the EIS for the project. Specifically, noise monitoring was carried out at 25 representative locations during June to July and August to September 2015. This information has been supplemented with ambient noise data collated during the investigations for other recent projects, resulting in a database for a total of 29 representative locations across the project area

Unattended noise monitors were placed at sensitive receiver locations in the vicinity of all construction sites for a minimum period of one week. The location of unattended noise surveys are shown on the respective site plans in Appendix B. The results of the unattended noise survey are summarised in Table 9. Representative monitor locations are listed in bold.

Table 9. RBL's from EIS Data

Site	Location ID	RBL (7am to 6pm)	RBL (6pm to 10pm)	RBL (10pm to 7am)
Chatswood	B.22	42	41	34
	B.23	**63**	**60**	**45**
	B.24	**50**	**47**	**39**
	B.25	41	40	35
Crows Nest	**B.19**	**59**	**55**	**50**
Victoria Cross	**B.16**	**65**	**63**	**52**
	B.17	55	50	44
	B.18	65	57	51
Pitt Street	**B.27 (2009)**	**66**	**64**	**61**
Waterloo	**B.06**	**54**	**47**	**39**
Marrickville	**B.01**	**59**	**53**	**41**
	B.02	**58**	**52**	**38**
	B.03	**52**	**43**	**38**
	B.04	47	47	47

Due to the significant number of sensitive receivers across the project, and for the purposes of reducing the required number of monitors, it is necessary to group sensitive receivers with like characteristics into monitoring zones or 'noise catchment areas' (NCAs) that can be represented by a single monitor. For the purpose of simplicity, NCA's have been defined according to their general direction relative to the site i.e. North, East, South and West. The EIS background monitoring locations and their noise environments were analysed to determine the most representative monitors for each NCA around each site. A summary of this analysis is provided below.

Chatswood

B.24 is considered to be representative of the ambient noise environment to the North, East and South of the Chatswood site taking into account general street activity as well as vehicular traffic.

B.22 and B.25 are located in quieter residential streets and are therefore not considered representative.

B.23 is representative of the ambient noise environment along the Pacific Highway to the West of the site being located on the corner of Pacific Highway and Mowbray Road.

Crows Nest

B.19 is considered to be representative of the ambient noise environment to the North, South and West of the Crows Nest site taking into account general street activity as well as vehicular traffic. B.19 may not be representative of the ambient noise environment to the East of the site on Clarke Street and Hume Street due to the reduced vehicular traffic in this area. In the absence of any other data, B.19 shall be used however it is recommended that additional monitoring is conducted to establish a new RBL to the East of the Crows Nest Site.

Victoria Cross

B.16 is considered to be representative of the ambient noise environment in all directions taking into account general street activity as well as vehicular traffic.

Pitt Street

The location of the B.27 (2009) monitor is not evident on the map supplied in Chapter 10 of the EIS. In the absence of any alternative data, this monitor has been assumed to be representative of the ambient noise environment in all directions on the Pitt Street Site.

Waterloo

B.06 is considered to be representative of the ambient noise environment to the North, East and South of the Waterloo site taking into account general street activity as well as vehicular traffic. B.06 is not representative of Botany Road as this is a major traffic route and there is significantly more street activity and heavy vehicular traffic. It is recommended that additional RBL monitoring is conducted along Botany Road to more accurately represent RBL's to the West of the Waterloo site.

For the purposes of establishing a more realistic NML to the West of the Waterloo site, the RBL has been assumed to be equal to that recorded along the similarly busy Pacific Highway to the West of the Chatswood site at 63dB(A). It is further noted that the vast majority of sensitive receivers situated along Botany Road are commercial in nature as opposed to residential for the vast majority of sensitive receivers to the North, East and South of the site.

Marrickville

B.01 is representative of the nearest residential receivers to the South of the Marrickville site beyond Unwins Bridge Rd.

B.02 is representative of the nearest residential receivers to the East of the Marrickville site beyond Edgeware Rd.

B.03 is representative of the nearest residential receivers to the North of the Marrickville site along Edinburgh Rd. B.03 is used as the basis for NML's for sensitive receivers to the West of the Marrickville site.

The location of B.04 was not evident on the map supplied in Chapter 10 of the EIS.

It is noted that there are no near-field monitoring points that represent the adjacent sensitive receivers as they are of an industrial nature.

Table 10 presents the NML's applicable to each noise catchment area based on the most representative RBL's for that site as identified above.

Table 10. NML's based on ICNG using RBL's from EIS Data

Site	Direction of Sensitive Receivers	Representative EIS Monitor Location ID	NML (7am to 6pm) $L_{Aeq\ (15\ min)}$	NML (6pm to 10pm) $L_{Aeq\ (15\ min)}$	NML (10pm to 7am) $L_{Aeq\ (15\ min)}$
Chatswood	**North**	**B.24**	60	52	44
	East	**B.24**	60	52	44
	South	**B.24**	60	52	44
	West	**B.23**	73	65	50
Crows Nest	**North**	**B.19**	69	60	55
	East	**B.19**	69	60	55
	South	**B.19**	69	60	55
	West	**B.19**	69	60	55
Victoria Cross	**North**	**B.16**	75	68	57
	East	**B.16**	75	68	57
	South	**B.16**	75	68	57
	West	**B.16**	75	68	57
Pitt Street	**North**	**B.27 (2009)**	76	69	66
	East	**B.27 (2009)**	76	69	66
	South	**B.27 (2009)**	76	69	66
	West	**B.27 (2009)**	76	69	66

Table 10. NML's based on ICNG using RBL's from EIS Data					
Site	**Direction of Sensitive Receivers**	**Representative EIS Monitor Location ID**	**NML (7am to 6pm) $L_{Aeq\ (15\ min)}$**	**NML (6pm to 10pm) $L_{Aeq\ (15\ min)}$**	**NML (10pm to 7am) $L_{Aeq\ (15\ min)}$**
Waterloo	**North**	**B.06**	64	52	44
	East	**B.06**	64	52	44
	South	**B.06**	64	52	44
	West	**B.23**	73	65	50
Marrickville	**North**	**B.03**	62	48	43
	East	**B.02**	68	57	43
	South	**B.01**	69	58	46
	West	**B.03**	62	48	43

Other Sensitive Land Uses

The project specific $LA_{eq(15minute)}$ NML's for other non-residential noise sensitive receivers from the ICNG are provided in Table 11.

Table 11. ICNG Noise Criteria for 'Other' Sensitive Receivers	
Land Use	**Management Level $L_{Aeq\ (15\ min)}$ (Applied when the land is in use)**
Classrooms at schools and other education institutions	Internal noise level of 45dB(A)
Hospital wards and operating theatres	Internal noise level of 45dB(A)
Places of worship	Internal noise level of 45dB(A)
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level of 65dB(A)
Passive recreation areas (characterised by contemplative activities that generate little noise and where bene ts are compromised by external noise intrusion, e.g. reading, meditation)	External noise level of 60dB(A)

Table 11. ICNG Noise Criteria for 'Other' Sensitive Receivers	
Land Use	**Management Level $L_{Aeq\ (15\ min)}$ (Applied when the land is in use)**
Community centres	Depends on the intended use of the centre. Refer to the recommended 'maximum' internal levels in Australian Standard 2107 – Acoustics – Recommended design sound levels and reverberation times for building interiors for specific uses.

Other noise-sensitive businesses require separate project specific noise goals. The Interim Construction Noise Guideline recommends that the internal construction noise levels at these premises are determined based on the 'maximum' internal levels presented in AS 2107. These recommended 'maximum' internal noise levels are provided in Table 12.

Table 12. AS2107 Noise Criteria for 'Other' Sensitive Receivers			
Description	**Time Period**	**AS2107 Classification**	**Recommended 'Maximum' Internal $L_{Aeq\ (15\ min)}$**
Hotel	Daytime and evening	Bars and lounges	50
	Night-time	Sleeping areas (hotels near major roads)	40
Cafe	When in use	Coffee bar	50
Bar/Restaurant	When in use	Bars and lounges / Restaurant	50
Library	When in use	Reading areas	45
Recording studio	When in use	Music recording studios	25
Theatre / Auditorium	When in use	Drama theatres	30

Childcare Centres

The EIS for the project provides information on the NML's adopted for childcare centres. Specifically, for internal play areas an internal NML of $L_{Aeq(15\ minute)}$ 55 dBA has been adopted and for sleeping areas an internal NML of $L_{Aeq(15\ minute)}$ 40 dBA (when in use) has been adopted. The EIS further provides external NML's *based on the assumption that windows and doors of childcare centres may be opened*, thus providing a noise reduction of 10dB from external to internal environments. However a site visit has determined that, based on the layout of the premises and type of windows and doors, the expected noise reduction between the external

environment and internal play/sleep rooms would be in the range of 20 to 35 dB, depending on their location. This noise reduction shall be verified by establishing background noise levels in both the internal and external environments prior to the start of demolition activities, thus enabling external monitoring for an internal NML.

Commercial and industrial premises

NMLs for commercial and industrial premises have been set based on the Interim Construction Noise Guidelines. For commercial premises, including offices, retail outlets and small commercial premises an external NML of $LA_{eq(15\ minute)}$ 70 dBA has been adopted. An external NML of $LA_{eq(15\ minute)}$ 75 dBA has been adopted for industrial premises. For both land use types, the external noise levels should be assessed at the most affected occupied point on the premises.

4.1.2 Conditions of Approval

Conditions of Approval E37 and E38 for the project impose alternative requirements on Noise Management Levels for the Crows Nest, Victoria Cross and Pitt Street sites. These additional requirements override the CNVS and therefore ICNG NML's and refer to internal noise levels only. The objective of these conditions is to allow for longer working hours whilst mitigating impact to sensitive receivers, and are predicated on consultation with the affected sensitive receivers to determine appropriate respite hours. These requirements are outlined in Table 13.

Table 13. Noise Criteria for the Assessment Period

Assessment Period	% of Assessment Period	Hours in Assessment period	Internal Noise Criteria (which must not be exceeded)
07:00 - 20:00	50	6.5	$L_{eq(15\ minute)}$ 60dB(A)
	25	3.25	$L_{eq(15\ minute)}$ 55dB(A)

All works associated with the CSSI (including utility works) shall be coordinated to provide the required respite periods identified in accordance with the terms of the Infrastructure Approval.

In the absence of defined noise criteria for the remaining 6.5 hours of the Assessment Period, consideration should be given to the DECC's *Interim Construction Noise Guideline* as discussed in Section 4.1.1.

Outside of these hours, the following night time Noise Management Levels apply:

a) Residential receivers, located in non-residential zones, likely to experience an internal noise level exceeding $L_{eq(15\ minute)}$ 60 dB between 8pm and 9pm or $L_{eq(15\ minute)}$ 45 dB between 9pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in regenerated noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the Revised Construction Noise and Vibration Strategy.

b) Residential receivers in residential zones likely to experience an internal noise level of $L_{eq(15\ minute)}$ 45 dB or greater between 8pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works

associated with utility adjustments)) must be offered additional mitigation in accordance with the Revised Construction Noise and Vibration Strategy.

Notwithstanding the above, at no time can noise generated by construction exceed the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of $LA_{eq,(8h)}$, of 85dB(A) for any employee working at a location near the CSSI.

4.2 Ground-borne Noise Management Levels

For the Chatswood, Waterloo and Marrickville sites where the ICNG requirements apply, Ground-borne Noise Management Levels for residential receivers are provided in Table 14.

Table 14. ICNG NML's for Ground-borne Noise

Land Use	Noise Management Level $L_{Aeq\ (15\ min)}$
Daytime 7am - 6pm	Internal noise level of 45dB(A)
Evening 6pm - 10pm	Internal noise level of 40dB(A)
Night-time 10pm - 7am	Internal noise level of 35dB(A)

For the Crows Nest, Victoria Cross and Pitt Street sites where Conditions of Approval E37 and E38 apply, Ground-borne Noise Management Levels are as per Table 13.

4.3 Construction Vibration

Condition E28 of the Conditions of Approval for the project stipulate that vibration from construction activities shall not exceed 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.

Notwithstanding the above, it should be noted that humans are generally quite sensitive to vibration, being able to detect levels of vibration that are well below damage limits. Human perception of vibration and whether or not it is tolerable to the individual depends heavily on the context in which the vibration was experienced. For example, vibration experienced while travelling in a car is expected and otherwise considered 'normal'. Vibrations felt unexpectedly in an office or dwelling may be considered 'abnormal' and are therefore more likely to yield complaints. For reference purposes, an overview of vibration assessment according to Human Comfort criteria is provided below. The Human Comfort criteria provides a sound basis for understanding the likelihood of vibration-related complaints which may arise as a result of construction activities on the project.

4.3.1 Human Comfort Criteria

The German Standard DIN 4150 Part 2 - 1975 presents information on the degree of human perception of various levels of motion and is summarised in Table 15.

Table 15. Peak Vibration Levels and Human Perception of Motion	
Approximate Vibration Level	**Degree of Perception**
0.10 mm/s	Not felt
0.15 mm/s	Threshold of perception
0.35 mm/s	Barely noticeable
1 mm/s	Noticeable
2.2 mm/s	Easily noticeable
6 mm/s	Strongly noticeable
14 mm/s	Very strongly noticeable

Note also that the definition of 'Perceptible level of vibration' is defined in the Conditions of Approval as "The value identified in the Preferred Peak velocity (mm/s) column in Table C1.1 Criteria for exposure to continuous and impulsive vibration in the Assessing Vibration: A technical guideline (DEC 2006)."

For the purposes of assessing human comfort, vibration is categorised as either continuous, impulsive or intermittent. The NSW EPA's publication "Assessing Vibration: A Technical Guideline" gives the following definitions for these categories:

Continuous Vibration continues uninterrupted for a defined period (usually throughout daytime and/or night-time). This type of vibration is assessed on the basis of weighted rms acceleration values presented in Table 16.

Impulsive vibration is a rapid build up to a peak followed by a damped decay that may or may not involve several cycles of vibration (depending on frequency and damping). It can also consist of a sudden application of several cycles at approximately the same amplitude, providing that the duration is short, typically less than 2 seconds. Impulsive vibration (no more than three occurrences in an assessment period) is assessed on the basis of acceleration values presented in Table 16. Note that this does not apply to blast-induced vibration which instead is assessed according to ANZECC (1990).

Intermittent vibration can be defined as interrupted periods of continuous (e.g. a drill) or repeated periods of impulsive vibration (e.g. a pile driver), or continuous vibration that varies significantly in magnitude. It may originate from impulse sources (e.g. pile drivers and forging presses) or repetitive sources (e.g. pavement breakers), or sources which operate intermittently, but which would produce continuous vibration if operated continuously (for example, intermittent machinery, railway trains and traffic passing by). This type of vibration is assessed on the basis of vibration dose values in Table 17.

Table 16. Preferred and Maximum weighted rms values for continuous and impulsive vibrations acceleration (m/s^2) 1-80 Hz					
Location	Assessment Period	Preferred Values		Maximum Values	
		z-axis	x- and y- axes	z- axis	x- and y- axes
Continuous Vibration					
Critical areas[2]	Day- or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.010	0.0071	0.020	0.014
Offices, schools, educational institutions and places of worship	Day- or night-time	0.020	0.014	0.040	0.028
Workshops	Day- or night-time	0.04	0.029	0.080	0.058
Impulsive vibration					
Critical areas[2]	Day- or night-time	0.0050	0.0036	0.010	0.0072
Residences	Daytime	0.30	0.21	0.60	0.42
	Night-time	0.10	0.071	0.20	0.14
Offices, schools, educational institutions and places of worship	Day- or night-time	0.64	0.46	1.28	0.92
Workshops	Day- or night-time	0.64	0.46	1.28	0.92

1. Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am.
2. Examples include hospital operating theatres and precision laboratories where sensitive operations are occurring. There may be cases where sensitive equipment or delicate tasks require more stringent criteria than the human comfort criteria specified above. Stipulation of such criteria is outside the scope of this policy, and other guidance documents (e.g. relevant standards) should be referred to. Source: BS 6472-1992

Table 17. Acceptable vibration dose values for intermittent vibration (m/s$^{1.75}$)				
Location	Daytime[1]		Night-time[1]	
	Preferred value	Maximum value	Preferred value	Maximum value
Critical areas[2]	0.10	0.20	0.10	0.20
Residences	0.20	0.40	0.13	0.26
Offices, schools, educational institutions and places of worship	0.40	0.8	0.40	0.80
Workshops	0.80	1.60	0.80	1.60

[1] Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am.

[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

4.3.2 Damage Criteria

British Standard 7385: Part 2 1993 suggests levels of vibration at which 'cosmetic', 'minor' and 'major' damage may occur. This standard is based on data collated from a wide range of national and international sources which collectively saw relatively few cases of damage caused by vibration. BS7385 suggests that vibration levels up to the cosmetic damage level are considered 'safe' and have produced no observable damage for particular building types.

For the purposes of this standard, damage includes minor non-structural effects such as hairline cracks on drywall surfaces, hairline cracks in mortar joints and cement render, enlargement of existing cracks and separation of partitions or intermediate walls from load bearing walls.

BS7385, reproduced in Table 18, is based on peak particle velocity and specifies damage criteria for transient vibration within the range of frequencies usually encountered in buildings, being 4Hz to 250Hz.

Table 18. BS7385: Part 2 Damage Criteria

Group	Type of Structure	Damage Level	Peak component particle velocity, mm/s		
			4 Hz - 15 Hz	15 Hz - 40 Hz	40 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	Cosmetic	50		
		Minor	100		
		Major	200		
2	Unreinforced or light framed structures Residential or light commercial type buildings	Cosmetic	15 to 20	20 to 50	50
		Minor	30 to 40	40 to 100	100
		Major	60 to 80	80 to 200	200

Where dynamic loading caused by continuous vibration may result in magnification of vibration through a building structure the guideline values may need to be reduced by up to 50 per cent. Rock breaking, rock hammering and sheet piling activities are considered to have the potential to cause dynamic loading in some structures (eg residences).

For construction activities involving intermittent vibration sources such as rock breakers, piling rigs, vibratory rollers, excavators and the like, the predominant vibration energy occurs at frequencies greater than 4 Hz (and usually in the 10 Hz to 100 Hz range). On this basis, and consistent with the guidance from BS 7385, the following conservative vibration damage screening level per receiver type have been adopted for the project:

- Reinforced or framed structures: **25.0 mm/s**
- Unreinforced or light framed structures: **7.5 mm/s**
- Heritage structures: **7.5 mm/s**

Where vibration levels are predicted to exceed the screening criteria, a more detailed assessment of the structure and attended vibration monitoring would be carried out to ensure vibration levels remain below appropriate limits for that structure.

With regards to heritage items, BS7385 states that "a building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive". Therefore any detailed assessment would specifically consider the heritage values of the structure in consultation with a heritage specialist to ensure sensitive heritage fabric is adequately monitored and managed.

5. Noise and Vibration Assessment

5.1 Sensitive Receivers

A full list of sensitive receivers for each site can be found in the relevant CNVIS for that site. As per Section 6.4 of the Sydney Metro Construction Noise and Vibration Strategy (CNVS), a subjective classification of the noise & vibration impact has been evaluated for each sensitive receiver and documented as:

- Low Impact
- Moderate Impact
- High Impact

The classifications were determined on a case-by-case basis using the metrics defined in the CNVS, including:

- The location of the works in relation to the NSR's with consideration of the noise attenuation features such as distance to NSR's, noise barriers, attenuation factor of NSR's windows and elements, Topographical features etc.
- The type and sensitivity of the NSR's:
    - Lower impact: e.g. commercial buildings/scattered residential (low density)
    - Moderate impact: eg standard residential (typical density)
    - High impact: e.g residential home for elderly/high density unit blocks/persistent complainers/residents deemed to have "construction noise fatigue", highly sensitive commercial (jewellers, etc.) or health applications e.g. operating theatres, MRI's, Psychotherapy units, Audio & video production studios etc. and schools/childcare centres.
- Predicted noise and vibration levels and extent of noise exceedance above Noise Management Level
- The type of and intensity of noise emitted from works (ie tonal or impulsive):
    - Lower Impact: No high noise and/or vibration intensive activities
    - Moderate Impact: Short/intermittent high noise and/or vibration intensive activities

- High Impact: Prolonged high noise and/or vibration intensive activities.

- The duration of any OOHW required.

Table 19 provides examples of how the assessment process is applied to a range of sensitive receivers.

Table 19. Impact Assessment Examples

Sensitive Receiver	Proximity and Exposure to Works	Receiver Type	Predictions	Intensity of Works	Resultant Impact Level
Childcare Centre - 65 Berry St	Zero boundary Opening windows and doors facing work site No existing barriers between site and receiver	Childcare Centre - High Sensitivity	Noise predictions indicate potential for routine exceedance of NML's.	Hammering/ sawing activities to occur in close proximity	**High**
Office Tower - 65 Berry Street	5m from site boundary No opening doors or windows facing work site Double-glazed facade	Commercial Building - Low Sensitivity	Noise predictions indicate potential for exceedance of NML's where works occur at closest site boundary.	Hammering/ sawing activities to occur in close proximity	**Moderate**
Sydney Indoor Climbing Gym - 1-7 Unwins Bridge Rd	63m from site boundary	Commercial Building - Low Sensitivity	Noise predictions indicate routine compliance with NML's	No highly noise intrusive works in close proximity to receiver	**Low**

Site plans illustrating the location of, and degree of impact to, sensitive receivers can be found in Appendix B.

5.2 Assessment Methodology

Table 20. Assessment Methodology

No.	Step	Details
1	Establish noise and vibration objectives	
		• Identify noise sensitive receivers • Identify applicable construction noise and vibration criteria
2	Establish Construction Scenarios	
		• Identify construction stages and key activities for site • Include: - the site location; - times of operation; - processes involved; - plant & equipment (inc. size / type). • Identify construction works in the vicinity of the project. Liaise with Proponent to ensure cumulative noise & vibration impacts are managed, in particular in relation to OOHW.
3	Noise and Vibration Predictions	
Airborne Noise		• Determine $L_{Aeq(15\ minute)}$ sound power levels based on operating scenarios for input to noise model (see below). • Establish noise model for construction activity/ component. • The noise model should include: - Height and location of sources and receivers; - Distance attenuation (incorporating noise reflections and ground absorption); - Effects of noise shielding (topography, buildings, boundary fences, noise barriers etc); and - Effects of *standard* noise mitigation measures. - Effects of facade sound insulation - See Section 5.5 for methodology • Calculate the $L_{Aeq(15minute)}$ noise levels from the proposed construction activities at each receiver and compare these with the construction noise management levels.
Groundborne (Regenerated) Noise		• Determine the location of each plant or equipment item in relation to each receiver. • On the basis of ground-borne noise levels versus distance prediction curves for each plant item, determine the level of ground-borne noise at each building location. For highly sensitive building occupancies, the assessment may need to incorporate the acoustic properties of the building space and the structural response of the building.

Table 20. Assessment Methodology		
No.	**Step**	**Details**
	Ground Vibration	• Determine the location of each plant or equipment item in relation to each receiver. • Where vibration intensive equipment could potentially be operating in close proximity to receivers, determine whether this is within the minimum working distances (Section 7.2). Note that minimum working distances may differ for heritage items; • Where plant & equipment may operate within minimum working distances, or for heritage items: • Use vibration levels vs distance prediction curves for each plant item • Determine the vibration likely to occur at each building location • For highly sensitive equipment, assessment may need to incorporate structural response of building & particular sensitivities of equipment.
4	Noise and Vibration Mitigation	
		• Implement appropriate reasonable/ feasible standard mitigation measures. • Predicted noise / vibration at receivers, incorporating nominated mitigation measures, based on the expected noise reduction from mitigation measures. • Additional mitigation measures may need to be considered.

5.2.1 Cumulative Impacts

Sydney Metro has noted the potential for cumulative impacts at the Chatswood dive site due to the duration of works in this area. The demolition phase of the work is relatively short term and no specific action is required in relation to the Delta works at this site.

Delta notes that there are a number of demolition and construction sites in the vicinity of the VC site. In particular, the Berry Square redevelopment is adjacent to some of the receivers that are impacted by the Delta works (65 and 77 Berry Street). Any OOH work would be coordinated with the adjacent developer to manage cumulative noise impact. Attention would also be given to ensuring good records are kept regarding timing and location of activities on the Delta site as this would assist in determining whether any noise complaints result from the Delta work or surrounding worksites.

5.3 Construction Noise and Vibration Impact Statements

In accordance with Condition of Approval E33, Construction Noise and Vibration Impact Statements shall be prepared for each construction site. These documents shall fulfil the requirements relating to the identification of affected properties (sensitive receivers) and the associated notification of those properties. Each CNVIS shall assess the likely impacts of construction noise and vibration on sensitive receivers and identify specific mitigation measures identified through collaboration between the demolition team, noise and vibration specialist and place managers. Work areas, site compounds and access points for each site are also detailed in the respective CNVIS. The CNVIS documents prepared under this CNVMP are identified in the Table 21.

Table 21. List of CNVIS Documents		
Works	**Site**	**CNVIS Document**
Demolition and Retention	Chatswood Dive Site	0116-041-02 CNVIS - Sydney Metro - Chatswood
	Crows Nest Station Site	0116-041-03 CNVIS - Sydney Metro - Crows Nest
	Victoria Cross Station Site	0116-041-04 CNVIS - Sydney Metro - Victoria Cross
	Pitt Street Station Site	0116-041-05 CNVIS - Sydney Metro - Pitt Street
	Waterloo Station Site	0116-041-06 CNVIS - Sydney Metro - Waterloo
	Marrickville Dive Site	0116-041-07 CNVIS - Sydney Metro - Marrickville

5.3.1 Child Care Centre - 65 Berry Street

Due to the high profile nature of potential impacts to the child care centre at 65 Berry Street, a detailed analysis of noise and vibration impacts specific to this sensitive receiver are included in the Victoria Cross CNVIS document. This includes floor by floor prediction and mitigation measures as well as consideration of potential OOH Works as a result of consultation with the sensitive receiver.

5.4 Construction Activities and Sources of Noise

The degree of noise impact on adjacent sensitive receivers from demolition activities is highly dependent on the type and size of machinery used. A list of construction activities to be undertaken and the associated machinery is provided in Table 22.

Table 22. Construction Activities and Equipment Noise		
Equipment	**Construction Activity**	**Assumed Sound Power* Level dB(A)**
2T Excavators	Strip Out	88
5T Excavators	Strip Out	89
12T Excavators w/hammer	Structural Demolition	115
20T Excavators w/hammer	Structural Demolition	116
30T Excavators w/hammer	Structural Demolition	118
47T Excavators w/hammer+	Lower Level Structural Demolition	119
12T Excavators w/hydraulic shears/pulverisers	Structural Demolition	102
20T Excavators w/hydraulic shears/pulverisers	Structural Demolition	104

Table 22. Construction Activities and Equipment Noise		
Equipment	**Construction Activity**	**Assumed Sound Power* Level dB(A)**
Mustang Bobcats	Strip Out and Structural Demolition	110
Powered Hand Tools	Powered Hand Tools	100
Trucks	Trucks	105
Concrete Cutters	Structural Demolition	119

✶ Sound power levels provided in the table above should be verified against specifications of actual equipment used onsite.

+ Proposed for use on lower levels only. Hoarding may provide up to 10dB reduction in predicted noise levels provided in each CNVIS

5.5 Airborne Noise Predictions

Using the sound power levels stated in Section 5.4, predicted noise levels have been calculated at representative locations around each site based on the distance between noise-emitting activities and the closest sensitive receivers for that site. Predictions assume that equipment is operating at the nearest point of works to the sensitive receiver and therefore represent worst-case scenarios. Predictions do not take into account any noise mitigation measures.

Where prediction of internal noise levels are required, it is necessary to make an assessment of the degree of noise reduction between the outdoor and indoor environment. This assessment is made according to noise reduction values listed in Table 23.

Table 23. Typical Noise Reduction Values	
Building Environment	**Noise Reduction**
Most building types - with windows open	10dB
Most building types - with windows closed	20dB
Commercial buildings - non-opening double-glazed windows, etc.	30dB

Results of noise modelling are detailed in the relevant CNVIS.

5.6 Vibration Predictions

Vibration at the nearest sensitive receivers (adjacent to the building foundation) has been estimated using the formula from the FTA's Guideline "Transit Noise and Vibration Impact Assessment".

$$PPV_{Receiver} = PPV_{Ref} \times \left(\frac{d_{ref}}{d}\right)^{1.5}$$

Where: $PPV_{Receiver}$ = peak particle velocity at the receiver in mm/s

PPV_{Ref} = peak particle velocity of the source, measured at the reference distance (7.6 m)

d_{ref} = reference distance for the vibration source (7.6 m)

d = horizontal distance from the source to the receiver (m)

The values of PPV_{Ref} are based on a review of current literature and are provided in Table 24 for reference.

Table 24. Reference PPV's

Equipment	PPV @ 7.6m (mm/s)
5T Excavators	2.5
30T Excavators w/ Hammer	5.1
45T Excavators w/hammer	7.6
Mustang Bobcats	0.3
Powered Hand Tools	0.2
Trucks	1.9

A qualitative assessment of vibration impacts for each site is summarised in Table 25. Refer to the relevant CNVIS for further details.

Table 25. Summary of Vibration Impacts

Site	Impact
Chatswood	Low impact to all sensitive receivers (including Mowbray House on the provision that demolition activities are confined to the existing structures on the site
Crows Nest	Generally low impact except for: • Moderate impact to properties opposite Clarke Lane where hammering activities approach Eastern site boundary • High impact where hammering activities approach adjoining properties 20 Clarke St and 473 Pacific Highway
Victoria Cross 2	Generally low impact except for: • Moderate impact to adjoining properties to East and South where vibration-intensive activities approach these site boundaries

Table 25. Summary of Vibration Impacts	
Site	**Impact**
Pitt St	Generally low impact except for: • Moderate impact to adjoining properties to North where vibration-intensive activities approach this site boundary
Waterloo	Low impact to all sensitive receivers except for : • Potential high impact to heritage listed church at 103-105 Botany Rd as demolition works encroach on this site boundary
Marrickville	Low impact to all sensitive receivers

Where possible, predictions of ground vibration will be confirmed through site trials. These trials will involve commencement of high-impact works away from sensitive receivers with monitoring in place. Monitoring will continue as works approach the sensitive receiver thus enabling validation of vibration predictions whilst minimising impact on the sensitive receiver.

5.7 Ground-borne Noise

As demolition and retention works do not involve ground excavation, ground-borne noise is expected to be an issue only where sensitive receivers adjoin or are otherwise directly coupled to the works (structure-borne noise). Table 26 summarises the sensitive receivers that are expected to be affected by ground-borne noise during demolition works. Refer to the relevant CNVIS for more information.

Table 26. Sensitive Receivers Likely Affected by Ground-Borne Noise	
Site	**Sensitive Receiver**
Crows Nest	• 473 Pacific Highway • 20 Clarke Street
Victoria Cross 2	• 100 Miller Street
Pitt St	• 242 Pitt Street • 169 Castlereagh Street

Where possible, predictions of structure-borne noise at sensitive receivers will be confirmed through site trials. These trials will involve commencement of noise-intrusive activities away from the sensitive receiver with monitoring in place. Monitoring will continue as works approach the sensitive receiver thus enabling validation of noise predictions whilst minimising impact on the sensitive receiver.

5.8 Condition Surveys

Prior to the commencement of construction the Demolition Contractor will offer Pre-construction Building Condition Surveys, in writing, to the owners of buildings where there is a potential for construction activities to cause cosmetic or structural damage. If accepted, the Demolition Contractor will produce a comprehensive written and photographic condition report produced by an appropriate professional prior to relevant works commencing. **(HOLD POINT)**

The Demolition Contractor shall submit the Condition Surveys to TfNSW for its acceptance prior to commencing work at the relevant Demolition Sites.Noise and Vibration Management

6.1 Community Communication Strategy

CoA B1 stipulates that "A Community Communication Strategy must be prepared to facilitate communication between the Proponent, and the community (including Relevant Councils, adjoining affected landowners and businesses, and others directly impacted by the CSSI), during the design and construction of the CSSI and for a minimum of 12 months following the completion of construction of the CSSI."

Sydney Metro have retained responsibility for this process, which is outlined in the document "*Sydney Metro Community Consultation Strategy – Early Works*", attached in Appendix D. Delta's role is to support TfNSW in managing stakeholder communications.

6.2 Complaints Management System

CoA B6 stipulates that "A Complaints Management System must be prepared before the commencement of any works in respect of the CSSI and be implemented and maintained for the duration of works and for a minimum for 12 months following completion of construction of the CSSI."

Sydney Metro have retained responsibility for this process, which is outlined in the document "*Sydney Metro Construction complaints management system*", attached in Appendix E. Delta's role is to support TfNSW in managing complaints from the community. Specifically, Delta's responsibilities include:

- Answer all phone calls transferred by the call centre from the community information line (calls to be answered by a team member 24/7, not an answering machine while construction activities are occurring).
- Develop and implement procedures for managing and resolving stakeholder and community complaints directed to the contractor in accordance with the Construction Complaints Management System (this document). and the relevant projects' Conditions of Approval.
- Refer complaints not associated with contractor activities to the Sydney Metro Project Communications team immediately.
- Investigate and determine the source of a complaint immediately, including an initial call to the complainant (when received by phone or where a telephone number was provided or available on Consultation Manager).

- Provide an initial verbal response to all complaints within two hours (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise.
- Provide a written response to emails within 24 hours (or verbally within two hours if a phone number is provided or available on Consultation Manager).
- Provide a written response to letters/faxes within 24 hours (or verbally within two hours if a phone number is provided or available on Consultation Manager).
- Keep the complainant informed of the process until the complaint is resolved.
- Provide feedback to requests for information from the Sydney Metro Project Communications team or the Community Complaints Commissioner within two hours.
- Comply with all directions from the Sydney Metro Project Communications team or the Community Complaints Commissioner in relation to the resolution of an escalated complaint.
- Take all actions and implement all measures to prevent the reoccurrence of the complaint.
- Close out complaints within agreed timeframe (with complainant).
- Escalate complaints in accordance with the Construction Complaints Management System.
- Report to the Sydney Metro Project Communications team and the Environmental Representative on a daily basis. Record all complaints on Consultation Manager in accordance with Consultation Manager data entry procedure within 24 hours. Details should include how it was managed and closed out.

6.3 Environmental Monitoring

6.3.1 Methodology

In accordance with Condition of Approval C11, real-time noise and vibration monitoring shall be undertaken by a specialist consultant using permanent monitor installations at key sensitive receivers around each site. It is proposed to implement an automated monitoring system whereby monitor data is instantly and automatically uploaded to a central server via the 3G network. Data shall be accessible by way of an online gateway whereby users can log on to the system and interrogate monitors in real-time and view a full history of results for each location. The demolition contractor will grant access to the online monitoring gateway to key stakeholders including, but not limited to, the construction team, Proponent, ER, AA, EPA and DPE.

Monitoring shall be conducted in accordance with the requirements of Appendix A of the Construction Noise and Vibration Strategy for the project.

6.3.2 Monitoring Locations

Due to the significant number of sensitive receivers across the project, it is not feasible to monitor at every sensitive receiver, thus necessitating the rationalisation of sensitive receivers with like characteristics into 'noise catchment areas' (NCAs) that can be represented by a single monitor. For the purpose of simplicity, NCA's have been defined according to their general direction relative to the sites i.e. North, East, South and West. A permanent monitor installation shall be established at a location that is generally representative of each NCA as a whole, ensuring that the monitor location adequately represents the noise environment at the worst affected receiver. This is generally achieved by locating the monitor at the closest point of the NCA to the demolition works. Further, the grouping of multiple sensitive receivers into NCAs for the purpose of practical monitoring will necessitate the supplementation of long term unattended monitoring with both short term unattended and attended monitoring. This is discussed further in Section 6.3.4.

Long term unattended monitoring locations have been determined with reference to the requirements of the Construction Noise and Vibration Strategy for the project as defined below.

Noise

Where it has been predicted that noise levels may be in excess of the nominated construction noise goals at a noise sensitive receiver, noise monitoring would be conducted at:

- the affected receiver; or
- if more than one affected receiver has been identified, at the nearest affected receiver; or
- where the nearest affected receiver refuses noise monitoring on their property, at the near point to that receiver within the site boundary.

Vibration

Where it is anticipated that an item of plant will exceed cosmetic damage criteria, vibration monitoring would be required at the nearest affected receiver. Where it is anticipated that an item of plant will exceed the human response / ground borne noise criteria and concerns have been raised regarding vibration, vibration monitoring would also be required at the receiver(s) under question. Consideration shall also be given to the monitoring of vibration for human comfort particularly in respect of CoA E37.

Proposed permanent monitor locations are detailed in Appendix B. The number and location of monitoring points shall be reviewed after an initial period of 2 - 3 months. Where noise and vibration levels are negligible and, in consideration of the works still to be completed, those levels are not expected to increase for the remainder of the project, consideration shall be given to the removal of redundant monitoring points.

6.3.3 Reporting

All monitoring results will be compiled into a compliance report by Osterman Consulting and forwarded to Delta's Environment Manager and site project manager on a weekly basis for assessment against the nominated goals. Reports shall be submitted within one week of being undertaken or at weekly intervals for continuous monitoring and include those points stipulated in Appendix A of the Construction Noise and Vibration Strategy for the project. Delta's Environment Manager will manage all compliance reports, and such

reports shall be made available upon request to all authorised parties. All compliance reports will be stored on Delta's project server for no less than 7 years after project completion. All noise and vibration monitoring results are stored on the Osterman Consult INFRANet online database for 10 years.

6.3.4 Attended Monitoring

Unattended long term monitoring shall be supplemented with both attended and unattended short term monitoring to:

- Validate the estimates of structure borne noise and vibration
- Validate the estimates of internal noise levels via the facade (and thus the degree of facade sound insulation), where applicable
- Determine relationships between permanent monitor locations and other affected receivers such as upper floors in a building, etc.
- Where complaints are received, additional monitoring may be conducted at the specific location of complaint.

Operator-attended noise monitoring will be conducted for a minimum of 15 minutes at each location during the demolition works. Where a longer monitoring duration is required, measurements shall be made in consecutive 15 minute periods.

6.3.5 Heritage Structures

AMBS Ecology and Heritage have been engaged to provide specialist advice on heritage matters. The includes advice on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures. Details of monitoring requirements as stipulated by AMBS are provided in the relevant CNVIS documents.

6.3.6 Plant Noise

Noise levels of plant and equipment shall be assessed for compliance with the Maximum Allowable Plant Sound Power Levels listed in the CNVIS for the project. To achieve this, the following shall apply:

- Measurements of Sound Pressure Level (SPL) at 7 m (with plant or equipment stationary) shall be undertaken using procedures that are consistent with the requirements of Australian Standard AS2012 1990 Acoustics Measurement of Airborne Noise Emitted by Earthmoving Machinery and Agricultural Tractors Stationary Test Condition Part 1: Determination of Compliance with Limits for Exterior Noise.
- Measurements of Sound Power Level (SWL) shall be determined using procedures that are consistent with the requirements of International Standard ISO9614-2 1996 Acoustics Determination of sound power levels of noise sources using sound intensity - Part 2: Measurement by scanning.

- If measuring the SPL at 7 m of moving plant, compliance measurements would be guided by the requirements of Australian Standard AS2012 1977 Method for Measurement of Airborne Noise From Agricultural Tractors and Earthmoving Machinery.
- For all measurements, the plant or equipment under test would be measured while operating under typical operating conditions. If this is not practical, it may be appropriate to conduct a stationary test at high idle.
- In the case of an exceedance in sound power levels the item of plant would either be replaced, or the advice of an acoustic consultant would be sought to provide suitable mitigation measures
- A register of measured sound power levels for each item of plant would be kept for reference where future noise audits are conducted. The register would be reviewed annually in conjunction with this strategy and corresponding revisions made to the Sound Power Levels presented in Section 7 to represent contemporary plant noise emission levels.

6.3.7 Compliance with Limits and Managing Unsatisfactory Results

The INFRA Monitoring System used on this project features a number of real time alerts and alarms that enable instant notification where limits are approached or exceeded. Where vibration-intensive works are planned to occur in close proximity to sensitive receivers, and works are expected to approach the limits for cosmetic damage, monitoring equipment shall be equipped with visual and/or audible alarms that are triggered when the levels of vibration exceed the control criteria presented in Table 27.

Table 27. Operator Warning and Halt Levels

Structure	Site Control Criteria (PPV in any Orthogonal Direction)	
	Operator Warning Level	Operator Halt Level
Reinforced or framed structures	20 mm/s	25 mm/s
Unreinforced or light framed structures	5 mm/s	7.5 mm/s
Heritage structures	5 mm/s	7.5 mm/s

The INFRA system is also able to send text messages to key project stakeholders when certain limits are approached or exceeded. Where works cause activation of the alert/alarm system, the following shall occur:

A. Works are to cease immediately until the cause of the trigger can be identified.

B. Once identified, a revised approach to the works shall be determined by site management in accordance with this CNVMP. This shall include revision of the suitability and effectiveness of mitigation measures employed, and implementation of additional mitigation measures as outlined in Section 6.4, as appropriate.

C. The revised approach shall be implemented ensuring that levels are monitored closely for an initial period as appropriate. This may require the use of additional monitors where necessary.

6.3.8 Dilapidation Surveys

If demolition works have the potential to cause damage through vibration to nearby public utilities, structures, buildings and their contents, an Existing Condition Inspection of these items shall be undertaken in accordance with AS 4349.1 "*Inspection of Buildings*".

Prior to conducting the Existing Condition Inspections, the property owners will be advised of the inspection scope and methodology and the process for making a property damage claim. A register shall be maintained of all properties inspected and of any properties where owners refused the inspection offer.

The findings of all dilapidation surveys conducted for each Sydney Metro construction site shall be complied into a report to be forwarded to the construction contractor and project manager. Follow-up Condition Inspections would be required at the completion of certain major works (eg completion of shaft bulk excavation works).

6.3.9 Consultation in Relation to Monitoring

Routine consultation is held with Place Managers and, where appropriate, individual sensitive receivers for the purpose of establishing suitable monitoring methodologies. This includes consultation around the type of activity undertaken at each receiver, occupied/inhabited spaces and therefore suitable locations at which to install monitoring equipment. Place Managers responsible for each site are referenced in Section 1.4 - Roles and Responsibilities.

6.4 Mitigation Measures

6.4.1 Standard Mitigation Measures

Table 28 sets out an indicative list of standard noise and vibration mitigation measures that shall be adopted on the project.

Table 28. Noise and Vibration Mitigation Measures

No.	Control	Anticipated Noise Reduction	Timing
Administration			
NVM1	Conduct a site induction addressing the requirements of this CNVMP for all new personnel undertaking site activities	N/A	Prior to starting works
NVM2	Educate staff on noise and the impacts of workers activities on the noise environment	N/A	Prior to starting works / following noise complaints
NVM3	Develop a complaints handling procedure and respond to complaints	N/A	Prior to starting works / as required
NVM4	Conduct regular toolbox talks to reiterate the appropriate noise and vibration management methodologies	N/A	Periodically

Table 28. Noise and Vibration Mitigation Measures			
No.	**Control**	**Anticipated Noise Reduction**	**Timing**
Procedural			
NVM5	Turn off machinery when not in use	Up to 10 dB	Daily
NVM6	Conduct regular noise measurements in the vicinity of the site to assess compliance with noise criteria	N/A	As needed / following changes in activities
NVM7	The coincidence of noisy plant working simultaneously close together would be avoided	Up to 10 dB	Daily
NVM8	Operate and maintain equipment according to manufacturers' specifications.	Up to 3 dB	Daily
NVM9	Do not use crane whistles, amplified external telephone ringers/ horns or alarms (excluding emergencies)	N/A	Daily
NVM10	Preference the use of the following in lieu of hydraulic hammers: • hydraulic concrete shears • hydraulic concrete pulverisers • saw cutting and lifting	Up to 15 dB	At all times so far as is practicable
NVM11	Maximise offset of noisy plant to sensitive receivers as much as possible.	N/A	Where practicable
NVM12	Sequencing of demolition works to retain noise shields (walls, etc.) as long as possible ie floor by floor leaving the perimeter wall	5 to 15 dB	Where practicable
NVM13	Positioning of load out areas and dump chutes away from neighbouring walls and enclosing dump chutes	N/A	Where practicable
NVM14	Unless compliance with the relevant traffic noise criteria can be achieved, night time heavy vehicle movements at the Chatswood dive site, Crows Nest Station, and Victoria Cross Station and Waterloo Station sites would be restricted to: • The Pacific Highway and Mowbray Road at the Chatswood dive site • The Pacific Highway, Hume Street and Oxley Street at the Crows Nest Station construction site • McLaren Street, Miller Street and Berry Street at the Victoria Cross Station construction site • Botany Road and Raglan Street at the Waterloo Station construction site.	N/A	Night time works only
Engineering			
NVM15	Install temporary hoardings around the sites. The hoardings will be formed from a solid, continuous material with a minimum mass per unit area of at least 10 kg/m2 and will be at least 2.4m high and up to 3.6m.	5 to 10 dB	Prior to starting works
NVM16	Use site offices, sheds as noise barriers during demolition works	5 to 15 dB	Prior to starting works
NVM17	Use equipment appropriately sized for each task.	Up to 2 dB	Daily
NVM18	Use a noise reduction kit on the jack hammer to limit its sound power level to 115 dBA.	6 dB per source	When selecting equipment

Table 28. Noise and Vibration Mitigation Measures			
No.	**Control**	**Anticipated Noise Reduction**	**Timing**
NVM19	Use smart broadband reversing alarm on mobile equipment where possible.	2 to 5 dB	When selecting equipment
NVM20	Removal of any points of contact between the buildings	Up to 15 dB	Where practicable
NVM21	Installation of carpet/ply on scaffold at level of demolition.	Up to 10 dB	Where practicable
Hours of Work			
NVM22	Operate during standard work hours wherever possible	N/A	Daily
NVM23	Introduce respite periods and/or take smoke and lunch breaks when noisy equipment is operating close to the site boundaries.	N/A	Daily
NVM24	Consultation shall be undertaken with affected sensitive receivers to determine sensitive periods	N/A	Daily
NVM25	Noise-intrusive works shall not be timetabled within sensitive periods as required by CoA E34	N/A	Daily

N.B. REMM NV1 makes reference to residential grade mufflers fitted to all mobile plant, and the use of dampened rock hammers. These options were investigated in the development of this CNVMP and subsequently deemed neither reasonable or feasible.

When a rock hammer is classed as dampened or silenced it means that the internal actuation of the hammer firing is apparently quieter than a standard hammer. This has nothing to do with the chisel/moil hitting the concrete or material/compound it's hit against. Therefore using a silenced rock hammer is completely pointless as the sound of the chisel hitting a piece of cement/rock is much louder than the hammers internal actuation. The demolition contractor has used Atlas Copco hammers for many years due to the high efficiency and low maintenance with this particular make. Further, the demolition contractor has trialled silenced rock hammers in the past and they have proved to be no quieter than a standard hammer, with the disadvantage of being much less efficient. In lieu of noise-dampened hammers, and as per NVM10, alternative methods to hammering shall instead be preferenced where possible.

Retrofitting specialist mufflers to all plant is not a feasible option due to the significant number of units required and associated costs. Further, a significant portion of the works will involve sub-contractors and fitting of specialist mufflers to all subcontractor vehicles is neither reasonable or feasible. Note that all plant owned by the demolition contractor has the highest level of sound suppression (mufflers/catalytic converters/emission control) available without derating the engine or causing internal engine exhaust carbon issues.

6.4.2 Additional Mitigation Measures

Based on the TfNSW Construction Noise Strategy, Table 29, Table 30 and Table 31 outline the additional mitigation measures that shall be adopted where exceedance of imposed limits is expected.

Table 29. Airborne Noise - Additional Mitigation Measures

Time Period		Mitigation Measures $L_{Aeq\ (15\ min)}$ above RBL			
		0 to 10 dB(A) (Noticeable)	10 to 20 dB(A) Clearly Audible	20 to 30 dB(A) Moderately Intrusive	>30 dB(A) Highly Intrusive
Standard	Mon - Fri (7am - 6pm)	-	-	LB, M	LB, M
	Sat (8am - 1pm)				
	Sun/Pub Hol (Nil)				
OOHW Period 1	Mon - Fri (6pm - 10pm)	-	LB	LB, M	M, IB, LB, RO, PC, SN
	Sat (7am - 8am) & (1pm - 10pm)				
	Sun/Pub Hol (8am - 6pm)				
OOHW Period 2	Mon - Fri (10pm - 7am)	LB	M, LB	M, IB, LB, PC, SN	AA, M, IB, LB, RO, PC, SN
	Sat (10pm - 8am)				
	Sun/Pub Hol (6pm - 7am)				

Abbreviations:
LB = Letterbox Drop
PC = Phone Calls
AA = Alternative Accomodation
M = Monitoring
SN = Specific Notifications
IB = Individual Briefings
RO = Project-specific Respite Offer

Table 30. Ground-borne Noise - Additional Mitigation Measures

Time Period		Mitigation Measures Predicted $L_{Aeq\ (15\ min)}$ noise level exceedance		
		0 to 10 dB(A) Clearly Audible	10 to 20 dB(A) Moderately Intrusive	20 to 30 dB(A) Highly Intrusive
Standard	Mon - Fri (7am - 6pm)	LB	LB	M, LB, SN
	Sat (8am - 1pm)			
	Sun/Pub Hol (Nil)			
OOHW Period 1	Mon - Fri (6pm - 10pm)	LB	M, LB, RO, SN	M, IB, LB, RO, PC, SN
	Sat (7am - 8am) & (1pm - 10pm)			
	Sun/Pub Hol (8am - 6pm)			
OOHW Period 2	Mon - Fri (10pm - 7am)	M, LB, SN	AA, M, IB, LB, RO, PC, SN	AA, M, IB, LB, RO, PC, SN
	Sat (10pm - 8am)			
	Sun/Pub Hol (6pm - 7am)			

Abbreviations:
LB = Letterbox Drop
PC = Phone Calls
AA = Alternative Accomodation
M = Monitoring
SN = Specific Notifications
IB = Individual Briefings
RO = Project-specific Respite Offer

Table 31. Vibration - Additional Mitigation Measures		
Time Period		**Mitigation Measures Predicted vibration exceeds limits**
Standard	Mon - Fri (7am - 6pm)	M, LB, RO
	Sat (8am - 1pm)	
	Sun/Pub Hol (Nil)	
OOHW Period 1	Mon - Fri (6pm - 10pm)	M, IB, LB, RO, PC, SN
	Sat (7am - 8am) & (1pm - 10pm)	
	Sun/Pub Hol (8am - 6pm)	
OOHW Period 2	Mon - Fri (10pm - 7am)	M, IB, LB, RO, PC, SN, AA
	Sat (10pm - 8am)	
	Sun/Pub Hol (6pm - 7am)	

Abbreviations:
LB = Letterbox Drop
M = Monitoring
IB = Individual Briefings
PC = Phone Calls
SN = Specific Notifications
RO = Project-specific Respite Offer
AA = Alternative Accomodation

6.4.3 Sensitive Periods

Condition of approval E34 requires that noise generating works must not be timetabled within sensitive periods at affected community, religious, educational institutions and other noise and vibration sensitive businesses. Examples include exams at nearby schools and performances at theatres. Delta shall liaise with TfNSW place managers to determine times and locations where this may affect the works and will implement respite at specific times where reasonable and practical.

6.4.4 Alternatives to Rock Hammering

Condition of Approval E35 requires that alternatives to rock hammering are reviewed with the aim of minimising impacts on sensitive receivers. Table 32 outlines the tools that shall be used to limit the use of hydraulic hammers across each of the sites.

Table 32. Alternatives to Rock Hammering	
Site	**Tools to be used to limit the use of hydraulic hammers**
Chatswood	The use of hydraulic concrete shears in lieu of hammers/rock breakers
Crows Nest	The use of hydraulic concrete shears in lieu of hammers/rock breakers for removal of low level buildings along Clarke Lane

Table 32. Alternatives to Rock Hammering	
Site	**Tools to be used to limit the use of hydraulic hammers**
Victoria Cross	The use of concrete shear/pulveriser attachments (or sawcutting and lifting) as the preferred demolition method for concrete walls and suspended concrete slabs where practical
Pitt Street	The use of concrete shear/pulveriser attachments (or sawcutting and lifting) as the preferred demolition method for concrete walls and suspended concrete slabs where practical
Waterloo	The use of hydraulic concrete shears in lieu of hammers/rock breakers for removal of perimeter walls
Marrickville	The use of hydraulic concrete shears in lieu of hammers/rock breakers

6. CNVMP Review

This CNVMP shall be periodically reviewed and updated to maintain relevance to construction activities and compliance with legislative requirements. This shall occur, as a minimum, every 6 months - in line with the annual revision of the Construction Noise and Vibration Strategy for the project. The CNVMP shall also be reviewed and, where necessary, amended in the following circumstances:

- Whenever there are major changes in construction methodology
- To address exceedances or non-compliances if investigations determine changes are required to prevent reoccurrences
- Where consultation with employees, contractors or regulators identify a better way of doing things;
- To take into account changes to the environment or generally accepted environmental management practices, new risks to the environment, any hazardous substances, contamination or changes in law;
- Where requested or required by the AA or ER for the project
- In response to internal or external audits or management reviews.

Further, this document shall be updated where changes are required as a result of any future Construction Noise and Vibration Impact Statement.

Revisions to this CNVMP shall be subject to approval by the Delta Project Manager, endorsement by the project AA and ER, and final approval by DPE.

7. References

Additional guidelines and standards relating to the management of construction noise and vibration from this project include:

- NSW Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change 2009
- NSW Road Noise Policy, Dept. of Environment, Climate Change and Water 2011
- NSW Industrial Noise Policy, Environment Protection Authority 2000
- NSW Assessing Vibration – a technical guideline (AVTG), Department of Environment and Conservation 2006
- Australian Standard AS/NZS 2107:2000 Acoustics - Recommended design sound levels and reverberation times for building interiors
- Australian Standard 2834-1995 Computer Accommodation, Chapter 2.9 Vibration
- Australian Standard AS 2187.2 Explosives - Storage and use - Part 2 Use of explosives
- Australian Standard AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings (1- 80Hz)
- British Standard 7385: Part 2-1993 'Evaluation and measurement of vibration in buildings'
- German Standard DIN4150-1999 Structural vibration Part 3: Effects of vibration on Structures
- Sydney Metro Construction Noise and Vibration Strategy, Report No. 610.14213-R3, Transport for NSW 2016
- Sydney Metro City and Southwest Environmental Impact Statement, Transport for NSW 2016
- Sydney Metro City and Southwest Submissions and Preferred Infrastructure Report, Transport for NSW 2016
- Sydney Metro City and Southwest Conditions of Approval, Department of Planning and Environment 2017
- Transit Noise and Vibration Impact Assessment, Federal Transit Administration 2006
- Environmental Noise Management Manual (ENMM), Roads and Traffic Authority 2001

Appendices

Appendix A - Glossary of Terms

Term	Definition
AA	Acoustic Advisor
Absorption Coefficient α	The absorption coefficient of a material, usually measured for each octave or third-octave band and ranging between zero and one. For example, a value of 0.85 for an octave band means that 85% of the sound energy within that octave band is absorbed on coming into contact with the material. Conversely, a low value below about 0.1 means the material is acoustically reflective.
Adverse weather	Weather effects that enhance noise (particularly wind and temperature inversions) occurring at a site for a significant period of time. In the NSW INP this occurs when wind occurs for more than 30% of the time in any assessment period in any season and/or temperature inversions occurring more than 30% of nights in winter.
Active recreation	Active recreation area, characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion, e.g. school playground, golf course
Air-borne noise	Noise which is fundamentally transmitted by way of the air and can be attenuated by the use of barriers and walls placed physically between the noise source and receiver.
Alternate Solution	An Alternative Solution is a design that complies with the relevant Performance Requirements of the National Construction Code other than by using Deemed-to-Satisfy Provisions.
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.
Amenity	A desirable or useful feature or facility of a building or place.
AS	Australian Standard
Assessment period	The time period in which an assessment is made. e.g. Day 7am-6pm, Evening 6pm-10pm, Night 10pm-7am.
Assessment Point	A location at which a noise or vibration measurement is taken or estimated.
Attenuation	The reduction in the level of sound or vibration.
Audible Range	The limits of frequency which are audible or heard as sound. The normal hearing in young adults detects ranges from 20 Hz to 20 kHz, although some people can detect sound with frequencies outside these limits.
A-weighting	A filter applied to the sound recording made by a microphone to approximate the response of the human ear.
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. 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 LA90 noise level if measured as an overall level or an L90 noise level when measured in octave or third-octave bands.

Term	Definition
Barrier (Noise)	A natural or constructed physical barrier which impedes the propagation of sound and includes fences, walls, earth mounds or berms and buildings.
BS	British Standard
CNVS	Construction Noise and Vibration Strategy
CNVIS	Construction Noise and Vibration Impact Statement
CNVMP	Construction Noise and Vibration Management Plan
Decibel [dB]	The units of sound measurement. The following are examples of the decibel readings of every day sounds: 0dB The faintest sound we can hear, defined as 20 micro Pascal 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 lunchtime 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 decibel. 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 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. The dB(C) level is not widely used but has some applications.
DECC	NSW Department of Environment and Climate Change
DIN	German Standard
DPE	NSW Department of Planning and Environment
EPA	NSW Environment Protection Authority
ER	Environmental Representative

Term	Definition
Field Test	A test of the sound insulation performance in-situ. See also 'Laboratory Test' The sound insulation performance between building spaces can be measured by conducting a field test, for example, early during the construction stage or on completion. A field test is conducted in a non-ideal acoustic environment. It is generally not possible to measure the performance of an individual building element accurately as the results can be affected by numerous field conditions.
Fluctuating Noise	Noise that varies continuously to an appreciable extent over the period of observation.
Free-field	An environment in which there are no acoustic reflective surfaces. Free field noise measurements are carried out outdoors at least 3.5m from any acoustic reflecting structures other than the ground.
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.
Ground-borne noise	Vibration propagated through the ground and then radiated as noise by vibrating building elements such as wall and floor surfaces. This noise is more noticeable in rooms that are well insulated from other airborne noise. An example would be vibration transmitted from an underground rail line radiating as sound in a bedroom of a building located above.
Habitable Area	Includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, sewing room, study, playroom, family room, home theatre and sunroom. Excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.
Heavy Vehicle	A truck, transporter or other vehicle with a gross weight above a specified level (for example: over 8 tonnes).
High Noise Impact Works	Grinding metal, concrete or masonry, rock drilling, line drilling, smooth drum vibratory rolling, bitumen milling and profiling, jackhammering, rock-hammering or rock breaking, impact piling and other work occurring on surfaces that generates noise with impulsive, intermittent, tonal or low frequency characteristics.
Impact Noise	The noise in a room, caused by impact or collision of an object onto the walls or the floor. Typical sources of impact noise are footsteps on the floor above a tenancy and the slamming of doors on cupboards mounted on the common wall between tenancies.
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.
INP	NSW Industrial Noise Policy, EPA 1999

Term	Definition
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.
Intrusive noise	Refers to noise that intrudes above the background level by more than 5 dB(A).
ISEPP	State Environmental Planning Policy (Infrastructure), NSW, 2007
ISEPP Guideline	Development Near Rail Corridors and Busy Roads - Interim Guideline, NSW Department of Planning, December 2008
L1	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_{10}(1hr)	The L10 level measured over a 1 hour period.
L_{10}(18hr)	The arithmetic average of the L10(1hr) levels for the 18 hour period between 6am and 12 midnight on a normal working day.
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_{Aeq} or L_{eq}	The “equivalent noise level” is the summation of noise events and integrated over a selected period of time, which would produce the same energy as a fluctuating sound level. When A-weighted, this is written as the L_{Aeq}.
L_{Aeq}(1hr)	The L_{Aeq} noise level for a one-hour period. In the context of the NSW EPA’s Road Noise Policy it represents the highest tenth percentile hourly A-weighted L_{eq} during the period 7am to 10pm, or 10pm to 7am (whichever is relevant).
L_{Aeq}(8hr)	The L_{Aeq} noise level for the period 10pm to 6am.
L_{Aeq}(9hr)	The L_{Aeq} noise level for the period 10pm to 7am.
L_{Aeq}(15hr)	The L_{Aeq} noise level for the period 7am to 10pm.
L_{Aeq} (24hr)	The L_{Aeq} noise level during a 24 hour period, usually from midnight to midnight.
L_{max}	The maximum sound pressure level measured over a given period. When A-weighted, this is usually written as the L_{Amax}.
L_{min}	The minimum sound pressure level measured over a given period. When A-weighted, this is usually written as the L_{Amin}.
Laboratory Test	The performance of a building element when measured in a laboratory. The sound insulation performance of a building element installed in a building however can differ from its laboratory performance for many reasons including the quality of workmanship, the size and shape of the space in which the measurement is conducted, flanking paths and the specific characteristics of the material used which may vary from batch to batch.

Term	Definition
Loudness	A rise of 10 dB in sound level corresponds approximately to a doubling of subjective loudness. That is, a sound of 85 dB is twice as loud as a sound of 75 dB which is twice as loud as a sound of 65 dB and so on. That is, the sound of 85 dB is four times or 400% the loudness of a sound of 65 dB.
Microphone	An electro-acoustic transducer which receives an acoustic signal and delivers a corresponding electric signal.
NCA	Noise Catchment Area. An area of study within which the noise environment is substantially constant.
Noise	Unwanted sound
Noise affected level	Definition as stated in the ICNG: “The noise affected level represents the point above which there may be some community reaction to noise.” Listed as RBL + 10dB for Standard Hours and RBL + 5dB Outside Standard Work Hours.
Passive recreation	Area specifically reserved for passive recreation, characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion e.g. reading, meditation
Reflection	Sound wave reflected from a solid object obscuring its path.
Reverberation Time	The time (in seconds) it takes for a noise signal within a confined space to decay by 60dB. The longer the reverberation time (usually denoted as RT60), the more echoic a room. Longer reverberation times generally result in higher noise levels within spaces.
RMS	Root Mean Square value representing the average value of a signal.
Rw	Weighted Sound Reduction Index A measure of the sound insulation performance of a building element. It is measured in very controlled conditions in a laboratory. The term supersedes the value STC which was used in older versions of the Building Code of Australa. Rw is measured and calculated using the procedure in ISO 717-1. The related field measurement is the DnT,w. he higher the value the better the acoustic performance of the building element.
R'w	Weighted Apparent Sound Reduction Index. As for Rw but measured in-situ and therefore subject to the inherent accuracies involved in such a measurement. The higher the value the better the acoustic performance of the building element.
RNP	Road Noise Policy, NSW, March 2011

Term	Definition
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 Leq 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 by conversion to thermal energy.
Sound Insulation	Sound insulation refers to the ability of a construction or building element to limit noise transmission through the building element. The sound insulation of a material can be described by the Rw and the sound insulation between two rooms can be described by the DnT,w.
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 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 of 1 pico watt.
Sound Pressure Level	The level of noise, usually expressed in decibels, as measured by a standard sound level meter with a microphone referenced to 20 mico Pascal.
STC	Sound Transmission Class A measure of the sound insulation performance of a building element. It is measured in controlled conditions in a laboratory. The term has been superseded by Rw.
Structure-borne Noise	Audible noise generated by vibration induced in the ground and/or a structure. Vibration can be generated by impact or by solid contact with a vibrating machine. Structure-borne noise cannot be attenuated by barriers or walls but requires the isolation of the vibration source itself. This can be achieved using a resilient element placed between the vibration source and its support such as rubber, neoprene or springs or by physical separation (using an air gap for example). Examples of structure-borne noise include the noise of trains in underground tunnels heard to a listener above the ground, the sound of footsteps on the floor above a listener and the sound of a lift car passing in a shaft. See also 'Impact Noise'.
Transmission Loss	The sound level difference between one room or area and another, usually of sound transmitted through an intervening partition or wall. Also the vibration level difference between one point and another. For example, if the sound level on one side of a wall is 100dB and 65dB on the other it is said that the transmission loss of the wall is 35dB. If the transmission loss is normalised or standardised, it then becomes the Rw or R'w or DnT,w.

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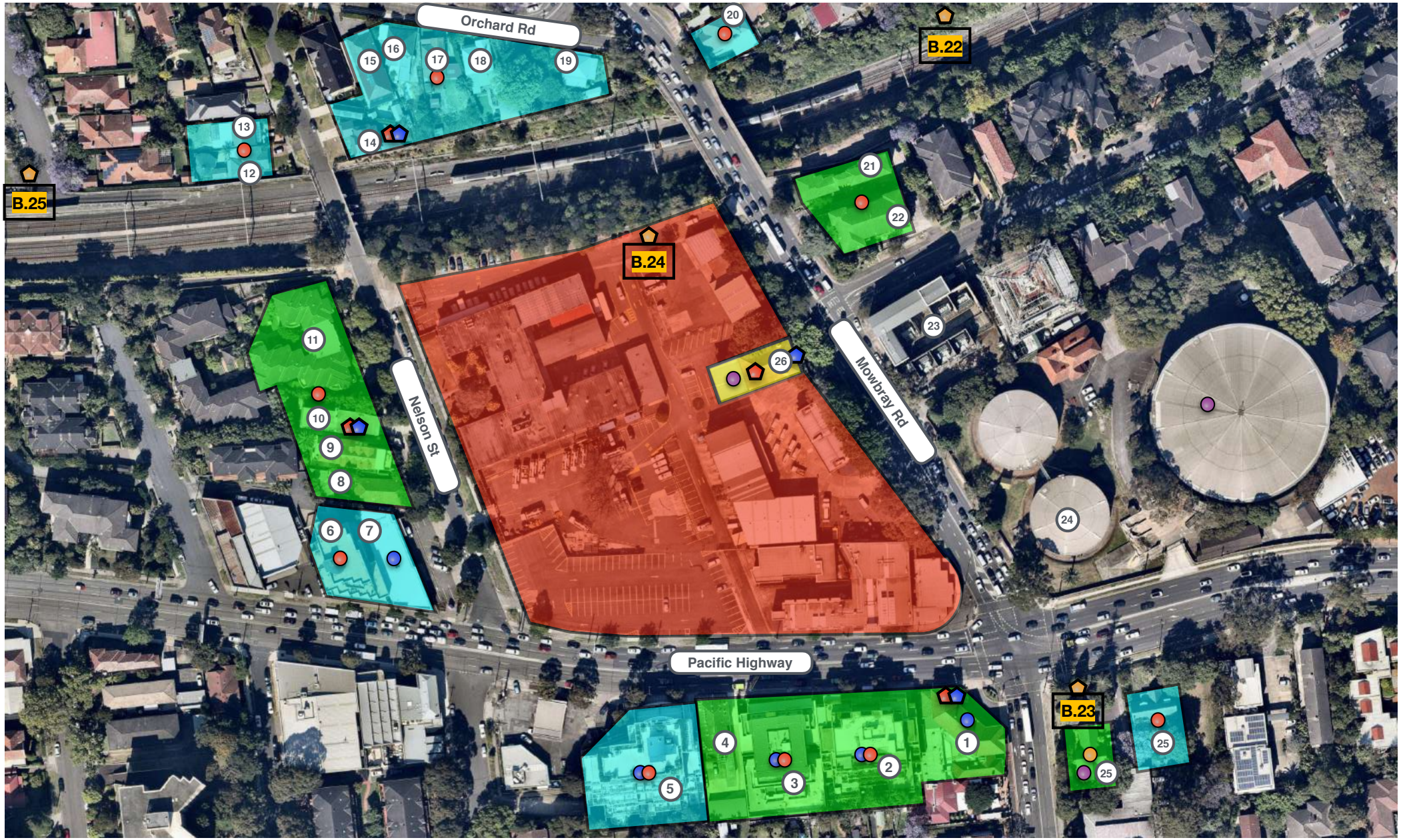

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educat/Childcare
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- EIS RBL Location

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Sydney Metro Demolition - Chatswood
Noise and Vibration Receivers & Land Uses

Date: 06/07/2017
Created by: RO
Report No: 0116 041 02

N

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educat/Childcare
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- Monitored RBL

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Sydney Metro Demolition - Crows Nest
Noise and Vibration Receivers & Land Uses

Date: 27/05/2017
Created by: RO
Report No: 0116 041 03

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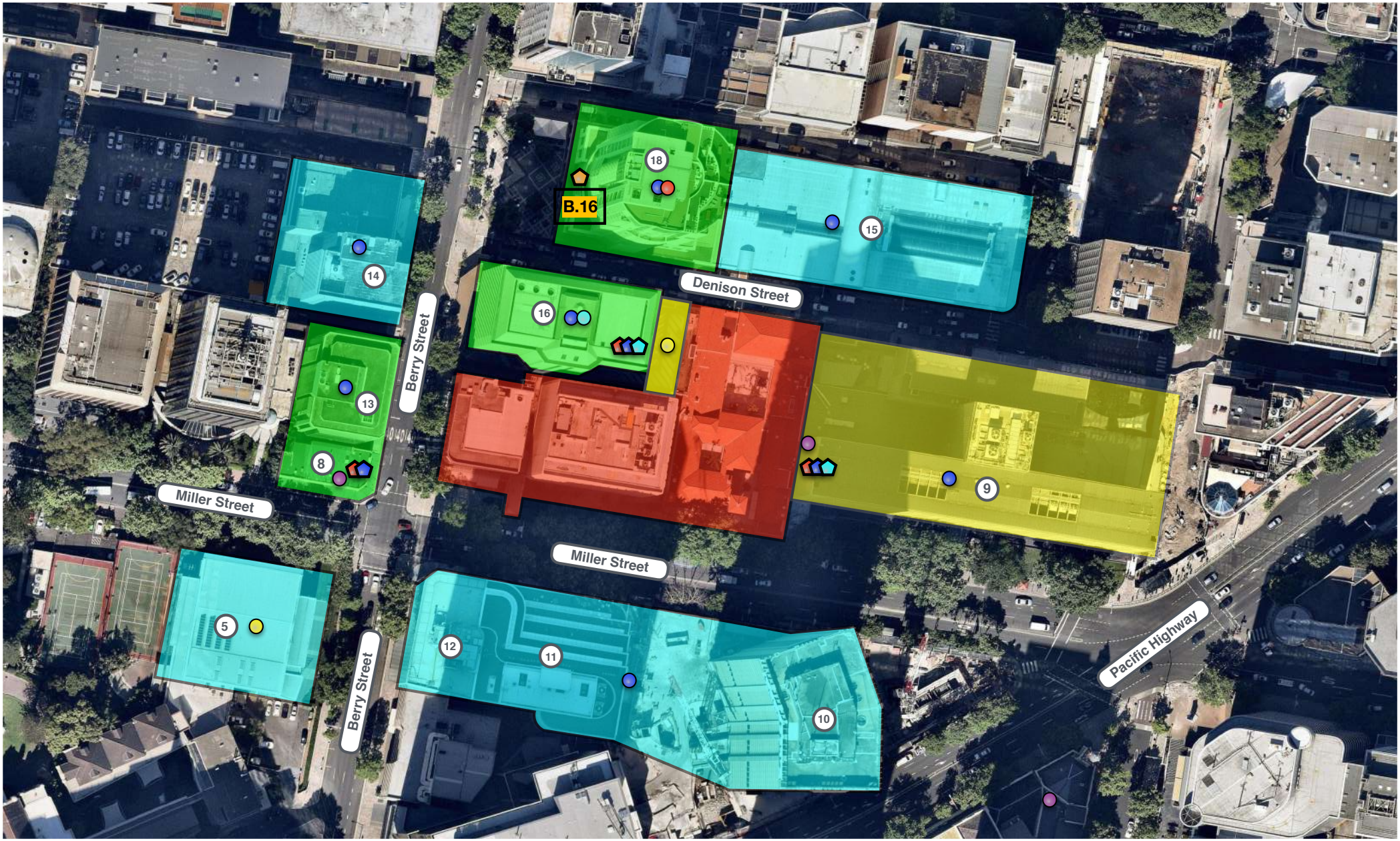

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educat/Childcare
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- Monitored RBL

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Noise and Vibration Receivers & Land Uses

Date: 27/05/2017
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Report No: 0116 041 04

N

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educational
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- Monitored RBL

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Sydney Metro Demolition - Pitt St North
Noise and Vibration Receivers & Land Uses

Date: 27/05/2017
Created by: RO
Report No: 0116 041 05

N

The contents within this document are based on third party data. The accuracy of the information can not be guaranteed

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educat/Childcare
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- Monitored RBL

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Sydney Metro Demolition - Waterloo
Noise and Vibration Receivers & Land Uses

Date: 15/08/2017
Created by: RO
Report No: 0116 041 06

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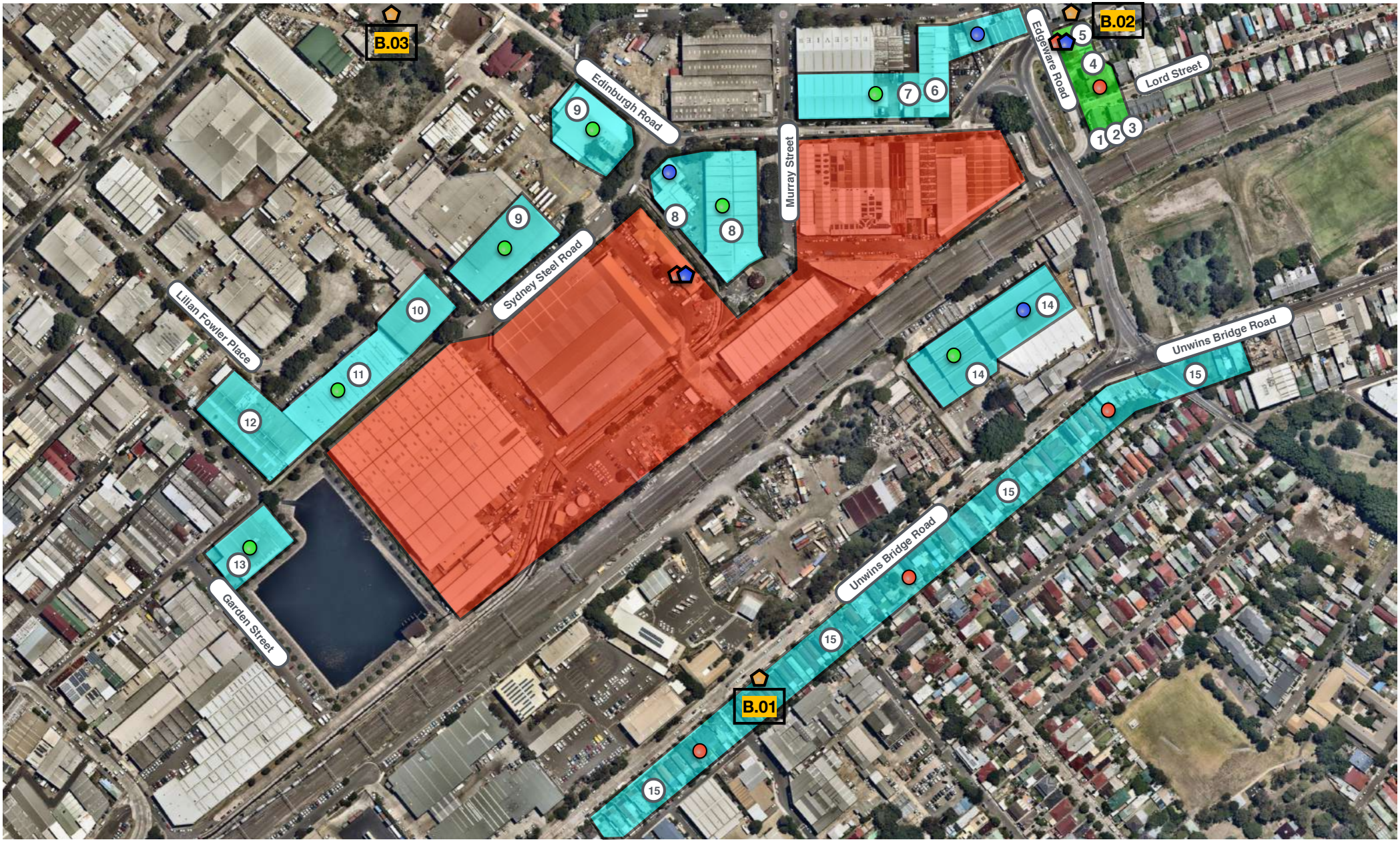

Impact Category

- Low Impact
- Moderate Impact
- High Impact
- Demolition Zone

Monitoring Category

- Noise
- Regenerated Noise
- Vibration
- Noise & Vibration

Sensitive Receiver Category

- Commercial
- Residential
- Educat/Childcare
- Industrial
- Heritage
- Place of worship
- (5) Property no.
- EIS Monitored RBL

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Sydney Metro Demolition - Marrickville
Noise and Vibration Receivers & Land Uses

Date: 21/07/2017
Created by: RO
Report No: 0116 041 07

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Appendix C - Sydney Metro Out of Hours Works (OOHW) Protocol

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Integrated Management System

City and Southwest Chatswood to Sydenham Out of Hours Work Protocol

SM ES-PW-317

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro City & Southwest
Document Owner:	Adam Koutsamanis
System Owner:	Fil Cerone
Status:	Final
Version:	2.0
Date of issue:	14 July 2017
Review date:	14 July 2018

Table of Contents

1. Introduction

This protocol outlines the process for preparing, assessing, managing and approving work on the Chatswood to Sydenham portion of the City & Southwest project that is undertaken outside of standard construction hours (i.e. Out of Hours).

1.1. Purpose

This protocol has been developed to comply with Condition E47 Out of Hours Work Protocol of the City & Southwest Chatswood to Sydenham planning approval. This condition (and other conditions that relate to Out of Hours work) is addressed in accordance with Table 1.

Table 1: Chatswood to Sydenham Out of Hours Work Planning Approval Conditions

Condition Number	Condition	Where this condition is addressed
A27(g)i.	The approved AA must in conjunction with the ER… consider requests for out of hours construction activities and determine whether to endorse the proposed activities in accordance with Condition E47.	Section 3.1.2.4 and Figure 1.
E36	Construction, except as allowed by Condition E48 (excluding cut and cover tunnelling), must only be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; (b) 8:00am to 1:00pm Saturdays; and (c) at no time on Sundays or public holidays.	Section 2.
E37	The Proponent must identify all receivers at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Central likely to experience internal noise levels greater than $L_{eq(15\ minute)}$ 60 dB(A) inclusive of a 5 dB penalty, if rock breaking or any other annoying activity likely to result in regenerated (ground-borne) noise or a perceptible level of vibration is planned (including works associated with utility adjustments), between 7am – 8pm.	Construction Noise and Vibration Impact Statements.
E38	The Proponent must consult with all receivers identified in accordance with Condition E37 with the objective of determining appropriate hours of respite so that construction noise (including ground-borne noise), does not exceed internal noise levels of: (a) $L_{eq(15\ minute)}$ 60 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 50 percent of the time; and (b) $L_{eq(15\ minute)}$ 55 dB(A) inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise or a perceptible level of vibration is planned between 7am – 8pm for more than 25 percent of the time, unless an agreement is reached with those receivers. This condition does not apply to noise associated with the cutting surface of a TBM [Tunnel Boring Machine] as it passes under receivers. *Note this condition requires that noise levels be less than $L_{eq(15\ minute)}$ 60 dB(A) for at least 6.5 hours between 7am and 8pm, of which at least 3.25 hours must be below $L_{aeq(15\ minute)}$ 55 dB(A). Noise equal to or above $L_{eq(15\ minutes)}$ 60 dB(A) is allowed for the remaining 6.5 hours between 7am and 8pm.*	Construction Noise and Vibration Management Plans and each OOH application as relevant (supported by a Construction Noise and Vibration Impact Statement or other type of quantitative impact assessment).

Condition Number	Condition	Where this condition is addressed
E41	The Proponent must ensure that residential receivers, located in non-residential zones, likely to experience an internal noise level exceeding $L_{eq(15\ minute)}$ 60 dB between 8pm and 9pm or $L_{eq(15\ minute)}$ 45 dB between 9pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in regenerated noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the *Sydney Metro City and South West Noise and Vibration Strategy* referenced in Condition E32.	Construction Noise and Vibration Management Plans and each OOH application as relevant (supported by a Construction Noise and Vibration Impact Statement or other type of quantitative impact assessment).
E42	The Proponent must ensure that residential receivers in residential zones likely to experience an internal noise level of $L_{eq(15\ minute)}$ 45 dB or greater between 8pm and 7am (inclusive of a 5 dB penalty if rock breaking or any other annoying activity likely to result in ground-borne noise, or a perceptible level of vibration is planned (including works associated with utility adjustments)) must be offered additional mitigation in accordance with the *Sydney Metro City and South West Noise and Vibration Strategy* referenced in Condition E32.	Construction Noise and Vibration Management Plans and each OOH application as relevant (supported by a Construction Noise and Vibration Impact Statement or other type of quantitative impact assessment).

Condition Number	Condition	Where this condition is addressed
E44	Notwithstanding Condition E36 construction associated with the CSSI [Critical State Significant Infrastructure] may be undertaken outside the hours specified under those conditions in the following circumstances: (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or (c) where different construction hours are permitted or required under an EPL in force in respect of the construction; or (d) construction that causes $L_{Aeq(15\ minute)}$ noise levels: i. no more than 5 dB(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), and ii. no more than the noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses, and iii. continuous or impulsive vibration values, measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006), and iv. intermittent vibration values measured at the most affected residence are no more than those for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006); or (e) where a negotiated agreement has been reached with a substantial majority of sensitive receivers who are within the vicinity of and may be potentially affected by the particular construction, and the noise management levels and/or limits for ground-borne noise and vibration (human comfort) cannot be achieved. All agreements must be in writing and a copy forwarded to the Secretary at least one (1) week before the works commencing; or (f) construction approved through an **Out of Hours Work Protocol** referred to in Condition E47, provided the relevant council, local residents and other affected stakeholders and sensitive receivers are informed of the timing and duration at least five (5) days and no more than 14 days before the commencement of the works.	Sections 1.5.3, 2, 3.1, 3.2.1 and 3.3.
E45	On becoming aware of the need for emergency construction in accordance with Condition E44(b), the Proponent must notify the AA, the ER and the EPA (if an EPL applies) of the need for those activities or work. The Proponent must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.	Section 3.3 and Figure 2.
E46	Notwithstanding Conditions E44 and E48, rock breaking and other particularly annoying activities are not permitted outside of standard construction hours, except at Central, unless the noise management level derived from the *Interim Construction Noise Guideline* can be achieved at sensitive receivers.	Section 2 and each OOH application as relevant (supported by a Construction Noise and Vibration Impact Statement or other type of quantitative impact assessment).

Condition Number	Condition	Where this condition is addressed
E47	An **Out of Hours Work Protocol** for the assessment, management and approval of work outside of standard construction hours, as defined in Condition E36 of this approval, must be prepared in consultation with the EPA [NSW Environment Protection Authority] and submitted to the Secretary [of the NSW Department of Planning and Environment] for approval before construction commences for works not subject to an EPL [Environment Protection Licence]. The protocol must include: (a) the identification of low and high risk construction activities; (b) a risk assessment process in which the AA [Acoustic Advisor] reviews all proposed out of hours activities and identifies their risk levels; (c) a process for the endorsement of out of hours activities by the AA and approval by the ER [Environmental Representative] for construction activities deemed to be of: i. low environmental risk; or ii. high risk where all construction works cease by 9pm. All other high risk out of hours construction must be submitted to the Secretary for approval unless otherwise approved through an EPL. The protocol must detail standard assessment, mitigation and notification requirements for high and low risk out of hours works, and detail a standard protocol for referring applications to the Secretary.	This document; particularly Sections 1.2, 3.1.2.3 and 3.1.2.4, Figure 1 and the Out of Hours Work Application Forms.
E48	Notwithstanding Condition E36 of this approval and subject to Condition E47, the following activities may be undertaken 24 hours per day, seven (7) days per week: (a) tunnelling and associated support activities (excluding cut and cover tunnelling); (b) excavation within an acoustic enclosure; (c) excavation at Central without an acoustic enclosure; (d) station and tunnel fit out; and (e) haulage and delivery of spoil and materials.	Section 2 and each OOH application as relevant (supported by a Construction Noise and Vibration Impact Statement or other type of quantitative impact assessment).

1.2. Protocol Consultation, Endorsement and Approval

In accordance with Condition E47 of the Chatswood to Sydenham planning approval, this protocol must be prepared in consultation with the NSW Environment Protection Authority (EPA) and approved by the Secretary of the NSW Department of Planning and Environment (the Secretary).

The protocol is also required to receive endorsement from the Environmental Representative and the Acoustic Advisor in accordance with Conditions A24(d) and A27(d) respectively, prior to submission to the Secretary.

1.2.1. Consultation

A draft version of this protocol was provided to the EPA for consultation and comment on 7 March 2017. Given that the protocol (and Condition E47) is aimed at addressing work that is 'not subject to an EPL', the EPA responded on 21 March 2017 to state that "the EPA does not have comments on this protocol".

In the event that the protocol is revised to address work that is subject to an Environment Protection Licence (EPL), TfNSW will re-consult with the EPA.

1.2.2. Endorsement

Both the Environmental Representative and the Acoustic Advisor have reviewed and left comments on drafts of this protocol. All comments have been satisfactorily addressed in this final OOH Work Protocol.

Appendix A provides endorsements of this OOH Work Protocol from the Environmental Representative and the Acoustic Advisor.

1.2.3. Approval

Appendix B provides approval of this OOH Work Protocol by the Secretary.

Construction activities on the Chatswood to Sydenham portion of the City & Southwest project will not be undertaken outside of standard construction hours for works that are not subject to an EPL until this protocol has been approved by the Secretary. Following approval from the Secretary, all works on the Chatswood to Sydenham portion of the City & Southwest project that are not subject to an EPL (irrespective of whether the works are defined as 'construction' in accordance with the Chatswood to Sydenham planning approval) will be subject to this protocol.

1.3. Accountabilities

The Principal Manager, Sustainability, Environment & Planning, City & Southwest is accountable for this protocol. Accountability includes authorising the document, monitoring its effectiveness and performing a formal document review.

Roles reporting to the Principal Manager are accountable for ensuring the requirements of this document are implemented within their area of responsibility. The roles that are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this document.

1.4. Definitions and Acronyms

All terminology in this Protocol is taken to mean the generally accepted or dictionary definition, unless stated otherwise in accordance with the Definitions section of the Chatswood to Sydenham planning approval or the *Sydney Metro Integrated Management System Glossary*.

Acronyms and terminology specifically used throughout this Protocol are listed below.

	Definitions
AA	Acoustics Advisor
BMP	Business Management Plan
CEMF	Construction Environmental Management Framework (for the City & Southwest project)
CNVIS	Construction Noise and Vibration Impact Statement
CNVS	Construction Noise and Vibration Strategy (for the City & Southwest project)
CSSI	Critical State Significant Infrastructure
EPA	Environment Protection Authority (of New South Wales)
EPL	Environment Protection Licence
ER	Environmental Representative
ICNG	*Interim Construction Noise Guideline* (DECC, 2009)
OOH	Out of Hours (i.e. outside of the standard construction hours stipulated in planning approval conditions)
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Secretary	The Secretary of the New South Wales Department of Planning and Environment
SPIR	Submissions and Preferred Infrastructure Report

1.5. Governance

This OOH Work Protocol should be used in conjunction with the Sydney Metro *Construction Environment Management Framework*, the *City & Southwest Construction Noise and Vibration Strategy* and any applicable Environment Protection Licences. These documents establish minimum requirements for managing noise and vibration impacts on the City & Southwest project.

1.5.1. Construction Environment Management Framework

The Chatswood to Sydenham Submissions and Preferred Infrastructure Report (SPIR) contains the *Sydney Metro Construction Environmental Management Framework* (CEMF) as Appendix B. The CEMF represents Sydney Metro's minimum requirements for environmental management and specifies a standard framework that each contractor must establish and document in their Construction Environmental Management Plan and sub-plans. These requirements include those relating to construction noise and vibration management as specified in Chapter 9.

1.5.2. Construction Noise and Vibration Strategy

Sydney Metro has developed a *Construction Noise and Vibration Strategy* (CNVS) for the City & Southwest project. The strategy:

- Establishes a framework for managing construction noise and vibration impacts and adopting appropriate mitigation measures (including minimum requirements),
- Forms Appendix C of the Chatswood to Sydenham SPIR,
- Forms part of the contract requirements that contractors must comply with, and
- Sets minimum requirements for all OOH work, including the need for and development of Construction Noise and Vibration Impact Statements.

1.5.2.1. Construction Noise and Vibration Impact Statements

A Construction Noise and Vibration Impact Statement (CNVIS) is a report that assesses and documents the anticipated noise and vibration impacts at sensitive receivers of proposed construction activities. In accordance with Condition E33 of the Chatswood to Sydenham planning approval, a CNVIS is to 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.

1.5.3. Environment Protection Licence

An Environment Protection Licence (EPL) is a regulatory approval issued to strategically control the localised, cumulative and acute impacts of pollution. The NSW Environment Protection Authority (EPA) is responsible for issuing EPLs for 'scheduled activities' under the *Protection of the Environment Operations (POEO) Act 1997* (NSW).

Some aspects of the City & Southwest construction and operation works will constitute 'scheduled activities' under the POEO Act and therefore need to be subject to an EPL. City & Southwest contractors are required to obtain and comply with any EPLs as applicable to their scope of works.

The process for approving OOH work outside of those already permitted in accordance with an EPL, is governed by the conditions of the EPL. In order for these types of OOH work to be approved, an application to vary the EPL is to be prepared and submitted to the EPA for approval. The application is to be in accordance with the CNVS and EPL requirements.

OOH work that is subject to an EPL do not require approval in accordance with Condition E47 of the Chatswood to Sydenham planning approval (i.e. this protocol).

1.6. Roles and Responsibilities

1.6.1. TfNSW Place Manager

A TfNSW Place Manager will be allocated to each site on the Chatswood to Sydenham portion of the City & Southwest project. The Place Manager is responsible for ensuring that all project communication requirements with the surrounding community are being complied with.

1.6.2. TfNSW Environment Manager

A TfNSW Environment Manager will be allocated to each contract package on the Chatswood to Sydenham portion of the City & Southwest project. The Environment Manager is responsible for ensuring that all environmental management requirements associated with their contract package are being complied with.

1.6.3. Independent Environmental Representative

Condition A22 of the Chatswood to Sydenham planning approval requires an Environmental Representative (ER) to be appointed to the project to represent the NSW Department of Planning and Environment. The ER is to act as the Secretary's independent point of contact for all environmental and planning approval compliance matters. Refer to Condition A24 of the Chatswood to Sydenham planning approval for a comprehensive list of the ER's responsibilities.

Sections 3.1.2.3 and 3.1.2.4 include descriptions of the ER's responsibilities with respect to reviewing and approving OOH work.

1.6.4. Acoustic Advisor

Condition A25 of the Chatswood to Sydenham planning approval requires an Acoustic Advisor (AA) to be appointed to the project. The AA is to act as the Secretary's independent point of contact for all noise and vibration matters on the project. Refer to Conditions A25 and A27 for a comprehensive description of the AA's responsibilities.

Sections 3.1.2.3 and 3.1.2.4 include descriptions of the AA's responsibilities with respect to reviewing, identifying risk level, endorsing and deferring OOH work.

2. Standard Hours

Condition E36 of the Chatswood to Sydenham planning approval defines standard construction hours as:

(a) 7:00am to 6:00pm Mondays to Fridays, inclusive;

(b) 8:00am to 1:00pm Saturdays; and

(c) at no time on Sundays or public holidays.

These hours are consistent with:

- The EPA's *Interim Construction Noise Guideline* (ICNG) 2009 'recommended standard hours' for construction in NSW, and
- The *City & Southwest Construction Noise and Vibration Strategy* (CNVS) 'standard daytime construction hours' (which were adopted by TfNSW as recommended by the ICNG).

Unless undertaken in accordance with Conditions E44, E46 or E48 of the Chatswood to Sydenham planning approval, construction is only permitted to be undertaken during standard construction hours.

If OOH work is to be undertaken in accordance with one or more of these conditions at the Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street or Central sites, the work must also comply with the specific requirements of Conditions E37 and E38 of the Chatswood to Sydenham planning approval. It should be noted however that the intent of Conditions E37 and E38 is to support certain types of work at these sites between 7am and 8pm. This should be considered when identifying risk levels for OOH work applications (refer to Section 3.1.2.3).

3. OOH Work

Out of hours (OOH) work is defined as any work that is undertaken outside of standard construction hours.

Some OOH work is permitted to be undertaken on the City & Southwest project in accordance with Conditions E44, E46 and E48 of the Chatswood to Sydenham planning approval. These works include:

- Delivery of materials as required by an authority for safety reasons,
- Emergency works,
- Works that are subject to different construction hours as permitted (or required) under an EPL,
- Low noise impact works,
- Works that are subject to a negotiated agreement with the substantial majority of affected sensitive receivers,
- Works undertaken in accordance with an Out of Hours Work Protocol approval and are the subject of a notification to the relevant council, local residents and other affected stakeholders and receivers at least five days prior to the works commencing and no more than 14 days prior to the works commencing.
- Rock breaking and other particularly annoying activities at the Central Station Site or, provided that the noise management level can be achieved at sensitive receivers, at any other site,
- 24 hour construction works in accordance with Condition E48, comprising:
    - Tunnelling and associated support activities (excluding cut and cover tunnelling),
    - Excavation within an acoustic enclosure,
    - Excavation at the Central Station Site without an acoustic enclosure,
    - Station and tunnel fit out, and
    - Haulage and delivery of spoil and materials,

In accordance with Condition E47 of the Chatswood to Sydenham planning approval and with the exception of OOH work that is subject to an EPL, all OOH work requires endorsement by the AA and approval by either the ER, or in the case of ‘high risk’ works undertaken after 9pm, the Secretary. This includes all work subject to Conditions E37, E38 and E48 of the Chatswood to Sydenham planning approval. The requirements of these conditions are to be specifically addressed in each OOH application (refer to Section 3.1.2) as relevant.

3.1. OOH Work Approval Process

Figure 1 provides the OOH work approval process for the Chatswood to Sydenham portion of the City & Southwest project. This includes a requirement to prepare an application that covers the assessment of noise and vibration impacts, mitigation measures (including community notification requirements), review and approval for all proposed OOH work.

All OOH work applications that are not subject to an EPL will be submitted to the TfNSW Place Manager, TfNSW Environment Manager, AA and ER for review and comment. These reviews will take into consideration a range of aspects, including reviewer experience and expert understanding, local knowledge of the area, current understanding of sensitive receiver requirements and other relevant documents (for example, the applicable Business Management Plan detailing predicted impacts to affected businesses, key issues and appropriate mitigation measures for implementation). This review process is further explained in section 3.1.2.3.

3.1.1. OOH Work subject to an EPL

For OOH work that is subject to an EPL, the EPL conditions will dictate the approval process. As a minimum however, for proposed OOH work that is not approved in the EPL and a variation is required, the contractor is expected to:

- Prepare an application to the EPA in accordance with the CNVS and EPL requirements,
- Submit the revised application to the EPA for approval and submit the application to the TfNSW Place Manager, TfNSW Environment Manager, AA and ER for information,
- Notify TfNSW, the AA and ER upon receiving EPA approval, and
- Ensure any required community notifications have been issued (by either TfNSW or the contractor directly) at least seven days prior to the works commencing.

3.1.2. OOH Work not subject to an EPL

For OOH work that is not subject to an EPL, the approval process is dictated by the requirements of Condition E47 of the Chatswood to Sydenham planning approval.

Contractors are required to prepare an OOH application using:

- A form consistent with the Sydney Metro *City & Southwest OOH Work Application Form* for proposed OOH work that is within the scope of a CNVIS, or
- A form consistent with the Sydney Metro *OOH Work Application Form* for proposed OOH work that is not within the scope of a CNVIS (or is within the scope of a CNVIS that is yet to be prepared).

Both of these forms require a noise and vibration impact assessment to be undertaken and contain a consolidated and conservative version of Table 14 from the CNVS. This facilitates simpler consideration of applicable additional noise and vibration mitigation measures to implement. The forms also require demonstration of how additional noise and vibration mitigation measures have been considered for implementation (including community notifications) in accordance with the CNVS.

3.1.2.1. OOH Work within the Scope of a CNVIS

The majority of OOH applications subject to this protocol are anticipated to be undertaken within the scope of a CNVIS.

For proposed OOH work that is within the scope of a CNVIS, the OOH application will outline the associated noise and vibration impacts of the proposed OOH work, based on the outcomes of the CNVIS. The applicable sections of the CNVIS are required to be appended to the OOH application.

The associated noise and vibration impacts will guide the consideration of standard and additional mitigation measures to implement, in accordance with the CNVS.

3.1.2.2. OOH Work not within the scope of a CNVIS

In some circumstances, OOH work may be required that is not within the scope of a CNVIS. Examples of these situations include OOH works that:

- Are not defined as 'construction' under the Chatswood to Sydenham planning approval,
- Are not confined to a 'construction site' (e.g. power supply works, in-tunnel works, etc.), and
- Were not anticipated in a CNVIS at the time it was prepared.

For proposed OOH work that is not within the scope of a CNVIS (or is within the scope of a CNVIS that is yet to be prepared), the noise and vibration impacts of the proposed OOH work will generally have less certainty than those that are within the scope of a CNVIS. Therefore, greater due diligence is required in completing the OOH application form.

To ensure an adequate level of due diligence is applied to reviewing proposed OOH work that is not within the scope of a CNVIS, a form consistent with the generic Sydney Metro *OOH Work Application Form* is to be used. This form has been developed by TfNSW to ensure consistency with the *Interim Construction Noise Guideline* (DECC, 2009) and requires applicants to:

- Provide justification for the works to be undertaken OOH,
- Adequately assess the noise and vibration impacts at nearest sensitive receivers,
- Consider standard and additional noise and vibration mitigation measures to implement in accordance with the CNVS, and
- Request formal review, endorsement and approval for the proposed OOH work prior to their commencement.

Furthermore, the Sydney Metro *OOH Work Application Form* requires a preliminary quantitative noise assessment to be undertaken in accordance with the *Interim Construction Noise Guideline* (ICNG) as a minimum. For assessments indicating that noise exceedance levels are greater than 10 dBA for more than 10 occasions at the same sensitive receiver, the need to undertake a detailed quantitative noise assessment will be considered by TfNSW, the contractor, the AA and the ER collectively. The term 'occasion' is defined in the *OOH Work Application Form*.

3.1.2.3. Review, TfNSW Endorsement and Identification of Risk Level

Review

Once the contractor has prepared an OOH work application, the application is submitted to the TfNSW Place Manager, TfNSW Environment Manager, AA and ER for review. Following their reviews, TfNSW, the AA and the ER may provide comments on the application, which need to be adequately addressed by the contractor in a resubmitted application to the satisfaction of the comment provider(s).

Prior to the TfNSW Principal Manager (Stakeholder & Community Liaison) indicating their endorsement (or otherwise) on the application, reference will be made to the applicable Business Management Plan (BMP) in accordance with Condition E64 of the Chatswood to Sydenham planning approval. The BMP will:

- Identify business stakeholders that may be affected by the project works and the issues specific to each business,
- Detail the strategies and activities to be used to facilitate open communication and engagement with businesses,
- Explain mitigation measures for identified business-related impacts, and
- Define roles and tools to enable TfNSW Place Managers to implement the BMP.

TfNSW Endorsement and Identification of Default Risk Level

Following endorsement from the TfNSW Principal Manager (Stakeholder & Community Liaison), the AA is required to identify a risk level for the proposed OOH work in accordance with Condition E47 of the Chatswood to Sydenham planning approval. This risk level will be categorised as either ‘Low risk’ or ‘High risk’.

As a default risk level, the AA will identify OOH work as ‘high risk’ if all of the following three criteria apply:

- The type and sensitivity of the affected noise sensitive receivers is categorised as either Moderate Impact receivers (e.g. standard residential / typical density) or High Impact receivers (e.g. elderly / high density / persistent complainers / residents experiencing construction noise fatigue), and
- The predicted noise level of the OOH work has a likelihood for potential sleep disturbance (i.e. Rating Background Level + 15 dB or more), and
- The type of and intensity of noise emitted from the OOH work is categorised as High Impact (e.g. prolonged high noise and/or vibration intensive activities).

These criteria are based on Section 6.4 General Assessment Procedure of the CNVS.

For non-residential receivers the AA may consider OOH work as ‘high risk’ if undertaken during trading hours and in close proximity to their place of business (for example, during Saturday afternoon trading hours). Since each non-residential receiver has different business needs, it is imperative that the AA discusses each OOH work application with the TfNSW Place Manager to better understand how the proposed OOH works would impact the business.

Modification of Default Risk Level

Using the default risk level as a 'starting point', the AA will consider all other relevant factors in order to identify a final risk level. These relevant factors include:

- Those identified on Pages 24 and 25 in Section 6.4 of the CNVS (noting that the reference to 'impact levels' is independent of the 'risk rating' identified by the AA for the purposes of complying with Condition E47(c) of the Chatswood to Sydenham planning approval),
- Those listed in Table 2, and
- Any other factors the AA considers relevant in its professional opinion.

These factors may be cause for the AA to modify the default risk rating from either 'high risk' to 'low risk', or 'low risk' to 'high risk', as the AA deems appropriate in its professional opinion.

Table 2: Risk Level Considerations

	Risk Level Considerations
Predicted Noise Exceedance	Degree of predicted noise level exceedance above the Rating Background Level or Noise Management Level as appropriate
Specific Scope of Work	Works that are not subject to Conditions E37 and E38
5 dBA Penalty	If 5 dBA penalty is required in accordance with Conditions E37, E38, E41 and E42
Certainty	Rating background levels, noise management levels or predicted noise impacts are not well understood
Past Experience	Nature of works are new, in a new location or have not been undertaken by the contractor on the project already
Negotiated Agreement with Sensitive Receivers	No negotiated agreement with sensitive receivers has been obtained in accordance with Condition E44(e)
Potential Sleep Disturbance	Likely to generate potential sleep disturbance (RBL + 15dB or greater)
Non-Residential Receivers	Impacted non-residential receivers operate during same period of proposed OOH works
Special Events	The timing and location of special events in the area of the proposed OOH works may be scheduled at the same time or immediately before or after the special event (e.g. festivals, public gatherings, etc.)
TfNSW Place Manager Feedback	Feedback from the Place Manager for the area will provide the AA an understanding of the types and requirements of surrounding sensitive receivers.
Sensitive Receivers	Moderate impact sensitive receivers (e.g. standard residential, medium density receivers) or high impact sensitive receivers (e.g. residential home for the elderly, high density unit blocks, persistent complainers, residents deemed to have 'construction noise fatigue')
High Impact Works	Prolonged high noise or vibration intensive activities
Other Impacts	Impacts other than noise and vibration impacts are likely to be generated (e.g. lighting, traffic, etc.)

Once the AA has identified a final risk level for the OOH work application, the AA indicates the risk level on the application (including any risk identification commentary), as well as whether the application includes works after 9pm, and signs and dates the application.

3.1.2.4. Endorsement and Approval

Figure 1 includes a process for the endorsement and approval of OOH work.

Following the identification of risk level by the AA, the AA endorses the OOH work application and provides any conditions or comments. If the AA identifies that the OOH work application is high risk and includes works after 9pm, the application is forwarded to the ER for endorsement only. Following the ER's endorsement, the application is then formally submitted by TfNSW via email to the Secretary for approval in accordance with Condition E47 of the Chatswood to Sydenham planning approval. For all other applications, the ER indicates their approval (or otherwise) on the application, including any conditions or comments, and forwards directly to TfNSW, the contractor and AA.

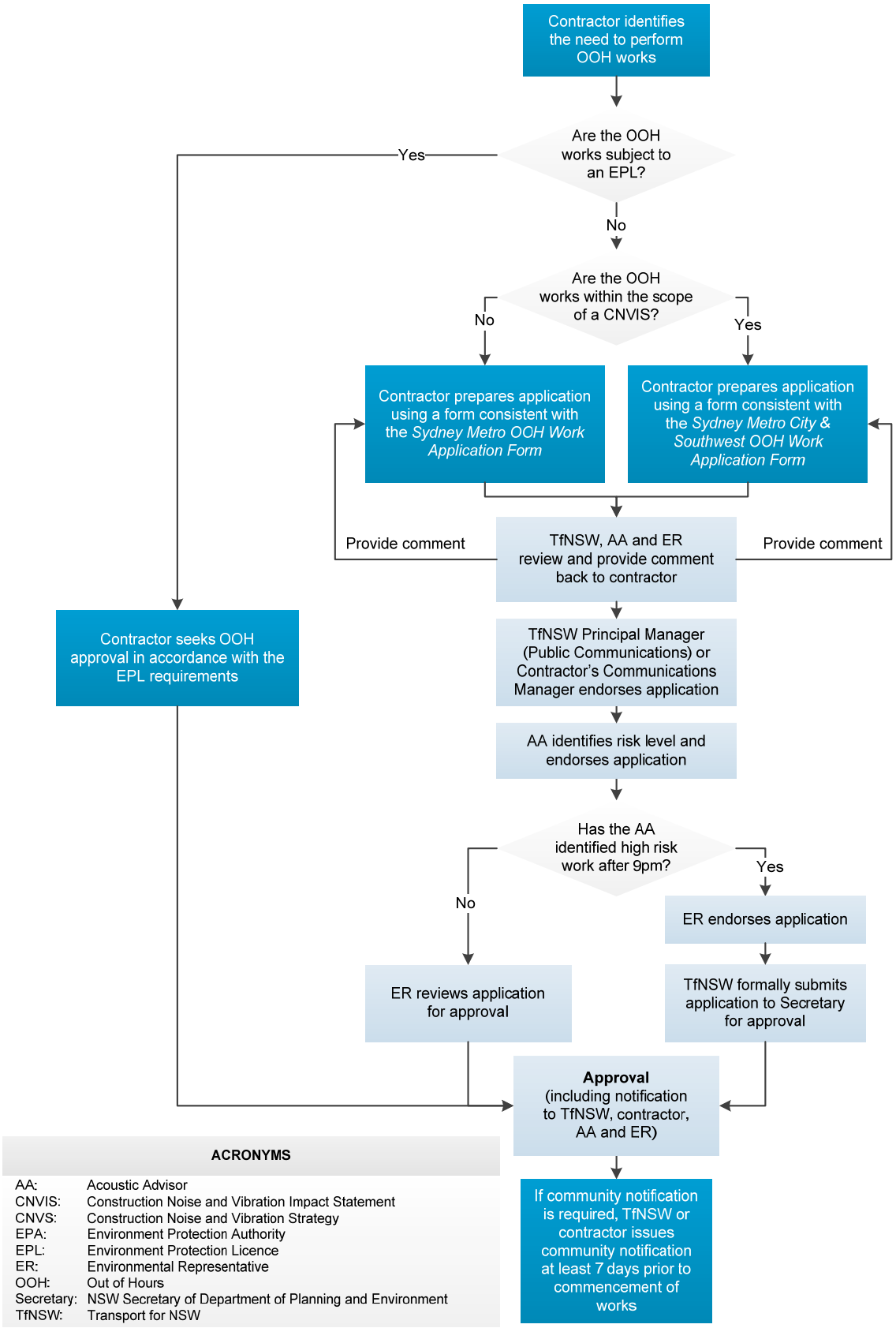

Figure 1: OOH Work Approval Process

3.2. Community Notifications

Community notifications can be used as a mitigation measure for receivers of noise and vibration impacts from OOH work.

Community notifications usually comprise of letterbox-dropped or hand-distributed notification letters to identified stakeholders prior to the commencement of works. Communities are more likely to understand and accept the impacts from noise and vibration if they are provided with honest detailed information and commitments on mitigation measures to be implemented that are adhered to by the project prior to the works commencing.

Community notification requirements are included in the CNVS and outlined in the *Community Communications Strategy* for the City & Southwest project in accordance with Condition B1 of the Chatswood to Sydenham planning approval.

Community notification is an example of an additional mitigation measure that may be considered for implementation in accordance with the CNVS and the additional mitigation measure tables contained in the OOH Work Application Forms. In the event that community notification is required as a mitigation measure prior to OOH work commencing, community notification is to be undertaken at least seven days prior to the works commencing.

3.2.1. Negotiated Agreements with Sensitive Receivers

Occasionally, a negotiated agreement for particular OOH work will be formed with the potentially affected sensitive receivers in accordance with Condition E44(e) of the Chatswood to Sydenham planning approval. These negotiated agreements would be undertaken and documented by either the contractor or TfNSW as part of an OOH application.

The negotiated agreement needs to reach a minimum 65% acceptance rate of those sensitive receivers that are contactable. 'Contactable' is defined as having received correspondence (either verbal or written) from receivers within a two week timeframe. The CNVIS process and the TfNSW Place Manager will advise of potentially affected sensitive receivers to be contacted.

Upon ER approval of any OOH applications containing negotiated agreements, TfNSW will forward the negotiated agreement documentation to the Secretary for information at least one week prior to the OOH work commencing. In the event that community notification is required as a mitigation measure prior to the OOH work commencing, this would be undertaken at the same time (i.e. at least seven days prior to the works commencing).

3.3. Emergency Works

Occasionally there may be a need to undertake emergency works outside of standard work hours. In this situation, the works are permitted to proceed without prior approval, provided that the works were:

- Unforeseen, and
- Required to avoid the loss of life, damage to property or prevent environmental harm.

Figure 2 outlines the emergency work process.

On becoming aware of the need to undertake emergency works in accordance with Condition E44(b) of the Chatswood to Sydenham planning approval, contractors must notify TfNSW, the AA, the ER and the EPA (if it is required under an EPL if relevant) of the need to undertake the works. This notification should be in the form of a written email or text message to TfNSW, the AA and the ER. The requirements for notifying the EPA will be dictated in the conditions of the EPL if relevant.

As a form of mitigation, community notification is to be undertaken within two hours of the commencement of emergency works. These notifications will generally be prepared by the contractor using a small hand-completed Sydney Metro card template for distribution to the immediate surrounding community. These cards will include the following details as a minimum:

- Scope,
- Location,
- Hours,
- Duration,
- Types of equipment to be used, and
- Likely impacts.

The day after any emergency works, the applicant is to provide a written emergency works report to TfNSW. The emergency works report is to include as a minimum:

- Date, time, duration and cause of the emergency,
- Description of emergency works undertaken,
- Mitigation measures implemented to address the impacts of the emergency works, and
- Actions/Measures taken or to be taken to prevent or mitigate recurrence of the emergency. If there are no appropriate actions/measures to be taken, explanation is to be provided as to why.

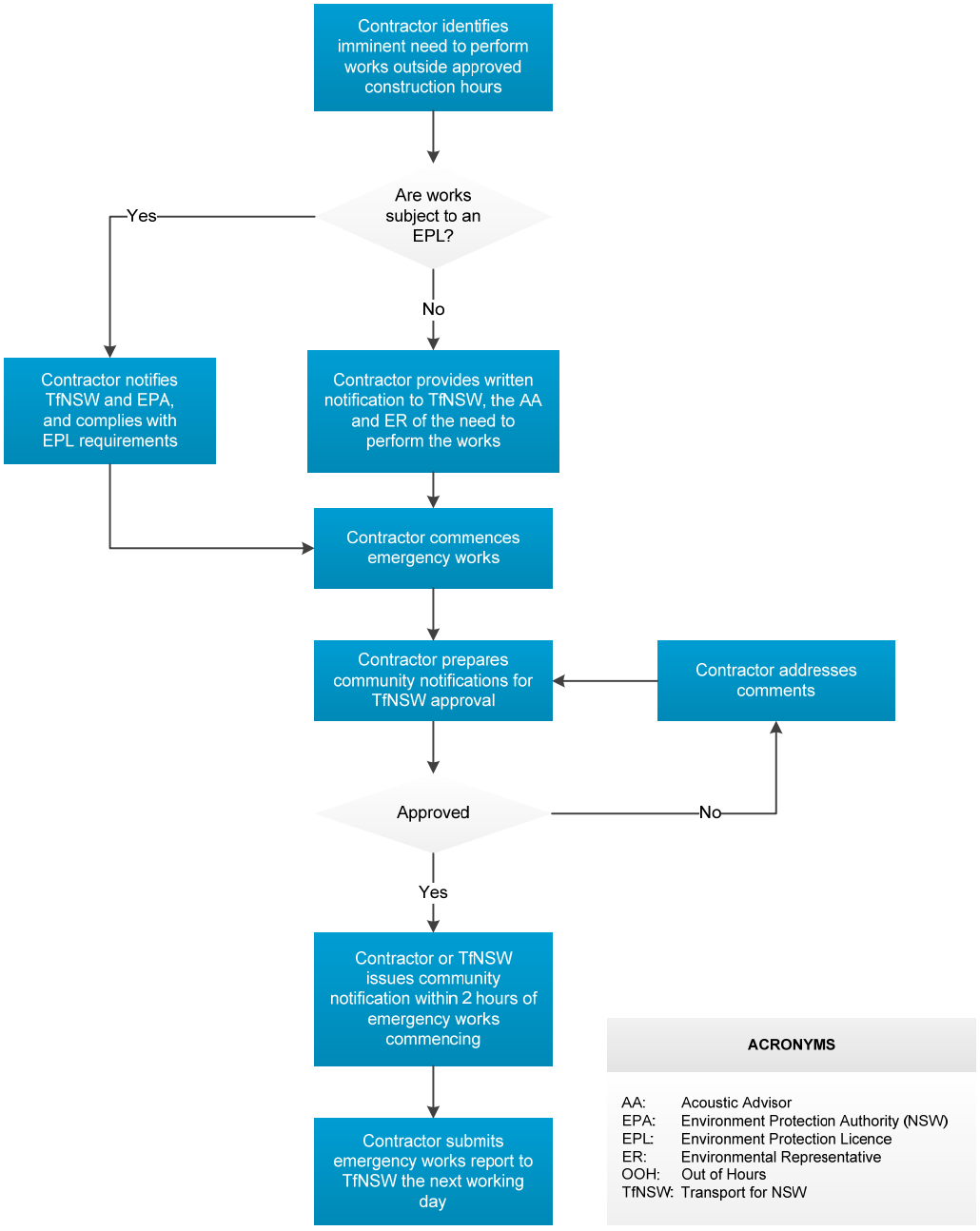

Figure 2: Emergency Work Process

4. Related Documents and References

Related Documents and References
• SM ES-MM-101 Environment & Sustainability Management Manual • SM ES-ST-204 Construction Environment Management Framework • SM ES-ST-210 City & Southwest Construction Noise and Vibration Strategy • SM ES-FT-443 City & Southwest Out of Hours Work Application Form • SM ES-FT-419 Out of Hours Work Application Form • SM SC-ST-202 Overarching Community Communications Strategy • SM QM-FT-435 Integrated Management System (IMS) Glossary • EPA Interim Construction Noise Guideline

5. Superseded Documents

Superseded Documents
There are no documents superseded as a result of this document.

6. Document History

Version	Date of approval	Summary of change
1.0	28/3/2015	New document
2.0	14/7/2017	Edits to address DP&E comments

Appendix A: OOH Work Protocol Endorsements

HBI Healthy Buildings International Pty Ltd
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Mr Stuart Hodgson
Principal Manager,
Program Sustainability Environment & Planning
Sydney Metro
Transport for NSW
PO Box 588
NORTH RYDE BC NSW 1670

28 March 2017

Ref:170108_OOHW Protocol

Dear Stuart

RE: Endorsement of Sydney Metro City & Southwest Out of Hours Work Protocol

Thank you for providing the following document for Environmental Representative (ER) review and endorsement as required by the Condition of Approval A24 (d) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Sydney Metro City & Southwest City & Southwest Out of Hours Work Protocol (SM ES-PW-317/1.0)

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed and provided comment on these documents. As required under A27 (d), the Acoustic Advisor has also been involved in this process and has provided separate endorsement.

I now consider this Protocol appropriate for submission to the Secretary notwithstanding that the required Specific Out of hours Works Application Forms will continue to be developed, reviewed by Acoustic Advisor, endorsed by the ER, and submitted to the Secretary for approval as required.

Yours sincerely

Jo Robertson
Environmental Representative – Sydney Metro – City and South West

ENDORSEMENT

CITY & SOUTHWEST ACOUSTIC ADVISOR (Interim)

Review of	**Out of Hours Work Protocol**	**Document reference:**	Sydney Metro City & Southwest City & Southwest Out of Hours Work Protocol Document number SM ES-PW-317, version 1.0, 28 March 2017
Prepared by:	Dave Anderson		
Date of issue:	28 March 2017		

As approved (interim) Acoustic Advisor for the Sydney Metro City & Southwest project, I have reviewed and provided comment on the Out of Hours Work Protocol, as required under A27 (d) of the project approval conditions.

I consider that this Protocol is appropriate for submission to the Secretary, noting that the required Specific Out of hours Works Application Forms will continue to be developed, including review by the Acoustic Advisor and endorsement by the ER.

Dave Anderson, interim City & Southwest Acoustic Advisor

Appendix B: OOH Work Protocol Approval from the Secretary

NSW GOVERNMENT | Planning & Environment

Contact: Jacqui McLeod
Phone: 9274 6454
Email: Jacqui.mcleod@planning.nsw.gov.au

Our ref: SSI 15_7400

Mr Stephen Jones
Executive Director
Safety, Sustainability and Environment
Sydney Metro, Transport for NSW
PO Box 588
North Ryde BC NSW 1670

Dear Mr Jones

Sydney Metro City & Southwest Chatswood to Sydenham (SSI 15_7400): Approval of the Out of Hours Work Protocol under condition E47.

Thank you for your correspondence dated 30 March 2017, submitting the Out of Hours Work Protocol in accordance with Condition E47 for the Secretary's approval. I also note further revisions to this document, responding to the Department's detailed comments and requirements. The Department has reviewed the updated Out of Hours Work Protocol (Rev 1.3 dated 4 July 2017) and considers that it satisfactorily addresses the requirements of Condition E47. Therefore, in accordance with Condition E47, I approve the Out of Hours Work Protocol (Rev 1.3 dated 4 July 2017).

Please note that under condition E47, all out of hours construction that is not subject to an EPL, that the Acoustic Advisor deems to be "High Risk", and that occurs after 9pm must be submitted to the Secretary for approval.

If you have any further queries or require clarification on this matter, please contact me on 9274 6454 or by email jacqui.mcleod@planning.nsw.gov.au.

Yours sincerely

Jacqui McLeod 14/7/17

Jacqui McLeod
Acting Director Infrastructure Management
as delegate of the Secretary

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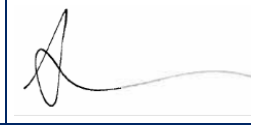
Sydney Metro

Community Consultation Strategy – Early Works

PROJECT	Sydney Metro	**DATE**	27/6/2017
GROUP	C&SW Project Communications	**STATUS**	FINAL
AUTHOR	Rebecca Raap	**REVISION**	1.2
COMPANY	Sydney Metro	**FILE NUMBER**	A5888184
FILE NAME	Community Communications Strategy - Early Works		

Revision	Revision Date	Status	Brief reason for update	Name/ Position/ Company	Author/ Reviewer/ Approver	Signature
0.1	20/3/17	Draft	Initial document	Rebecca Raap	Author	
1.0	21/3/17	Final	Approved for distribution to contractors and Department of Planning and Environment	Anne Purcell	Approver	
1.1	12/4/17	Draft	Review and edits based on feedback from DPE	Rebecca Raap	Author	
1.1	12/4/17	Final	Approved for distribution to contractors and Department of Planning and Environment	Anne Purcell	Approver	
1.2	27/6/17	Draft	Incorporating changes from DPE	Rebecca Raap	Author	
1.2	27/6/17	Final	Approved for distribution	Anne Purcell	Approver	

Contents

1 Introduction

1.1 Document purpose

The Community Communication Strategy – Early Works (CCS-EW) describes the approach Transport for NSW will use to manage engagement and ongoing consultation with stakeholders and the community with an interest in, or potentially affected by Sydney Metro City & Southwest early works between Chatswood and Sydenham (the Project).

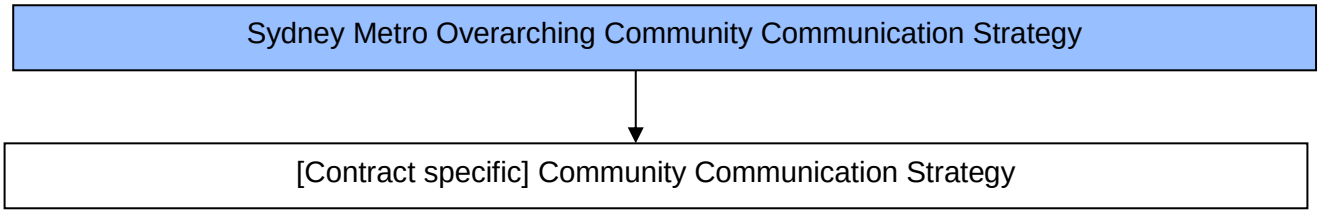
For the purpose of this plan, 'early works' includes demolition and the construction of the Sydney Yard Access Bridge.

The CCS-EW will:

- Identity stakeholders and members of the community that may be affected by early works and the issues specific to each community;
- Detail the strategies and activities to be use to facilitate open communication and engagement with stakeholders and members of the community;
- Explain mitigation measures; and
- Define roles and tools to enable Place Managers to deliver the CCS-EW.

This plan sits under the *Sydney Metro Overarching Community Communications Strategy* (OCCS) as outlined below.

Figure 1 Where this plan sits in the hierarchy



1.2 Plan requirements

This plan, along with the OCCS will be submitted to the Secretary for approval no later than three months from the date of this approval or one month before commencement of any work, whichever is the latter.

Work will not start until the Community Communication Strategy has been approved by the Secretary, and will be implemented for the duration of early works.

1.3 Objectives

The objectives of the CCS-EW are to:

- Fulfil the requirements of the Minister's Conditions of Approval (MCoA), as they relate to the early works portion of works, to facilitate engagement and ongoing consultation with stakeholders and members of the community interested in or affected by the Project's early works (see 1.4).
- Provide a detailed communication and engagement plan that supports the early works program,
- Inform stakeholders and members of the community by providing clear, factual and timely information about the timing and impacts associated with early works, including proposed mitigation measures,
- Provide a mechanism for prompt issues resolution,
- Build key stakeholder relationships and maintain goodwill,
- Ensure coordinated communications with all relevant agencies including Sydney Coordination Office and Roads and Maritime Services.

1.4 Minister's Conditions of Approval

The Projects' approval requires the preparation and implementation of a Community Communication Strategy. The Sydney Metro Overarching CCS document fulfils this requirement at an overarching level.

This document fulfils the requirements of the MCoA for the early works portion of the Project including:

- demolition between Q2 2017 and Q3 2017 (in Q3, the successful tunnelling contractors will take over the demolition contract and will prepare and implement a CCS to cover their scope of works)
- construction of the Sydney Yard Access Bridge between Q2 and Q4 2017.

Table 1 outlines the MCoA and where they are addressed in the OCCS, this or subsequent plans.

Table 1 Minister's Conditions of Approval

Ref	Requirement	Section
B1	A **Community Communication Strategy** must be prepared to facilitate communication between the Proponent, and the community (including Relevant Councils, adjoining affected landowners and businesses, and others directly impacted by the CSSI), during the design and construction of the CSSI and for a minimum of 12 months following the completion of construction of the CSSI.	• All, as it relates to the early works • OCCS
B2	The **Community Communication Strategy** must: (a) identify people or organisations to be consulted during the design and construction phases;	• Appendix A
	(b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the CSSI;	• 4.2 • 6 • Appendix A • OCCS (s. 6)

Ref	Requirement	Section
	(c) identify opportunities to provide accessible information regarding regularly updated site construction activities, schedules and milestones at each construction site including use of construction hoardings to provide information regarding construction, specific to the location;	• Appendix A
	(d) identify opportunities for the community to visit construction sites (taking into consideration workplace, health and safety requirements);	• Contractor CCS
	(e) involve construction personnel from each construction site in engaging with the local community;	• OCCS s8.1; 8.5; 8.11; 8.15; 8.21; 8.28 • Contractor CCS
	(f) provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant community(ies) for the CSSI;	• OCCS s8.29 • Contractor CCS
	(g) set out procedures and mechanisms: i. through which the community can discuss or provide feedback to the Proponent; ii. through which the Proponent will respond to enquiries or feedback from the community; and • iii. to resolve any issues and mediate any disputes that may arise in relation to environmental management and delivery of the CSSI.	• OCCS • Construction Complaints Management System
B3	The **Community Communication Strategy** must be submitted to the Secretary for approval no later than three months from the date of this approval or one (1) month before commencement of any work, whichever is the latter.	• 1.2
B4	Work for the purposes of the CSSI must not commence until the **Community Communication Strategy** has been approved by the Secretary, or within another timeframe agreed with the Secretary.	• 1.2
B5	The **Community Communication Strategy**, as approved by the Secretary, must be implemented for the duration of the works and for 12 months following the completion of construction.	• 1.2 • OCCS

2 About Sydney Metro

Sydney Metro is Australia's largest public transport Project. A new standalone railway, this 21st century network will deliver 31 metro stations and 66 kilometres of new metro rail for Australia's biggest city – revolutionising the way Sydney travels.

Sydney's new metro railway will have a target capacity of about 40,000 customers per hour, similar to other metro systems worldwide. Sydney's current suburban system can reliably carry 24,000 people an hour per line.

Sydney Metro, together with signalling and infrastructure upgrades across the existing Sydney rail network, will increase the capacity of train services entering the Sydney CBD – from about 120 an hour today to up to 200 services beyond 2024. That's an increase of up to 60 per cent capacity across the network to meet demand.

Sydney Metro has two core components:

- Stage 1: Sydney Metro Northwest

Formerly the 36-kilometre North West Rail Link, this $8.3 billion Project is now under construction. Tunnelling has finished and construction is progressing rapidly.

Services start in the first half of 2019 using Sydney's new-generation of fully-automated metro trains, with a metro train every four minutes in the peak.

Customers won't need a timetable when Sydney Metro opens – they'll just turn up and go.

- Stage 2: Sydney Metro City & Southwest

From Sydney's booming North West region, a new 30-kilometre metro line will extend metro rail from the end of Sydney Metro Northwest at Chatswood under Sydney Harbour, through new CBD stations and southwest to Bankstown.

Features will include:

  - 16.5 kilometres of new metro line between Chatswood and Sydenham
  - 15.5 kilometres of new twin rail tunnels
  - 13.5 kilometre upgrade and conversion of the T3 Bankstown Line to metro standards.

It is due to open in 2024 with the capacity to run a metro train every two minutes each way through the centre of Sydney – a level of service never before seen in Sydney.

3 Early works scope

The following table outlines the early works scope across the Sydney Metro construction sites between Chatswood and Sydenham and the associated Place Manager responsible for engagement with business stakeholders.

Engagement with businesses during early works will be undertaken by a combination of Sydney Metro Place Managers and Contractor Place Managers.

Table 2 Early works scope

Site	Explanation	Place Manager
Chatswood	• Demolition by Delta Group – Site establishment – Aerial Bundling Cabling Low Voltage works – Soft strip out of buildings – Decommission of Ausgrid Substation – Demolition of former Ausgrid site	Robin Baird
Artarmon	• No early works required	Robin Baird
Crows Nest	• Demolition by Delta Group – Site establishment – Soft strip out of buildings – Demolition of buildings	Jonathan Lloyd
Victoria Cross South	• Demolition by Delta Group – Site establishment – Soft strip out of buildings – Demolition of buildings	Jonathan Lloyd
Victoria Cross North	• No early works currently scheduled	Jonathan Lloyd
Blues Point	• No early works required	Robin Baird
Martin Place North	• Demolition by Metropolitan Demolitions – Site establishment – Soft strip out of buildings – Demolition of buildings	Jonathan Lloyd
Martin Place South	• No early works required	Jonathan Lloyd
Pitt Street North	• Demolition by Delta Group – Site establishment – Soft strip out of buildings – Demolition of buildings	Emily Smith
Pitt Street South	• No early works required	Emily Smith

Site	Explanation	Place Manager
Central Station	• No early works required	Michael Lloyd
Sydney Yard Access Bridge	• Laing O'Rourke – Site establishment – Soft strip out of buildings – Demolition of buildings on Regent Street	Emily Smith
Waterloo	• Demolition by Delta Group – Site establishment – Soft strip out of buildings – Demolition of buildings	Michael Lloyd
Marrickville	• Demolition by Delta Group – Site establishment – Soft strip out of buildings – Demolition of buildings	Emily Smith

4 Stakeholder & Community Engagement

Engagement before and during early works, will lay a good foundation for engagement throughout major construction by the Principal contractors. Engagement will focus on stakeholders and the community adjacent to construction sites who have an interest in, or who are likely to be affected by early works activities.

4.1 Our approach

Sydney Metro's approach to stakeholder and community engagement during early works is to:

- Provide key stakeholders and the community with information about construction progress
- Ensure people understand the scope of the works and mitigation measures
- Ensure key stakeholders and the community understand the proposed timing of the works
- Take steps to minimise potential impacts
- Maintain and protect Transport for NSW and Sydney Metro's reputation.

Encouraging stakeholder understanding of the project is essential. If an activity and the need for it are fully understood, stakeholders can be more tolerant of short-term impacts.

By undertaking open and honest communication with stakeholders, working to minimise impacts and being approachable and responsive during this project, Transport for NSW's reputation can be maintained or improved and the project delivered on schedule.

4.2 Tools

A full suite of Sydney Metro's communication tools are outlined in the *Overarching Community Communications Strategy*. The stakeholder and community engagement tools to be used during early works will include:

- **Place Managers** to be the single point of contact for affected stakeholder and the community and the project team, who will proactively doorknock properties and also respond quickly to any issues or complaints raised;
- **Notifications, signage, newsletters** including **maps** to keep stakeholders and the community informed, explaining the purpose of the works, what they can expect, and any potential impacts (delivered in paper or electronic format);
- **Newsletter** to provide a three month look-ahead to properties within 500 metres of the construction site on a quarterly basis;
- **Fact sheets** (as required) to provide detail on aspects of the work and the project;
- **Newspaper advertising** to advise of work starting, the community contact facilities and road closures for example;
- **Mobile community information centre**;
- **Communications Management Control Group**, Sydney Metro will establish a new group or attend existing forums to discuss project activities with neighbouring infrastructure projects;

- **Contact facilities and information points:**
  - Project website - www.sydneymetro.info
  - Facebook - www.facebook.com/SydneyMetro
  - 24-hour community information line - 1800 171 386
  - Postal address - PO Box K659, Haymarket, NSW 1240
  - Community email address - sydneymetro@transport.nsw.gov.au;
- **Briefings** to strata managers, council officers, SCO, government agencies, and local groups;
- **Mitigation measures** to respond to impacts; and
- **Stakeholder database** to record interactions with stakeholders and the community.

4.3 Enquiries and complaint management

Enquiries and complaints will be managed in accordance with the Sydney Metro Overarching Community Communication Strategy and the Sydney Metro Complaints Management System. Both documents are available on the Sydney Metro project website.

5 Key Issues and mitigation measures

Table 3 Key issues and mitigation measures

Issues	Communication and mitigation measures
Information about construction	• Regular notifications and newsletters • One on One meetings on request • Door knocks as required - both prior to works and as stakeholder checks after works • Attend stakeholder meetings to communicate Project information to their client base • Community contact facilities
Coordination of information for tenants and property owners	• Strata/building managers and owners notified of scheduled and emergency work in the area when necessary • Meetings arranged with strata/building managers and owners • Strata/building managers and owners informed of works before they commence
Construction noise and vibration	• Early engagement with neighbouring stakeholders on likely noise and vibration impacts (see *Information about construction* above) • Implementation of mitigation measures in the Construction Noise and Vibration Management Plan, Minor Works Approval or Out of Hours Approval where relevant • Noise minimised through, use of appropriate plant, tools and techniques and programming • High impact noise works staged with respite periods as required by any applicable Environment Protection Licence or planning approval • Temporary noise screens used around equipment, where appropriate • Staff Induction and tool box meetings prior to noisy activities to highlight acceptable work force behaviour • Noise and or vibration monitoring offered in response to complaints
Dust	• Dust minimised by using water carts, water sprayers, street sweepers, chemical and organic ground cover, hard stands and limiting activities on windy days where necessary
Construction traffic	• Implement site specific Traffic Management Plans • Coordinate traffic management with the CBD Coordination Office • Construction traffic movements minimised in peak times, where possible • Heavy vehicle specific access and egress locations and routes to minimise local congestion • Truck driver tool box meetings on localised conditions • Out of hours deliveries to minimise impacts of oversized vehicles on local roads

Issues	Communication and mitigation measures
	• Traffic Control Group
Concerns about property damage	• Property Condition Surveys offered where eligible • Vibration modelling information • Distribute fact sheets • Protection of heritage items using hoarding
Utility relocation and continuity of supply	• Detailed briefings for businesses potentially affected • Timing works, particularly service cutovers, to minimise potential impacts • Provide alternative service where necessary to maintain essential supply
Visual amenity	• Retain vegetation where possible or for as long as practical • Protection of trees to be retained • Hoarding designed in line with Sydney Metro Brand Style Guidelines • Prompt graffiti removal from hoarding, buildings, plant and surroundings kept well maintained and clean

6 Communication Implementation plan

Site specific details can be found in Appendix A including a site overview, potential issues and stakeholder lists. The following implementation plan will be rolled out across all sites. For detail of specific stakeholders, refer to the relevant site specific appendix.

Responsibilities for implementing these tools can be found in the Overarching Community Communications Strategy, section 8.

Table 4 Communication implementation plan

Project phase	Communication tools	Stakeholder	Timing
Project start-up	Communications Management Control Group	Neighbouring infrastructure projects (cumulative impacts) Government agencies Local council	Monthly or as required
	Mobile Community Information Centre	Local events like markets and fairs, shopping centre displays etc.	Throughout construction
	Briefings	Local council Local member Senior stakeholders Local groups Educational and religious institutions	As required or requested
Site investigations	Notification letter	Delivered to properties within 100m	7 days prior to work starting
	Doorknock (if intrusive or loud)	Immediate neighbours	
Adjoining owner agreements	Briefing	Adjoining property owners	Before site establishment

Project phase	Communication tools	Stakeholder	Timing
Site establishment	Newsletter	Local council Local member Senior stakeholders Local groups Delivered to properties within 500m	At site establishment On a quarterly basis
	Notification letter	Delivered to properties within 100m Local groups	7 days prior to work starting
	Site signage Hoarding banners Directional signage	People passing by the site	As required
	Doorknock	Properties within 50m Educational and religious institutions	7 days prior to work starting
Out of hours work	Notification letter	Delivered to properties within 100m Local groups	7 days prior to work starting
	Doorknock	Properties within 50m	7 days prior to work starting
Emergency work*	Notification letter	Affected properties	Within 2 hours
	Doorknock		
Construction milestones	Included in monthly notification letter	Delivered to properties within 100m	Delivered on a monthly basis
	Doorknock	Properties within 50m Educational and religious institutions	7 days prior to new milestone
	Briefings	Local council Local member Senior stakeholders	As required or requested

Project phase	Communication tools	Stakeholder	Timing
		Local groups Government agencies	
Traffic changes	Included in monthly notification letter	Delivered to properties within 100m	Delivered on a monthly basis
	VMS Traffic alert Bus stop notices	Road users	7 days prior to work starting 7 days prior to new milestone

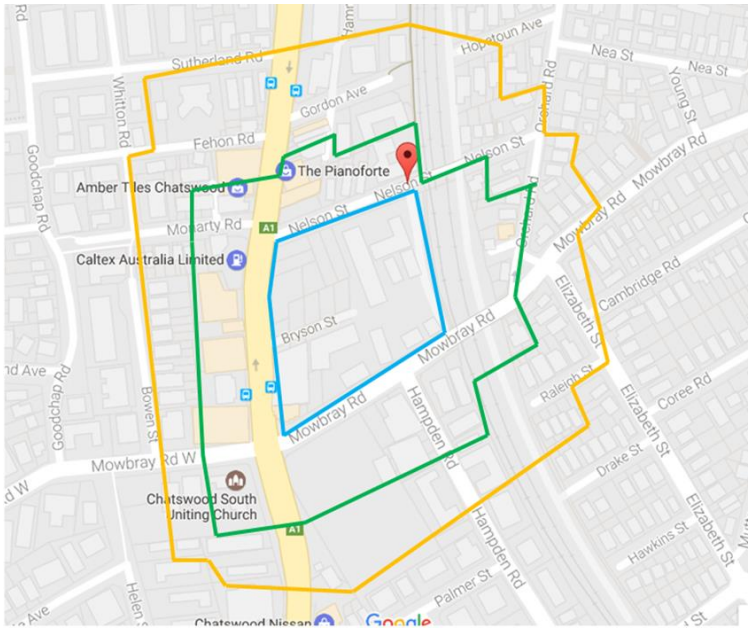
**Work required to repair damaged utilities and/or make an area safe after an incident outside standard construction hours.*

Appendix A Site specific details

Note: timing is approximate and subject to change. The community and stakeholders will be notified before work starts.

A.1 Chatswood dive site

Table 1 Site overview

Item	Description	
Site name	• Chatswood dive site	
Responsible contractor	• Delta Group	
Place Manager	• Robin Baird	
Start date	• April 2017	
Location	• The site is bordered by Mowbray Road, Pacific Highway and Nelson Street (and the rail corridor), Chatswood	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of early	• Minor works (Subject to Minor Works Approval) – Service disconnections and temporary service	• Early works from April 2017 – Aerial Bundling Cabling Low Voltage works

Item	Description	
work	establishment - 27 March 2017 – Site establishment - 27 March 2017 – Hoarding installation - 6 April 2017 – Strip out and Hazmat removal - 13 April 2017	– Decommissioning Ausgrid Substation – Building demolition
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 2 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on neighbouring businesses • Construction traffic noise including workforce, deliveries and truck movements
Traffic and access	• Maintaining vehicle access for neighbouring businesses including Chatswood Bowls Club, Midas Service Centre, Payless Tyres, T&M Auto Supplies, Dulux Paints and Pianoforte • Additional traffic including large vehicles on surrounding streets, Nelson Street and Orchard Road. • Traffic modifications including signage changes to footpath and pedestrian diversions • Utility works affecting footpath access
Property impacts	• Potential effects of vibration and settlement • Dust
Business operations	• Congestion and access to premises for customers and staff • Health impacts to business staff and customers from dust • Maintaining on-street parking for customers and staff
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• 33 kV utility works between Willoughby and Chatswood • Main North and North Shore Corridor Works between Waitara and Waverton

Item	Description
Landscape	• Trees on the perimeter of Mowbray Road
Heritage	• Heritage Listed Mowbray House

Table 3 Stakeholders and community overview

Stakeholders	Detail	
Local council	City of Willoughby	
Local member	The Hon. Gladys Berejiklian MP, Premier of NSW and Member for Willoughby	
Local groups	• Chatswood East Progress Association • Chatswood West Progress Association • Chatswood Chamber of Commerce • Artarmon Progress Association	• Artarmon Village Chamber of Commerce • Artarmon Bush Care • Bike North
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • Transport for NSW • NSW Trains	• NSW TrainLink • Sydney Trains • Sydney Water • Ausgrid • Heritage Council
Senior Stakeholders	• Federation of Willoughby Progress Associations • District Commissioner - North, Greater Sydney Commission	• Mayor, Willoughby City Council • Willoughby District Historical Society Inc.
Road users	• Road users on Mowbray Road, Pacific Highway, Hampden Road, Orchard Road, Nelson Street and Gordon Avenue	
Residents and businesses		
Mowbray Road	• 340 – 2 double storey residences (duplex) • 342 - 6 residential units + NSW Strata Management	• 348 – Ausgrid, heritage substation • 366 – Sydney Water, heritage water tanks

Stakeholders	Detail	
	• 344-346 - 9 residential units + strata manager	
Pacific Highway	• 522 – Great Northern Hotel • 524 - 35 residential units + strata manager • 544 - Baby Bounce and 35 residential units + strata manager • 546 – Real Flame • 552 – Demir Leather and 49 residential units+ strata manager • 572 - Caltex Service Station	• 574 - Maurer & Bracks Funeral Directors • 582 – Amber Tiles • 655 – Chatswood Bowling Club • 653 - 18 residential units + strata manager • 639 - Payless Tyres & Brakes and T&M Auto Parts • 629 - Midas Exhaust Brakes & Shocks • 627 – Pianoforte and 18 residential units + strata manager • 613 – Dulux Inspiration Paint
Orchard Road	• 2-14 - 6 residential homes	
Gordon Avenue	• 5-9 - Louder Minds (home based business) and 15 residential units + strata manager • 1-3 - 12 residential units (Frank Knight Property Management)	
Nelson Street	• 2 - 2 Home based businesses and residential home • 5 - residential home • 9-11 - 45 residential units (Dunns Strata Management, Property Manager – Oasis Property Management)	• 15 - 7 residential units + strata manager • 17 - 6 residential units + strata manager • 19 - 1 residential home

A.2 Crows Nest station site

Table 4 Site overview

Item	Description
Site name	• Crows Nest Station
Responsible contractor	• Delta Group
Place Manager	• Jonathan Lloyd
Start date	• 1 July 2017
Location	• The site is bordered by Pacific Highway, Clarke Lane, Oxley and Hume streets, Crows Nest
Notification key	___ Site boundary ___ 50m ___ 100m
Scope and timing of early work	• Minor works (Subject to Minor Works Approval) – Service disconnections and temporary service establishment – 1 July 2017 – Site establishment – 8 July 2017 – Hoarding installation – 15 July 2017 – Strip out and Hazmat removal – 22 July 2017 • Early works – Building demolition – 22 June 2017
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved

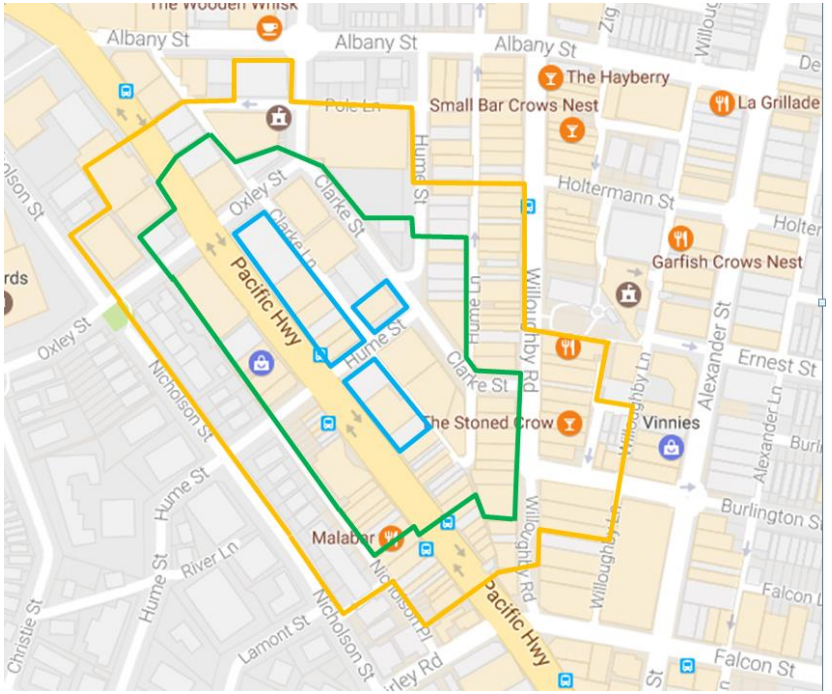


Table 5 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on neighbouring residential buildings and businesses • Noise and vibration effects on adjacent childcare centre • Vibration impacts on sensitive equipment used by neighbouring businesses, for example medical premises and sound studios • Construction traffic noise including workforce, deliveries and truck movements
Traffic and access	• Maintaining access to rear driveways on Clarke Lane during demolition of adjacent buildings • Traffic modifications including signage changes to footpath and pedestrian diversions
Property impacts	• Potential effects of vibration and settlement • Dust impacts
Business operations	• Concern about health impacts to business staff and customers from dust, particularly adjacent childcare centre • Maintaining on-street parking for customers • Maintaining pedestrian access and providing clear signage to local businesses when diversion are required
Visual amenity	• Impact on visual amenity for businesses overlooking the site
Cumulative Impacts	• Multiple residential apartment developments underway in the precinct with traffic, noise, dust and amenity impacts • Council reviewing Crows Nest Master Plan • Future plan for redevelopment of Hume Street Parklands

Table 6 Stakeholders and community overview

Stakeholders	Special requirements
Local council	• North Sydney Council • Lane Cove Council
Local member	• Member for North Shore, Ms Felicity Wilson MP • The Hon. Gladys Berejiklian MP, Premier of NSW and Member for Willoughby

Stakeholders	Special requirements	
Local groups	• Holtermann Precinct Committee • Wollstonecraft Precinct Committee	• Naremburn Progress Association • Crows Nest Main Street
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • Transport for NSW • NSW Trains	• NSW TrainLink • Sydney Trains • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Mayor, North Sydney Council	• Greater Sydney Commission (District Commissioner: North)
Road users	• Road users on Hume Street, Pacific Highway, Oxley Street, Clarke Lane and Clarke Street	
Residents and Businesses		
Clarke Street	• 6-8 Clarke St - 54 commercial units (Strata Plus Pty Ltd) • 10-12 Clarke St - Lawson House, 4 levels of commercial offices including audio post production company Labsonics, and ground floor retail including Nebula Hair and Nectar Coffee House (Strata Committee) • 14-20 Clarke St - KTBR Business Centre, 4 levels of commercial offices including TSD Audio Production Studio and Awareness Institute (Precise Strata Management/ Owner) • 22-26 Clarke St – Wyndel Apartments, 36 residential units and holiday apartments, and ground floor retail (Owner) • 28-34 Clarke St - Oxley Corporate Centre, multi-storey commercial office block, 10 tenants including dance studio and a gym (Managing Agent: Prosper Group) • 11 Clarke St – double storey commercial, ground floor has 7 retail tenants (food, hair, massage)	
Pacific Highway	• 545-553 Pacific Hwy – 95 residential apartments (Strata One/ Ralan Property Care) • 446-448 Pacific Hwy – Oasis Car Wash, site recently sold • 402-420 Pacific Hwy - Atrium Apartments, 77 residential apartments and ground floor retail CoCo Republic and Arium (Strata Manager: Jameson Executive Committee, Building Manager: Atrium Apartments)	

Stakeholders	Special requirements
	• 400 Pacific Hwy – development site, future residential apartments and ground floor retail • 390 Pacific Hwy – commercial, Bad Backs (medical supply store) • 388 Pacific Hwy – commercial, Orson & Blake (furniture) • 382 Pacific Hwy – commercial, Sofa Studio • 380 Pacific Hwy – commercial, Vision personal training • 378 Pacific Hwy – commercial, De Rucci • 376 Pacific Hwy – commercial, Latex Bedding Co. • 374 Pacific Hwy – commercial, Hawks International Framing • 372 Pacific Hwy – commercial, Comfort & Fit • 370 Pacific Hwy – commercial, The Purple Corporation • 368 Pacific Hwy – commercial, Advance Mirrors • 360 Pacific Hwy – commercial including Sydney Side and Moss (Body Corporate Services) • 473-475 Pacific Hwy - ground floor retail (Oil Paintings Plus) with 4 residential units upstairs
Hume Street	• 36 Hume Street - Kellys Place Childrens Centre (Business owner) • 31-33 Hume St – Curves Gym and commercial offices • 35 Hume St – commercial offices including Ambient Psychology Services • 37-39 Hume St – commercial offices including Benchmark Sleep Services • 41 Hume St - Security Industry House
Oxley Street	• 38 Oxley St – 4 storey commercial, Boat Books Australia • 34-36 Oxley St – Northside Community Church & Northside Conference Centre and 38 residential (Precision Apartments)

A.3 Victoria Cross station site

Table 7 Site overview

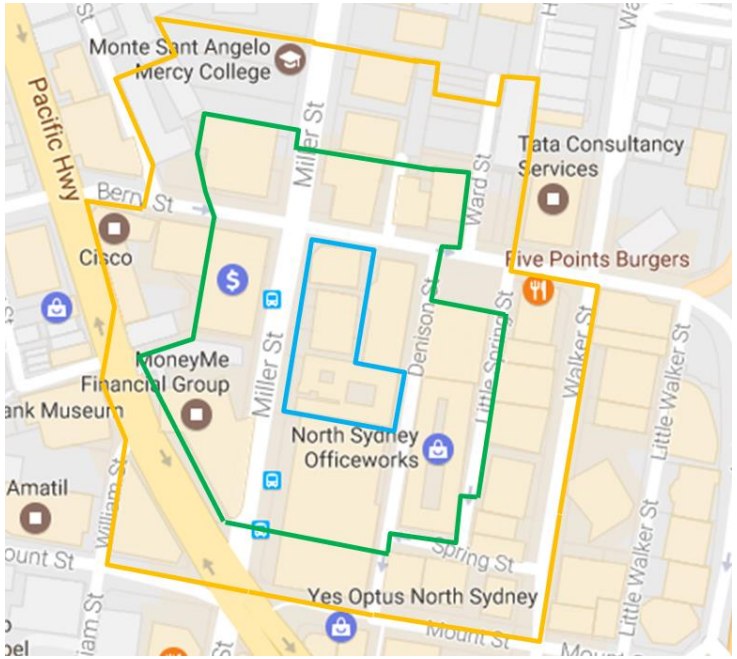
Item	Description	
Site name	• Victoria Cross	
Responsible contractor	• Delta Group	
Place Manager	• Jonathan Lloyd	
Start date	• April 2017	
Location	• The site is bordered by Miller, Berry and Denison streets, North Sydney (and 105 Miller Street)	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of early work	• Minor works (Subject to minor works approval) – Service disconnections and temporary service establishment, 189 Miller awning demolition - 20 March 2017 – Site establishment - 27 March 2017 – Hoarding installation - 6 April 2017	– Strip out and Hazmat removal - 13 April 2017 – Scaffold installation – 13 April 2017 • Early works – Building demolition – 1 May 2017 – Crane and Alimak / Hoist installation – 29 April 2017
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 8 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on adjacent buildings • Noise and vibration effects on adjacent residential tower • Noise and vibration from night/emergency works affecting adjacent residential tower • Noise and vibration from works affecting adjacent childcare centre • Construction traffic noise
Traffic and access	• Maintaining pedestrian access to adjacent buildings • Traffic modifications including signage changes to footpath and pedestrian diversions • Utility works affecting footpath access
Property impacts	• Potential effects of vibration and settlement • Issues salvaging contents from the heritage listed building to be demolished
Business operations	• Demolition noise and dust impacting outdoor dining space at neighbouring businesses • Maintaining drop off/pick up location and loading zones for adjacent businesses • Potential for increased pests impacting properties due to demolition of adjacent buildings
Visual amenity	• Impact on visual amenity for businesses overlooking construction site • Impact on visual amenity for outdoor dining spaces nearby to construction site
Cumulative Impacts	• Cumulative traffic impacts from other construction sites in North Sydney (particularly on Denison Street and north of Miller Street where multiple residential developments are underway)
Landscape	• Protection of trees on Miller Street
Health	• Concern from adjacent childcare regarding potential health risk to campus population from demolition noise, dust and hazardous materials removal

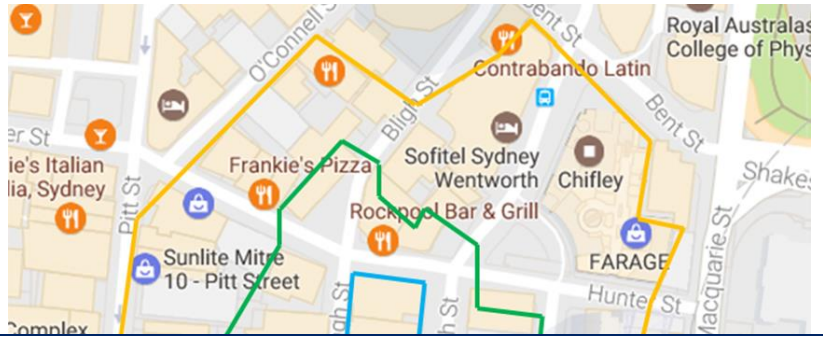
Table 9 Stakeholders and community overview

Stakeholders	Special requirements	
Local council	• North Sydney Council	
Local member	• Member for North Shore, Ms Felicity Wilson MP	
Local groups	• Stanton Precinct Committee • Willoughby District Historical Society	• North Shore Historical Society
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • NSW Trains • NSW TrainLink	• Sydney Trains • Transport for NSW • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Monte Sant' Angelo Mercy College • Mayor, North Sydney Council • Rydges Hotel • The Chevalier Family	• The North Sydney Chamber of Commerce • Greater Sydney Commission (District Commissioner: North) • Wenona School • Aqualand Developments
Road users	• Road users on Berry Street, Miller Street and Denison Street	•
Residents and Businesses		
Berry Street	• 53 Berry St – 7 storey commercial offices, ground floor retail (Chesterton International Australia) • 77-81 Berry St – Berry Square (29 retail shops) and Beaumonde Apartments (230) [Knight Frank] • 76 Berry St – 11 storey commercial office building (Knight Frank) • 66 Berry St – 7 storey commercial office building (Management Building Services) • 56 Berry St – Christie Corporate Centre, 15 storey commercial office building (Christie Corporate) • 50 Berry St – 14 storey commercial office building (Knight Frank)	

Stakeholders	Special requirements
Miller Street	• 100 Miller St – Northpoint, 32 storey commercial office building plus 2 level retail arcade (Cromwell Property Group) • 116 Miller St - Vignette House, 8 storey commercial office building, ANZ and Commonwealth banks and retail on ground floor (Knight Frank) • 105-153 Miller St – MLC, 12 storey commercial office building plus ground floor retail (Investa) • 199 Miller St – Rag & Famish Hotel (Business owner) • 201 Miller St – McAfee , 23 stories including a data centre and medical practice in the Pavilion (Dexus Property Group)

A.4 Martin Place station site

Table 10 Site overview

Item	Description	
Site name	• Martin Place North	
Responsible contractor	• Metropolitan Demolitions	
Place Manager	• Jonathan Lloyd	
Start date	• May 2017	
Location	• The site is bordered by Hunter, Castlereagh and Elizabeth streets, Sydney (and 50 Martin Place)	

Item	Description	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of early work	• 7 Elizabeth Street – Site establishment – 15 March 2017 – HAZMAT removal – March 2017 – Soft strip-out – April 2017 – Scaffold – June 2017 – Structural demolition – June 2017	• 8-12 Castlereagh Street – Site establishment – 8 May 2017 – HAZMAT removal – May 2017 – Soft strip-out – May 2017 – Scaffold – May 2017 – Structural demolition – June 2017
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 11 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on directly adjacent building at 48 Martin Place • Noise and vibration from night/emergency works affecting nearby hotels and residential apartments (Medina Serviced Apartments and Sofitel Sydney Wentworth)
Traffic and access	• Traffic congestion impacting access to businesses on Castlereagh and Elizabeth Streets
Property impacts	• Potential effects of vibration and settlement on adjacent heritage buildings
Business operations	• Noise, vibration and dust impacts at 48 Martin Place (Macquarie Bank has events space and production studio, Commonwealth Bank has vibration sensitive vault) • Noise impacts at Channel 7 studios, NSW Ministry, Department of Premier and Cabinet and NSW Treasury at 52 Martin Place • Loss of parking and loading zones • Maintaining pedestrian flows

Item	Description
	• Loss of amenity impacting on patronage at nearby cafés with outdoor seating
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• General disruption in the CBD and traffic implications due to light rail construction and nearby commercial demolition and construction projects

Table 12 Stakeholders and community overview

Stakeholders	Special requirements	
Local council	• City of Sydney	
Local member	• Mr Alex Greenwich MP – Member for Sydney	
Local groups	• To be confirmed	
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • NSW Trains • NSW TrainLink	• Sydney Trains • Transport for NSW • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Macquarie Bank • Network Seven • Lord Mayor, City of Sydney Council • Sydney Business Chamber • Greater Sydney Commission (District Commissioner: Central) • Tourism Accommodation Australia	

Stakeholders	Special requirements
	• Committee for Sydney
Road users	• Road users on Elizabeth St, Hunter St and Castlereagh Street
Residents and Businesses	
Martin Place	• 38-46 Martin Pl – Henry Davis York Building, 12 storey commercial office building, tenants include Fairfax & Roberts Jewellers, Henry Davis York (Jones Lang Laselle) • 48 Martin Place – Savings Bank Building, Macquarie Bank and tenants Commonwealth Bank • 52 Martin Place – 35 storey office building, tenants include Channel 7 (Colliers International); Main offices for the NSW Ministry, Department of Premier and Cabinet and NSW Treasury
Castlereagh Street	• 17 Castlereagh St – Medibank House,13 storey office building, ground floor tenant NIB Health Funds (D J Wear & Associates) • 15 Castlereagh St - City Freeholds House, 18 storey office building (City Freeholds) • 9 Castlereagh St – Castlereagh Centre, 31 storey office building, ground floor café The Naked Duck (Charter Hall Group) • 1 Castlereagh St – BHP Building, 25 storey office building, ground floor retail tenants City Convenience Store, Posh Printing, and Piccolo Me (Commercial Portfolio Management)
Bligh Street	• 37 Bligh St – 13 storey office building with ground floor bar and food outlets including The Wolf wine bar (BCS Strata Management)
Hunter Street	• 60-66 Hunter St - City Mutual Building, 12 storey offices, tenants include Rockpool Restaurant & Bar and Spice Temple (Colliers International)
Chifley Square	• 1 Chifley Sq – 16 storey office building including 3 levels of retail (Jones Lang Lasalle) • 2 Chifley Sq – Chifley Tower, 44 storey office building including retail arcade (Jones Lang Lasalle) • 8-12 Chifley Sq – 35 storey office building, ground floor retail tenants include Office of Hair and Flight Centre (Mirvac)
Phillip Street	• 61-101 Phillips St – Sofitel Sydney Wentworth 19 storey commercial hotel
Hosking Place	• 1-5 Hosking Pl – The Aston, 28-storey retail/residential/serviced apartment building (Medina Serviced Apartments)

A.5 Pitt Street station site

Table 13 Site overview

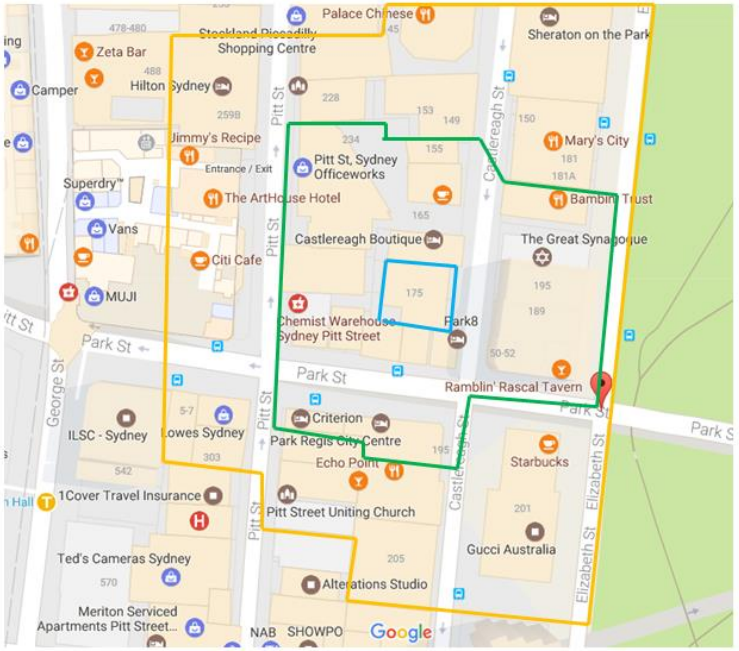
Item	Description	
Site name	• Pitt Street North	
Responsible contractor	• Delta Group	
Place Manager	• Emily Smith	
Start date	• April 2017	
Location	• 175 Castlereagh Street	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of minor and early works	• Minor works (Subject to Minor Works Approval) – Service disconnections and temporary service establishment - 20 March 2017 – Site establishment - 27 March 2017 – Awning demolition – 30 March 2017	– Hoarding installation - 6 April 2017 – Strip out and Hazmat removal - 13 April 2017 – Scaffold installation – 13 April 2017 • Early works – Building demolition – 7 July 2017
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 14 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on sensitive equipment used by businesses (eg jewellers) • Noise impacts on retail and open air dining environments • Construction traffic noise including deliveries and spoil truck movements • Noise and vibration from out-of-hours works • Noise disturbance during religious services
Traffic and access	• Increase in truck movements • Traffic modifications including signage changes to footpath and pedestrian diversions • Utility works affecting footpath access
Property impacts	• Potential effects of vibration and settlement • Potential damage to heritage elements of the neighbouring property at 169-171 Castlereagh Street
Business operations	• Visibility of businesses signage at neighbouring properties • Concern about health impacts to business staff and customers from dust • Changes to pedestrian patterns affecting walk-in trade
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• Relative proximity to Sydney Light Rail works on George Street • Perception that the CBD is a construction site affecting attractiveness of retail precincts

Table 15 Stakeholders and community overview

Stakeholders	Special requirements
Local council	• City of Sydney
Local member	• Mr Alex Greenwich MP – Member for Sydney
Local groups	• CityRAGS

Stakeholders	Special requirements	
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • NSW Trains • NSW TrainLink	• Sydney Trains • Transport for NSW • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Sydney Business Chamber • NSW Property Council • Tourism and Transport Forum • Greater Sydney Commission (District Commissioner: Maria Atkinson AM) • Lord Mayor, City of Sydney • Greater Sydney Commission (District Commissioner: Central)	
Educational and religious institutions	• The Great Synagogue – 166 Castlereagh Street • Church of Scientologists – 201 Castlereagh Street • Pitt Street Uniting Church – 264A Pitt Street	
Road users	• Road users on Castlereagh, Pitt and Park streets	
Residents and Businesses		
Castlereagh Street	• 133 - Piccadilly Tower, commercial building, 31 floors • 151 - commercial building, 13 floors • 155 - Citisite House, commercial building, 14 floors – Strata contact: Body Corporate Services • 160 - (also 185 Elizabeth Street) Commercial building, 12 floors. Commercial tenants are primarily health pracitioners, jewellers and legal firms. Retail tenants include Bambini Café Restaurant and Frost Antiques. – Property management contact: Jones Lang Lasalle • 161 & 167 (also 242 Pitt Street), commercial building (50 floors), commercial building (6 floors), and retail arcade. Commercial tenants are primarily financial, legal, consulting and media companies. Retail tenants include, Officeworks,	

Stakeholders	Special requirements
	Pablo and Rusty's, Scotch & Soda and The Local Bar - Property management contact: Liberty Place Management. • 169 - Castlereagh Boutique Hotel and retail premises including Pie Face and Hyde Park Jewellery • 197-199 - Victoria Tower, 36 floors, 250 apartments
Park Street	• 2 - Citigroup Centre, commercial building, 41 floors • 5-7 – Hotel Coronation • 27 - Park Regis Apartments, 28 floors and Centre Hotel, 9 floors • 50 - Commercial building, 12 floors. Commercial tenants are primarily legal and consulting firms. Retail tenant is Clueless International – Property management contact: Jones Lang Lasalle • 54 - Commercial building, 12 floors. Commercial tenant is Bauer Media Group. Retail tenants are Bambini on Park Espresso, Fifty Four Park St Health and Wellbeing Club, Hinkley's Diamonds and Renya Xydis – Property management contact: Jones Lang Lasalle • 60 – Commercial building, 13 floors
Pitt Street	• 210 - Picadilly Shopping Centre • 250 - Ashington Place, commercial building, 12 floors. Commercial tenants are primarily jewellers and legal firms. Retail tenants include City Convenience Store, Café Lido, Big Bite, CBD Bakery, Kais Jewellery, Remedial Massage Clinic, Kosmos Expresso Café, Deluxe Cleaners and Sydney Camera House – Property Management contact: Sydney Building Management, Strata contact: Change Strata • 255 - Hilton Sydney • 262 - Pilgrim House, commercial building, 6 floors – Property Management contact: Uniting Church • 260 Pitt Street – Criterion Hotel • 303-305 Pitt Street – Commercial building, 8 floors – Property Management contact: Tim Green Commercial • 295-301 Pitt Street – Commercial building, 8 floors – Property Management contact: Brookfield Multiplex
Elizabeth Street	• 145-171 - Sheraton on the Park • 179 - commercial building, 21 floors – Property Management Contact: Jones Lang Lasalle • 201 - commercial building, 42 floors – Property Management Contact: Colliers

A.6 Sydney Yard Access Bridge site

Table 16 Site overview

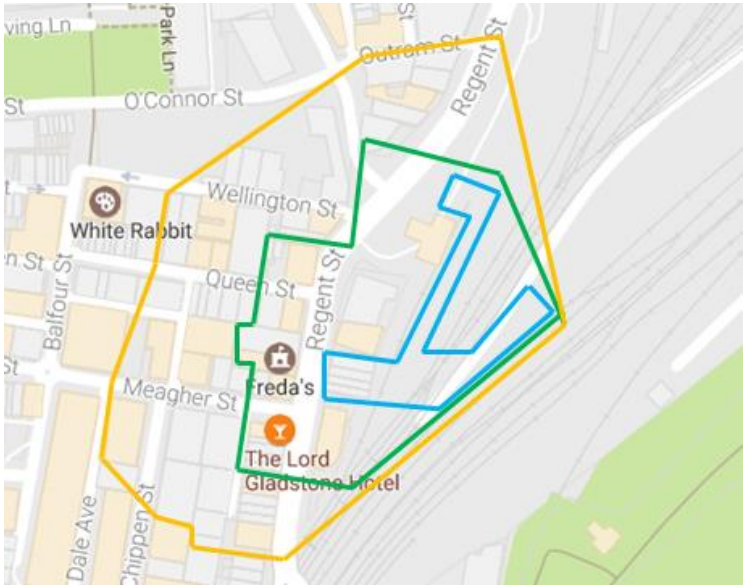
Item	Description	
Site name	• Sydney Yard Access Bridge	
Responsible contractor	• Laing O'Rourke	
Place Manager	• Emily Smith	
Start date	• 29 April 2017	
Location	• Zone SY - Sydney Yard within Central Station • Zone RS - between 54 - 66 Regent Street • Zone MS - between Mortuary Station and Zone RS	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of early work	• Site establishment (April – June 2017) – Fencing and hording – Establishment of hard stand and laydown areas • Demolition (Zone RS only - June – August 2017) • Bridge construction enabling works (June – August 2017) – Piling for abutments, piers, and Tower Crane	– Track work (OOH mid-week possessions) – Over-head wire removal (OOH mid-week possessions) – Signalling works (OOH mid-week and weekend possessions) • Utility relocations along Regent Street (August – October 2017 - OOH works) • Bridge construction (August– December 2017)
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 17 Potential issues

Item	Description
Noise and vibration	• Noise and vibration effects on neighbouring residential apartments during demolition and piling works • Noise and vibration from utility relocation night works along Regent Street • Potential for high noise generating activities to occur concurrently during daytime and out-of-hour periods (piling and service relocation works)
Light	• Lighting for OOH possession works in the rail corridor may impact on adjoining residential properties
Traffic and access	• Maintaining access for adjoining properties during service relocation works • Traffic modifications including signage changes to footpath and pedestrian diversions during demolition and service relocation works
Property impacts	• Potential effects of vibration and settlement
Business operations	• Loss of customer parking • Concern about health impacts to business staff and customers from dust • Changes to pedestrian patterns affecting walk-in trade
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• Substation construction works in the rail corridor to the north and east are considered to have negligible cumulative impact

Table 18 Stakeholders and community overview

Stakeholders	Special requirements	
Local council	• City of Sydney	
Local member	• Ms Jenny Leong MP – Member for Newtown	
Local groups	• Chippendale Residents Interest Group	• East Chippendale Community Group

Stakeholders	Special requirements	
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • Transport for NSW • NSW Trains	• NSW TrainLink • Sydney Trains • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Lord Mayor, City of Sydney • Sydney Business Chamber • NSW Property Council	• Tourism and Transport Forum • Tourism Accommodation Australia (TAA) • Greater Sydney Commission (District Commissioner: Central)
Road users	• Road users on Regent and Meagher streets	
Residents and Businesses		
Regent Street	• 52 – 41 residential apartments • 54 – 17 residential apartments • 61-65 – residential apartments • 55 – residential apartments • 87-97 - Hello Fresh, Continuity, Beautiful Burgers Café, City Furniture, and Remifa Music Studio • 99 Regent Street – Elders Real Estate Sydney City South • 101 Regent Street – Aust Corp Constructions • 105 Regent Street – Dunwood Recruitment • 107 Regent Street – We Are Social • 109 Regent Street – Fredas Restaurant and Houzz Furniture and event space • 113-115 Regent Street – Café Ideas	• 117– Lord Gladstone Hotel • 123 – commercial property • 125 – commercial property • 127 – commercial property • 129 – commercial property • 131 – commercial property • 133 – commercial property • 135 – commercial property • 137 - The Haymarket Centre, temporary accommodation provider for the homeless • 139 – residential apartments

Stakeholders	Special requirements	
Queen Street	• 15 - residential apartments • 19 - residential apartments • 21 - residential apartments • 23 - residential apartments • 24 – commercial property	• 26 – commercial property • 28 – commercial property • 34 – commercial property • 35 - residential apartments • 27 – 13 residential apartments
Wellington Street	• 20 - Wellington Street Projects	
Chippen Street	• 16 - commercial property • 36 – commercial property	• 23 – commercial property • 43 – commercial property
Meagher Street	• 42 - commercial property • 44 – commercial property	• 52 – commercial • 25 – commercial

A.7 Waterloo station site

Table 19 Site overview

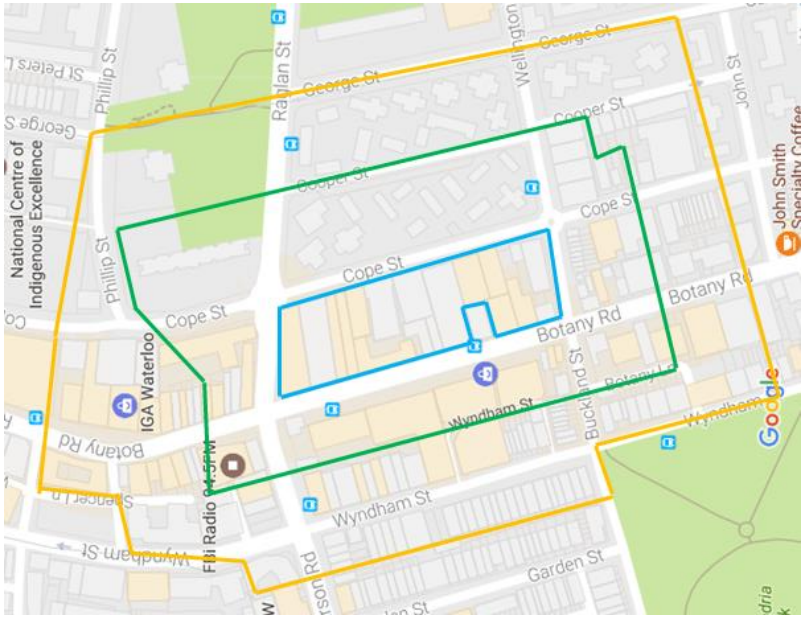
Item	Description	
Site name	• Waterloo	
Responsible contractor	• Delta Group	
Place Manager	• Michael Lloyd	
Start date	• 13 June 2017 (subject to minor works approval)	
Location	• The site is bound by Raglan, Wellington and Cope streets and Botany Road, Waterloo (excluding 103 Botany Road)	
Notification key	___ Site boundary ___ 50m ___ 100m	
Scope and timing of minor and early works	• Minor works (Subject to Minor Works Approval) – Service disconnections and temporary service establishment - 13 June 2017 – Site establishment – 20 June 2017 – Awning demolition – 20 June 2017	– Hoarding installation – 27 June 2017 – Strip out and Hazmat removal – 3 July 2017 • Early works – Building demolition – September 2017
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved	

Table 20 Potential issues

Item	Description
Noise and vibration	• Noise impacts on retail and open air dining environments • Construction traffic noise including deliveries and spoil truck movements • Noise and vibration from night works • Noise disturbance during religious services
Traffic and access	• Increase in truck movements • Traffic modifications including signage, changes to footpath and pedestrian diversions
Property impacts	• Potential effects of vibration and settlement • Potential damage to heritage elements of the neighbouring property at 103 Botany Road
Business operations	• Concern about health impacts to business staff and customers from dust • Maintaining on-street parking for customers and staff • Loss of customer base from removal commercial/residential properties
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• Nil

Table 21 Stakeholders and community overview

Stakeholders	Special requirements	
Local council	• City of Sydney	
Local member	• Mr Ron Hoenig MP, Member for Heffron • Ms Jenny Leong MP, Member for Newtown	
Local groups and community services	• RedWatch • Counterpoint Community Services	• Alexandria Residents Action Group

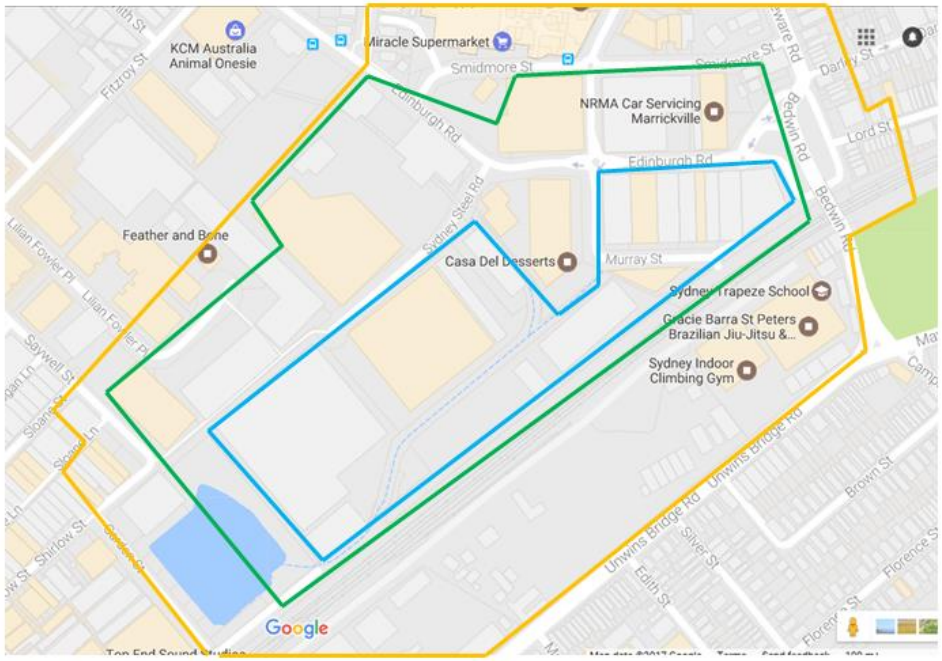
Stakeholders	Special requirements	
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • Family and Community Services (FACS) • NSW Trains	• NSW TrainLink • Sydney Trains • Transport for NSW • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Lord Mayor, City of Sydney • Sydney Business Chamber	• NSW Property Council • Greater Sydney Commission (District Commissioner: Central)
Religious	• Waterloo Congregational Church – 103 Botany Road	
Educational	• Sydney Film School - 82 Cope Street	
Road users	• Road users on Cope, Regent, Raglan, Buckland, Wellington streets and Henderson and Botany roads	
Residents and Businesses		
Cooper Street	• 95 – 3 Storey apartment block (Housing NSW) • 93 – 3 Storey apartment block (Housing NSW)	• 91 – 3 Storey apartment block (Housing NSW) • 89 – 3 Storey apartment block (Housing NSW)
Wellington Street	• 136, 134, 132, 130, 128, 126, 124, 122 – residential homes • 116 Wellington Street – Vental (Blinds)	• 117 – 3 Storey apartment block (Housing NSW) • 123 – 3 Storey apartment block (Housing NSW)
Cope Street	• 92-110 – 59 Apartments, strata contact: Strata Title Management • 149 – 20 storey apartment block (Housing NSW) • 176-178 Cope Street – Office National • 180 – Apartments • 184 – Apartments • 186 –Apartments	• 237 – Apartments • 233 – Apartments • 209 – 3 Storey apartment block (Housing NSW) • 213– 3 Storey apartment block (Housing NSW) • 215 – 3 Storey apartment block (Housing NSW) • 217– 3 Storey apartment block (Housing NSW) • 219 – 3 Storey apartment block (Housing NSW)

Stakeholders	Special requirements	
	• 190, 192, 194, 196, 229, 225 – residential homes	
Raglan Street	• 125 Raglan Street – Convenience Store • 104 – 3 Storey apartment block (Housing NSW)	• 129 Raglan Street – Ragland Café
Botany Road	• 23 - Waterloo Family Medical Centre • 43 – 3 Apartments • 41A, 127, 123 – residential homes • 41 Botany Road – Waterloo Discount • 43 Botany Road – Kirbys Pharmacy • 45-47 Botany Road – Abbotts Hotel and Bottleshop • Shop 6/44-54 Botany Road – Proexhibit (photographic studio) • Shop 4/44-54 Botany Road – Blanco Negro • Shop 1/44-54 Botany Road – FBi Radio • 56 – 12 Apartments60 Botany Road (upstairs) – Wholebox'n'dice (promotions) • 62-72 – 44 Apartments • 72 Botany Road – Yum Yai Thai • 100 Botany Road – No Quarter Gym	• 100 Botany Road (upstairs) – The Aurora Project • 108 Botany Road – Allans Music • Shop 1/110 Botany Road – 99 Bikes • Shop 2/110 Botany Road – Sunbeam Factory Outlet • 123 Botany Road – Cauliflower Hotel • 130 Botany Road – Dream Girl Massage • 132 Botany Road – Mr Toast (café) • Shop 1/138 Botany Road – AMS (vet) • Dens in Dente (Dentist) - Shop 2/138 Botany Road • Shop 3/138 Botany Road – Made in Apparel (Screen printing) • 138 – 10 Apartments • 13-21 – IGA Supermarket • 23-27, 29, 29A, 22, 28-30, 32, 34, 36, 40, 42 – retail stores
Henderson Road	• 1/3 Henderson Road – Attaquer Cycling • 5- Henderson Road – The Front (AV hire wirehouse) • 7 - Residential development site	• 8 – 10 Apartments • 10 - 10 Apartments • 12 - Lord Raglan Hotel
Buckland Street	• 1, 3, 7, 9, 11, 13, 15, 17, 19, 21, 8 – residential homes	• 23 - Sydney Fine Food Co.
Whyndam Street	• 111, 113, 115, 118, 120, 124 – residential homes	

A.8 Marrickville dive site

Table 22 Site overview

Item	Description
Site name	• Marrickville Dive Site
Responsible contractor	• Demolition - Delta Group
Place Manager	• Emily Smith
Start date	• June 2017
Location	• The site is bound by Sydney Steel and Edinburgh roads, and the rail corridor, Marrickville (and the Sydney Water Stormwater Retention Basin)
Notification key	___ Site boundary ___ 50m ___ 100m
Scope and timing of early work	• Minor works (Subject to Minor Works Approval) – Service disconnections and temporary service establishment - 5 June 2017 – Site establishment – 12 June 2017 – Hoarding installation – 19 June 2017 – Strip out and Hazmat removal – 25 June 2017 • Early works – Building demolition – 3 July 2017



Item	Description
Construction hours	• Standard Hours: 7am to 6pm Monday to Friday and 8am to 1pm Saturdays or as otherwise approved

Table 23 Potential issues

Item	Description
Noise and vibration	• Noise and vibration disturbance of local businesses and residents • Construction traffic noise including deliveries and spoil truck movements
Traffic and access	• Maintaining large vehicle access to 92-110 Edinburgh Road during demolition • Traffic modifications including signage changes to footpath and pedestrian diversions during utility relocations
Property impacts	• Potential effects of vibration and settlement (considered to negligible)
Business operations	• Concern about health impacts to business staff, customers and operations from dust • Maintaining on-street parking for customers and staff • Maintaining power and water supply to local businesses during utility relocations
Visual amenity	• Impact on visual amenity for businesses overlooking construction site
Cumulative Impacts	• Relative to proximity to WestConnex construction site on the southern side of Unwins Bridge

Table 24 Stakeholders and community overview

Stakeholders	Special requirements
Local council	• Inner West Council
Local member	• Ms Jo Haylen, Member for Summer Hill • Ms Jenny Leong, Member for Newtown • Mr Ron Hoenig, Member for Heffron

Stakeholders	Special requirements	
Local groups	• WestConnex Action Group	
Government agencies	• Sydney Coordination Office • Roads and Maritime Services • Department of Planning and Environment • Office of Environment and Heritage • NSW Trains • NSW TrainLink	• Sydney Trains • Transport for NSW • Sydney Water • Ausgrid • Heritage Council
Senior stakeholders	• Mayor, Inner West Council (or interim Administrator) • NSW Property Council	• Marrickville Chamber of commerce
Education	• St Pius Catholic Primary School Enmore (209 Edgeware Road)	
Road users	• Road users on Edinburgh Road and Murray Street	
Residents and Businesses		
Edgeware Road	• 344 – 12 Apartments • 360 – 7 Apartments • 290 – Only About Children Enmore Campus (childcare centre) • 358, 356, 354, 352, 350, 338, 336, 334, 332, 330, 328, 326, 324, 322, 320, 318 – Residential houses	
Edinburgh Road	• 1-3 – Metro Service Centre • 11 – JD Smash Repairs • 11A – Metro Storage • 13 – Premier Northpak (Logistics) • 74 – distribution and logistics (Bacchus Wine, Citymove, G&K Transport, Heli Guy, Tender Liquor, The Wine Point, United Cellars, Echosmart Fire, Dairy Farmers (LION)) • U1/102-110 – Rutledge Engineering • U3/102-110 – Nice Products	

Stakeholders	Special requirements
	• U4/102-110 – Printportal • U5/102-110 – Finepoint Building Group • U7/102-110 - Casa Del Australia (Food production) • U9/102-110 – Sunnyfield disAbility Services • U10/102-110 – R+M Builders • U16/102-110 – Science Press • U17/102-110 – Universal Flooring • U18/102-110 – Inner West Gymnastics • U19/102-110 – Signlite (Signage manufacture)
Smidmore Street	• 54 – NRMA Car Servicing
Unwins Bridge Road	• 1-7 – commercial units • 17-19 – commercial units
Lilian Fowler Place	• Dock 1, 18 – Simone Logue (Food distribution) • Dock 2, 18 – Styletex (distribution) • Dock 3, 18 – Afford (disability employment) • Dock 4, 18 – Hong Kong Dim Sim (Food distribution) • 16 – Eccosit Industries • Unit 1 / 10-14 – Robco Products (warehousing) • 26 – Spotpress (printing) • 8 – commercial units • 28-30 – commercial units
Victoria Road	• 34 - Marrickville Metro Shopping Centre

Appendix B Environmental Representative endorsement letter

HBI Healthy Buildings International Pty Ltd
A.C.N. 003 270 693 A.B.N. 39 003 270 693

Suite 2.06, Level 2
29-31 Solent Circuit
Baulkham Hills NSW 2153

Tel: 61 (02) 9659 5433
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Web: www.hbi.com.au

Mr Stuart Hodgson

23 March 2017

Principal Manager,
Program Sustainability Environment & Planning
Sydney Metro
Transport for NSW
PO Box 588
NORTH RYDE BC NSW 1670

Ref: 170108_EWCCS

Dear Stuart

RE: Endorsement of Sydney Metro Early Works Community Communications Strategy

Thank you for providing the following documents for Environmental Representative (ER) review and endorsement as required by the Condition of Approval A24 (d) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Sydney Metro City & Southwest Early Works Community Communications Strategy (Rev 1.0, 21 March 2017)

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed and provided comment on this document and now consider it appropriate for implementation for managing community information, consultation and involvement for the Early Works component of the Sydney Metro City & Southwest project.

The Business Management Plan required by E64 is currently under preparation for implementation prior to construction and will be endorsed by the ER in due course.

Yours sincerely

Jo Robertson
Environmental Representative – Sydney Metro – City and South West

NSW GOVERNMENT | Planning & Environment

Contact: Karl Fetterplace
Phone: 9274 6263
Email: karl.fetterplace@planning.nsw.gov.au

Our ref: SSI 15_7400

Mr Stuart Hodgson
Principal Manager
Program Sustainability Environment & Planning
Sydney Metro, Transport for NSW
PO Box 588
NORTH RYDE BC NSW 1670

Dear Mr Hodgson

Sydney Metro City & Southwest Chatswood to Sydenham (SSI 15_7400): Approval of the Overarching and Early Works Community Communication Strategy under condition B3.

I refer to your correspondence dated 28 March 2017, submitting both the Overarching and Early Works (high voltage feeder work for the tunnel boring machines, demolition and construction of the Sydney Yard Access Bridge) Community Communication Strategies (CCS) under condition B3 for the Secretary's approval. I also note further revisions to these documents, responding to the Department's detailed comments and requirements.

The Department has reviewed the updated Overarching CCS (Rev 5.3 dated 12 April 2017) and Early Works CCS (Rev 1.1 dated 12 April 2017) and considers that they satisfactorily address the requirements of condition B3, subject to responding to the additional matters listed in **Attachment A**.

Please ensure these matters are addressed, and final copies of the Overarching CCS and Early Works CCS are provided to the Department for information.

I also remind you of the need to submit further CCSs under condition B3 for the subsequent stages of this project.

If you have any further queries or require clarification on this matter, please contact Karl Fetterplace, Senior Planner - Infrastructure Management on 9274 6263 or by email karl.fetterplace@planning.nsw.gov.au.

Yours sincerely

9-6-17

Stacy Warren
Director Infrastructure Management
as delegate of the Secretary

ATTACHMENT A

Additional matters to address in the Overarching CCS

1. Ensure the Environmental Representative endorsement is included in Attachment B to the final document.

Additional matters to address in the Early Works CCS

1. Update relevant tables to reference the new member for North Shore as Ms Felicity Wilson MP.
2. It is noted that the listed local members are a mix of State and Federal members. For consistency, please ensure both members are listed.
3. Victoria Cross - Table 8 – include health as a potential issue.
4. Martin Place - Table 12 - Note 52 Martin Place includes the main offices for the NSW Ministry (including the Premier and her office), Department of Premier and Cabinet and NSW Treasury. Please specifically include these sensitive stakeholders, and identify potential impacts and issues.
5. Ensure the Environmental Representative endorsement is included in Attachment B to the final document.
6. Clarify the listing of the Department of Planning & Environment as a stakeholder - this should include all relevant agencies within this cluster not just OEH.

Appendix E - Sydney Metro Construction complaints management system

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Sydney Metro

Construction complaints management system

PROJECT	Sydney Metro	**DATE**	15 March 2017
GROUP	Communication and Engagement	**STATUS**	FINAL
AUTHOR	Rebecca Raap	**REVISION**	6.2
COMPANY	Sydney Metro	**FILE NUMBER**	A5746179
FILE NAME	Sydney Metro Construction complaints management system		

Revision	Revision Date	Status	Brief reason for update	Name/ Position/ Company	Author/ Reviewer/ Approver	Signature
0.1	7/11/12	Draft	Review	Danielle Smalley	Reviewer	
0.2	9/11/12	Draft	Incorporating Danielle Smalley comments	Rebecca Raap	Author	
0.3	19/11/12	Draft	Incorporating Peer Review comments	Rebecca Raap	Author	
1.0	26/11/12	Final	Approved for distribution to DoPI and contractors	Danielle Smalley	Approver	
1.1	19/12/12	Final	Edits based on comments from Environmental Representative and NWRL Principal Manager, Sustainability	Rebecca Raap	Author	
1.2	5/3/13	Final	Update to report name – SCL-05 replaces SCR-05 Addition of review requirements table Table 1 - Update to TfNSW group name; update to NWRL role 'Manage call centre'; update to contractor team removed 'reasonable' – 2 instances Table 2 – New table with MCoA 2 – New section 'Receiving complaints' Table 4 - Update to position tiles 4.3 – Update to process – advise DPD prior to updating database 5.1.1 – Role of the mediator expanded 5.2 - Update to escalation process incorporating more detail on the role of the mediator 6.2 - Update to actions required 7.1 - Table 3 - removed and replaced with text 7.2 – Additions to reporting requirements Appendix A - Deleted (incorporated into 5.1.1 and 5.2)	Rebecca Raap	Author	
1.2	5/3/13	Final	Approved for distribution to DoPI and contractors	Danielle Smalley	Approver	
2.0	19/7/13	Draft	References to SCR changed to SCL 'Stakeholder and Community Liaison 1.1 – Correction to review time, changed to 6 months Table 1 – Updated for consistency with SCL-02 and updates to reflect TSC, SVC and OTS contractual requirements	Rebecca Raap	Author	

			1.3 - MCoA not relevant to SCL-05 deleted 6.2 – Additional 'Action' added for completeness Appendix A - Updated complaint form			
2.0	19/7/13	Final	Approved for distribution to DoPI and contractors	Danielle Smalley	Approver	
3.0	9/12/13	Draft	Incorporating DoPI comments	Rebecca Smith	Author	
3.1	9/12/13	Final	Approved for distribution to DoPI	Danielle Smalley	Approver	
4.0	3/3/14	Draft	New 3.3/3.4 – Evidence required for classifying complaints Updates to 6.2 and 7.	Rebecca Raap	Author	
4.0	3/3/14	Final	Approved for distribution to DoPI and contractors	Danielle Smalley	Approver	
5.0	20/11/14	Draft	New section 7 to cover satisfaction surveys	Rebecca Raap	Author	
5.0	20/11/14	Final	Approved for distribution to DoPI and contractors	Danielle Smalley	Approver	
5.1	30/8/16	Draft	Updated to reflect new Sydney Metro organisational structure; new program name; new project communications teams; department/team and role names; update to contractor responsibilities based on new contracts.	Rebecca Raap	Author	
6.0	5/9/16	Final	Approved for distribution to contractors and Department of Planning and Environment	Danielle Smalley	Approver	
6.1	20/2/17	Draft	Updated to reflect new terminology: Independent Mediator is now known as Community Complaints Commissioner 6.2 updates to data entry process; deleted screen shots from the database	Rebecca Raap	Author	
6.2	15/3/17	Draft	Updated to reflect ER comments and compliance with Planning Approval for C&SW Table 1 – update to include role of ER, AA and CCC 5.1.1 – Addition of ER and AA; and limitations of the CCC	Rebecca Raap	Author	

			5.2 – Addition of ER/AA to resolution process 7.1 – Addition of AA to daily complaint report list App A – Addition of endorsement letter			
6.2	15/3/17	Final	Approved for distribution to contractors and Department of Planning and Environment	Anne Purcell	Approver	

Review Requirements

This procedure should be reviewed and reissued annually, or as required.

☑ Review due 30 July 2013	Actual Review Date: 19 July 2013
☑ Review due 30 January 2014	Actual Review Date: 9 December 2013
	Additional Review Date: 3 March 2014
☑ Review due 30 July 2014	Actual Review Date: 20 November 2014
☑ Review due 30 July 2016	Actual Review Date: 5 September 2016
	Additional Review Date: 22 February 2017
	Additional Review Date: 15 March 2017
☐ Review due 30 July 2017	Actual Review Date:
☐ Review due 30 July 2018	Actual Review Date:
☐ Review due 30 July 2019	Actual Review Date:
☐ Review due 30 July 2020	Actual Review Date:

Contents

1 Construction complaints management system

1.1 Document purpose

This document forms part of the Sydney Metro Communication and Engagement Management System. Its purpose is to outline the procedure for managing complaints across Sydney Metro. This includes:

- Receiving complaints
- Classifying complaints
- Responding to complaints
- Escalation
- Mediation
- Recording complaints
- Reporting.

This construction complaints management system will be reviewed annually and reissued or as required.

1.2 Responsibilities

Complaints handling is the responsibility of all team members who come into contact with the community and stakeholders.

The **Principal Manager, Project Communications** is the designated complaints handling management representative for their respective project.

Table 1 Responsibilities for complaints

Source: Sydney Metro Overarching Community Communication Strategy – March 2017

Role	Responsibility
TfNSW Public Affairs and Engagement	• Manage TfNSW call centre. • Forward any complaints regarding Sydney Metro to the relevant Sydney Metro Project Communications team or relevant contractor.
Sydney Metro Communication and Engagement team	• Manage Sydney Metro 24-hour call centre. • Develop procedures for managing and resolving stakeholder and community complaints directed to Sydney Metro (this document).
Environmental Representative	• City & Southwest – Assist in resolving complaints in accordance with this Strategy. – Notify the Secretary if a complaint cannot be resolved.
Acoustic Advisor	• City & Southwest – Assist in resolving complaints in accordance with this

Role	Responsibility
	Strategy. – Notify the Secretary if a complaint cannot be resolved.
Community Complaints Commissioner (known as the Independent Mediator on Sydney Metro Northwest)	• Follow-up on any complaint where a member of the public is not satisfied with the response.
Sydney Metro Project Communications team	• Implement the Construction Complaints Management System (this document). • Forward relevant complaints to contractors immediately. • Investigate and determine the source of a complaint **immediately,** including an **initial** call to the complainant (when received by phone or where a telephone number was provided or available on Consultation Manager). • Provide an initial response to all complaints **within two hours** (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise. • Provide a written response to emails within **24 hours** (or verbally **within two hours** if a phone number is provided or available on Consultation Manager). • Provide a written response to letters/faxes within **24 hours** (or verbally **within two hours** if a phone number is provided or available on Consultation Manager). • Keep the complainant informed of the process until the complaint is resolved. • Close out complaints within agreed timeframe (with complainant). • Escalate complaints in accordance with Construction Complaints Management System (this document). • Record all complaints on Consultation Manager in accordance with Consultation Manager data entry procedure **within 24 hours**. Details should include how it was managed and closed out.
Contractor delivery communication teams	• Answer **all phone calls** transferred by the call centre from the community information line (calls to be answered by a team member 24/7, not an answering machine while construction activities are occurring). • Develop and implement procedures for managing and resolving stakeholder and community complaints directed to the contractor in accordance with the Construction Complaints Management System (this document). and the relevant projects' Conditions of Approval. • Refer complaints not associated with contractor activities to the Sydney Metro Project Communications team **immediately**. • Investigate and determine the source of a complaint

Role	Responsibility
	immediately, including an **initial** call to the complainant (when received by phone or where a telephone number was provided or available on Consultation Manager). • Provide an initial verbal response to all complaints **within two hours** (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise. • Provide a written response to emails within **24 hours** (or verbally **within two hours** if a phone number is provided or available on Consultation Manager). • Provide a written response to letters/faxes within **24 hours** (or verbally **within two hours** if a phone number is provided or available on Consultation Manager). • Keep the complainant informed of the process until the complaint is resolved. • Provide feedback to requests for information from the Sydney Metro Project Communications team or the Community Complaints Commissioner **within two hours**. • Comply with all directions from the Sydney Metro Project Communications team or the Community Complaints Commissioner in relation to the resolution of an escalated complaint. • Take all actions and implement all measures to prevent the reoccurrence of the complaint. • Close out complaints within agreed timeframe (with complainant). • Escalate complaints in accordance with the Construction Complaints Management System (this document). • Report to the Sydney Metro Project Communications team and the Environmental Representative on a **daily basis**. Record all complaints on Consultation Manager in accordance with Consultation Manager data entry procedure **within 24 hours**. Details should include how it was managed and closed out.

1.3 Conditions of Approval

Each Project's approval has requirements around complaints handling including the creation of a Construction Complaints Management System. This document fulfils this requirement.

1.4 Australian Standard for Complaints Handling

Sydney Metro's approach to managing complaints is based on the Australian Standard for Complaints Handling '*Customer satisfaction-Guidelines for complaints handing in organisations - ISO 10002:2004, MOD*' (*Formerly AS4269: Complaints Handing*). Contractors must also develop their own complaint management procedures using this Australian Standard.

The standard requires the following guiding principles:

1.4.1 Visibility

'Information about how and where to complain should be well publicised to stakeholders'.

All Sydney Metro public materials will direct stakeholders wishing to make a complaint to use our:

- Community information line
- Community email address
- Community information centre and mobile displays
- Project postal address.

1.4.2 Accessibility

'A complaints-handling process should be easily accessible to all complainants'.

All construction complaints management systems will be available on the Sydney Metro website. Information and assistance in making complaints will be made available if required. Complaints can be made by phone, email, post, fax or in person to a member of any member of the project or contractor teams.

1.4.3 Responsiveness

'Receipt of each complaint should be acknowledged to the complaint immediately. The complainants should be treated courteously and kept informed of the progress of their complaint through the complaint-handling process'.

Our responsibilities for complaint handling include:

- Investigate and determine the source of a complaint **immediately,** including an **immediate** call to the complainant (when received by phone).
- Provide an initial response to all complaints **within two hours** (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise.
- Keep the complainant informed of the process until the complaint is resolved.

1.4.4 Objectivity

'Each complainant should be addressed in an equitable, objective and unbiased manner through the complaint-handling process'.

Our contractors develop and manage their own construction complaints management systems. Complaints unable to be resolved within the agreed timeframe are referred the **Principal Manager, Project Communications,** who may assist with resolving the complaint. If the complaint is still unable to be resolved in the agreed timeframe, the complaint will be referred to an **Community Complaints Commissioner** for equitable, objective and unbiased advice, to assist with a resolution in a timely manner.

1.4.5 Charges

'Access to the complaint-handling process should be free of charge to the complainant'.

All Construction Complaints Management Systems will be available free of charge on the Sydney Metro website.

1.4.6 Confidentiality

'Personally identifiable information concerning the complainant should be available where needed, but only for the purposes of addressing the complaint within the organisation and should be actively protected from disclosure, unless the customer or complainant expressly consents to its disclosure'.

A stakeholder's contact information along with their complaint record will be recorded for the purposes of resolving their complaint. Should they wish to remain anonymous, the complaint will be registered under an 'Anonymous' stakeholder record for recording keeping and reporting purposes.

1.4.7 Customer focussed approach

'The organisation should adopt a customer-focussed approach, should be open to feedback including complaints, and should show commitment to resolving complaints by its actions'.

Stakeholders will be informed of all works likely to cause an impact and of mitigation measures to reduce those impacts. Should this be unsatisfactory, complaints can be made by phone, email, post, fax or in person to a member of the project team.

Our contractors develop and manage their own construction complaints management systems. Complaints unable to be resolved within the agreed timeframe are referred the **Principal Manager, Project Communications,** who may assist with resolving the complaint. If the complaint is still unable to be resolved in the agreed timeframe, the complaint will be referred to an **Community Complaints Commissioner** for equitable, objective and unbiased advice, to assist with a resolution in a timely manner.

1.4.8 Accountability

'The organisation should ensure that accountability for and reporting on the actions and decisions of the organisation with respect to complaints handling is clearly established'.

The accountability for and reporting on the actions and decisions with respect to complaints handling are outlined in this document.

1.4.9 Continual improvement

'The continual improvement of the complaints-handling process and the quality of products should be a permanent objective of the organisation'.

This construction complaints management system will be reviewed and reissued annually, or as required.

2 Receiving complaints

Sydney Metro has established the following tools for receiving complaints from the community. At a minimum, the telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the start of construction for each project. This information will also be provided on the Sydney Metro website.

Contractors will be encouraged to develop other innovative ways to distribute these tools to the community.

Table 2 Community contact tools

Tools	Explanation and purpose
Community information line	This allows stakeholders and the community to have access to the project teams 24 hours a day during construction. All communication materials and the website will include the community information line number. During construction, calls will be redirected to relevant contractors as required.
Community email address	This allows stakeholders and the community to have access to the project teams. All communication materials and the website will include the community email address. During construction, emails will be redirected to relevant contractors as required.
Community post box	This central postal address allows stakeholders and the community to have access to the project teams. The website will include a central Sydney Metro community postal address. Correspondence will be redirected to relevant project teams and contractors as required.
Sydney Metro website	Information about the project will be uploaded to Sydney Metro website. The website will be referenced in all communication materials as a source of information and will be updated on a regular basis. Information will include: • Project information including: – Description of the project, current status and timing – Newsletters – Notifications – Up-to-date project information – Graphics and images on the project background and progress – Copies of relevant reports – Photos, images and maps – Links to documents as required under the relevant projects Conditions of Approval – A link to Sydney Metro contractor webpages • Contact information

3 Classification of complaints

Complaints may include any interaction with a community member or stakeholder who **expresses dissatisfaction with the project, policies, contractor's services, staff members, actions or proposed actions of Sydney Metro**.

Sydney Metro classifies complaints into two categories for reporting purposes:

- Unavoidable complaints
- Avoidable complaints.

The main aim of these complaint categories is to record complaints received, but not unfairly penalise our contractors for complaints received about works they have approval to do.

3.1 Unavoidable complaints

Unavoidable complaints include a stakeholder's opposition to the project or government policy or complaints about issues that are within project planning approvals.

For example:

- A complaint about noise generated at night when planning approval has been granted for night works and noise generated is within approved criteria.
- A complaint about how traffic is being controlled when the approved Traffic Management Plan is being implemented.

3.2 Avoidable complaints

Complaints about issues outside planning approval, or a commitment that has been given to the community or stakeholders. These commitments may be contained in staff inductions or written notifications.

For example:

- A complaint about noise at night where work is being performed outside of approved criteria. For example: work outside of approved (or notified) construction hours or approved noise levels.
- A complaint about how traffic is being controlled. Only applies when the approved Traffic Management Plan is not being implemented.
- A complaint about cars parking in parklands when the notification has stated we would not park cars in the parklands.
- A complaint about poor worker behaviour, for example: littering, swearing, poor driving behaviour, when an induction has specified that behaviour is not acceptable.

3.3 Determining a unavoidable complaint

When categorising a complaint as 'unavoidable' evidence should be referred to in the complaint notes about why the complaint has been categorised this way. The following types of evidence could be referred to in the complaint notes entered on Consultation Manager.

3.3.1 Evidence required to determine an unavoidable complaint

Table 3 Evidence required

Issues	Evidence required
Air Quality	• Construction Air Quality Management Plan implementation. • Control measures in place. • Implementation of all feasible and reasonable dust mitigation measures.
Biodiversity (plants and animals)	• Construction Flora and Fauna Management Plan implementation. • Nest Box Plan implementation. • Surveys and relocation of threatened species and habitat features. • Consultation undertaken with Councils and relevant stakeholders (Bushcare etc) prior to clearing next to bushland restoration works. • Re-routing of walking tracks and signage.
Community Liaison/ Notifications	• Community Liaison Plan implementation. • Business Management Plan implementation. • Notifications and delivery times. • Appropriate response times.
Construction hours	• See 'Noise and vibration'.
Construction site	• Construction Compound and Ancillary Facilities Management Plan implementation.
Geotech/ Surveys	• See 'Noise and vibration'. • See 'Property and business impacts'.
Heritage	• Construction Heritage Management Plan implementation. • Archival recording of affected heritage items.
Land use and community facilities	• Consultation with key stakeholders to address impacts and agree on mitigation and management measures.
Noise and vibration	• Construction Noise and Vibration Management Plan implementation. • Confirm work was being undertaken within construction hours. • Noise monitoring results. • Vibration monitoring results. • Offer made for attended noise monitoring and results • In the case of work outside standard construction hours or impulsive or tonal noise, evidence of respite periods provided. • A negotiated agreement with affected receivers where noise and vibration levels cannot be achieved. • Consultation with sensitive receivers. **Out of hours work** • Evidence of the Construction Noise Impact Statement implementation. • Evidence of noise levels within 'noise goals' for the specific out of hours work activity.

Issues	Evidence required
Property and business impacts	• Details of protection measures in place. • Business Management Plan implementation. • Referral to the Independent Property Impact Assessment Panel if required.
Transport, traffic and access	• Construction Traffic Management Plan implementation. • Maintenance of private property access unless otherwise agreed. • Reinstatement of landowner access to equivalent standard. • Alternative parking arrangements implemented where impacts to on and off street parking exceed four weeks. • Alternative pedestrian routes provided and signposted.
Utilities and services	• Residents and businesses advised of disruptions.
Visual amenity	• Visual Amenity Plan implementation • Implementation of all feasible and reasonable measures ie: retaining existing vegetation, temporary landscaping, minimising light spill, architectural treatments in temporary structures.
Waste management and spoil	• Construction Environmental Management Plan implementation. • See 'Worker behaviour'.
Water quality	• Construction Soil and Water Management Plan implementation. • Sediment control measures in place. • Water monitoring results within required parameters.
Worker behaviour	• Induction processes or toolbox information followed.

3.4 Resolving classification

If the Sydney Metro Project Communications team and the contractor cannot agree on a classification of unavoidable, the Independent Environment Representative maybe able to assist in classifying the complaint as it relates to the planning approval or commitments given to the community.

4 Responding to complaints

4.1 Receiving a complaint

As outlined in Table 4, telephone contact should be made with a complainant where a phone number is provided or available on Consultation Manager. All team members should exercise the following telephone techniques, to establish the nature of the complaint and the needs of the complainant.

This includes:

- Active listening
- Reducing barriers
- Open and closed questioning
- Summarising the call
- Confirming level of satisfaction with the actions and timeframes.

4.2 Referring complaints

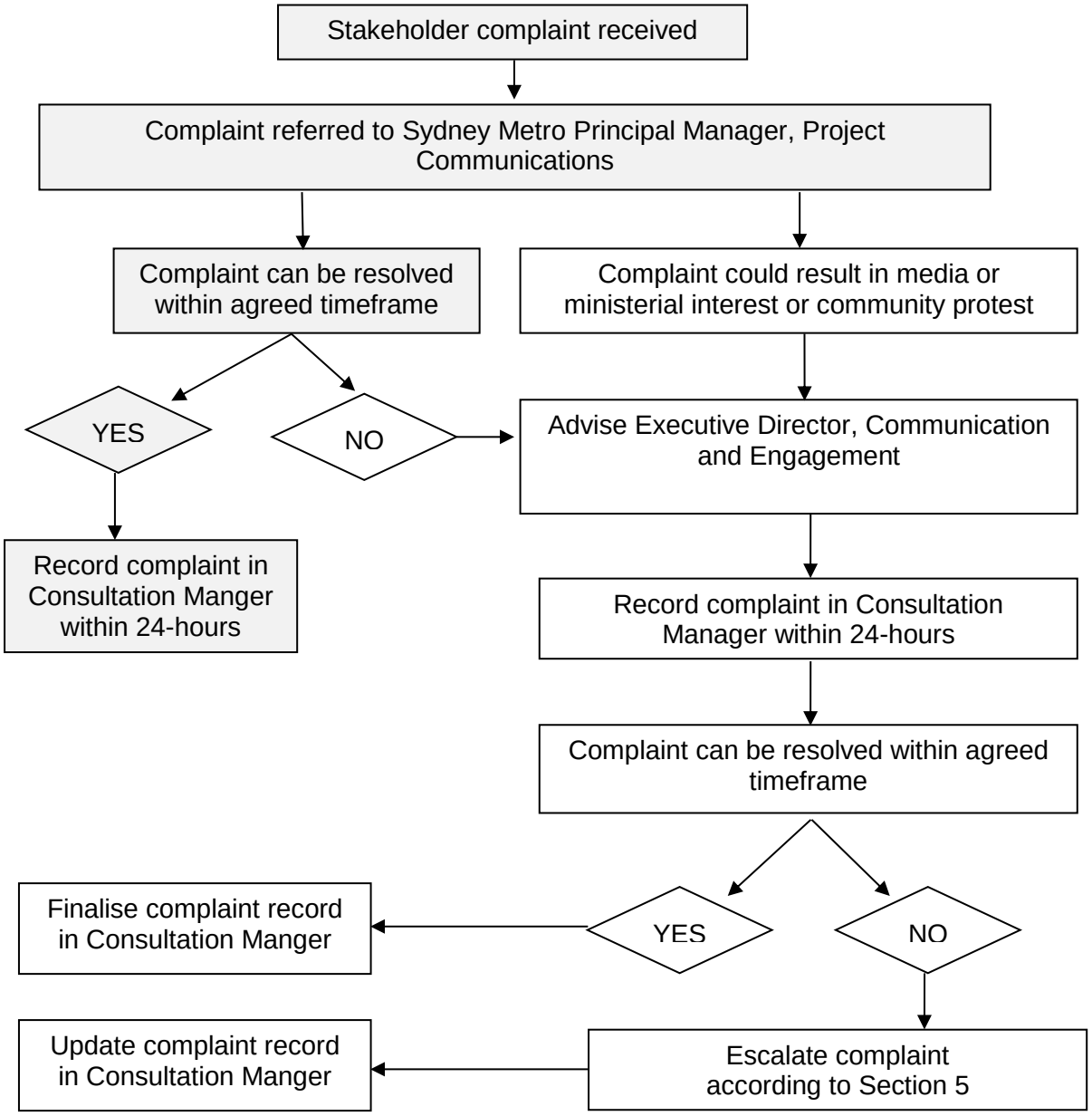
Regardless of how a complaint is received, it must be referred to the most appropriate person as soon as they are received. The following table outlines the referral process.

Table 4 Guideline for referring complaints

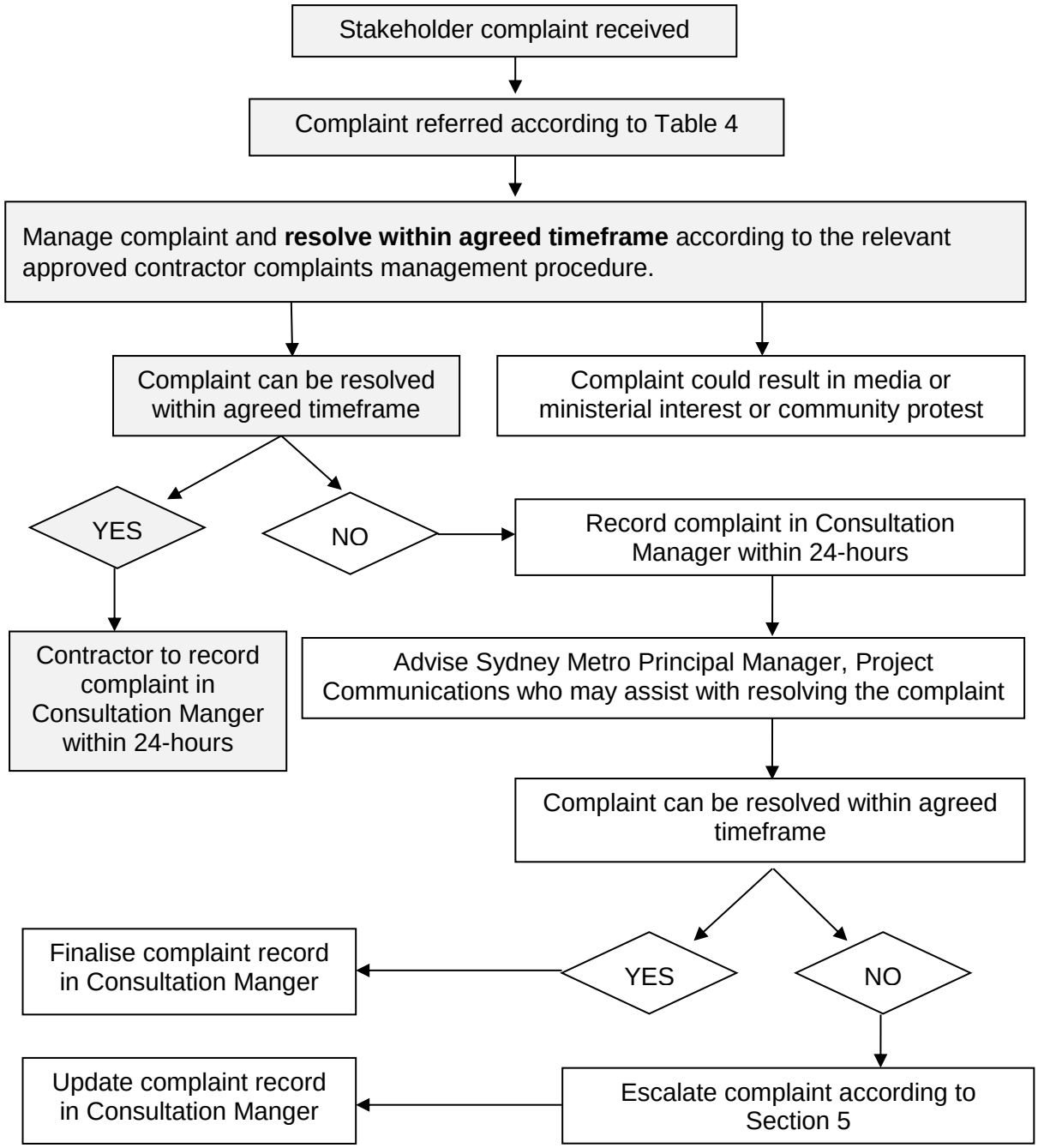
Type of complaint	Description	Referred to
Early construction works	Complaint is about early works activities or the early works contractor	Place Manager, Early Works or contractor representative
Construction site specific	Complaint is about construction work, behaviour or activities at/or around a Sydney Metro construction site (except early construction works)	Relevant construction contractor representative
Overall project or government policy	Complaint about the need for the project, the projects procedures or processes the approval process, or TfNSW policy position	Sydney Metro Principal Manager, Project Communications
Media	Complaint has come via a member of a media organisation	Sydney Metro Principal Manager, Public Affairs
Government or ministerial enquiry	Complaint has come via a member of a local, state or federal government body, government department or ministerial department	Sydney Metro Principal Manager, Stakeholder Management
Unrelated to Sydney Metro	Complaint is unrelated to Sydney Metro	Sydney Metro Principal Manager, Project Communications

Type of complaint	Description	Referred to
Precinct Planning	Complaint related to precinct planning around Sydney Metro station sites	Sydney Metro Principal Manager, Project Communications
Relates to other TfNSW projects	Complaint is unrelated to Sydney Metro but relates to other areas of TfNSW	Relevant area of TfNSW

4.3 Responding to complaints (not related to construction)



4.4 Responding to construction complaints



5 Complaint escalation procedure

5.1 When to escalate a complaint

Complaints should be escalated when:

- The complaint cannot be resolved using the procedure in section 4, within a timeframe agreed to by the complainant.
- The nature of the complaint falls into one of the following categories:
  - An activity generates three complaints within a 24-hour period (separate complainants).
  - Any construction site receives three different complaints within a 24-hour period.
  - A single complainant reports three or more complaints within a three day period.
  - A complainant threatens to escalate their issue to the media or government representative.
  - The complaint was avoidable.

Complaints would first be escalated to the Sydney Metro Principal Manager**, Project Communications** as the designated complaints handling management representative for the relevant project.

5.1.1 Role of the Community Complaints Commissioner

If the complaints handling management representative for the project is unable to resolve the complaint, it would be escalated to the project **Community Complaints Commissioner** (known as the **Independent Mediator** on Sydney Metro Northwest).

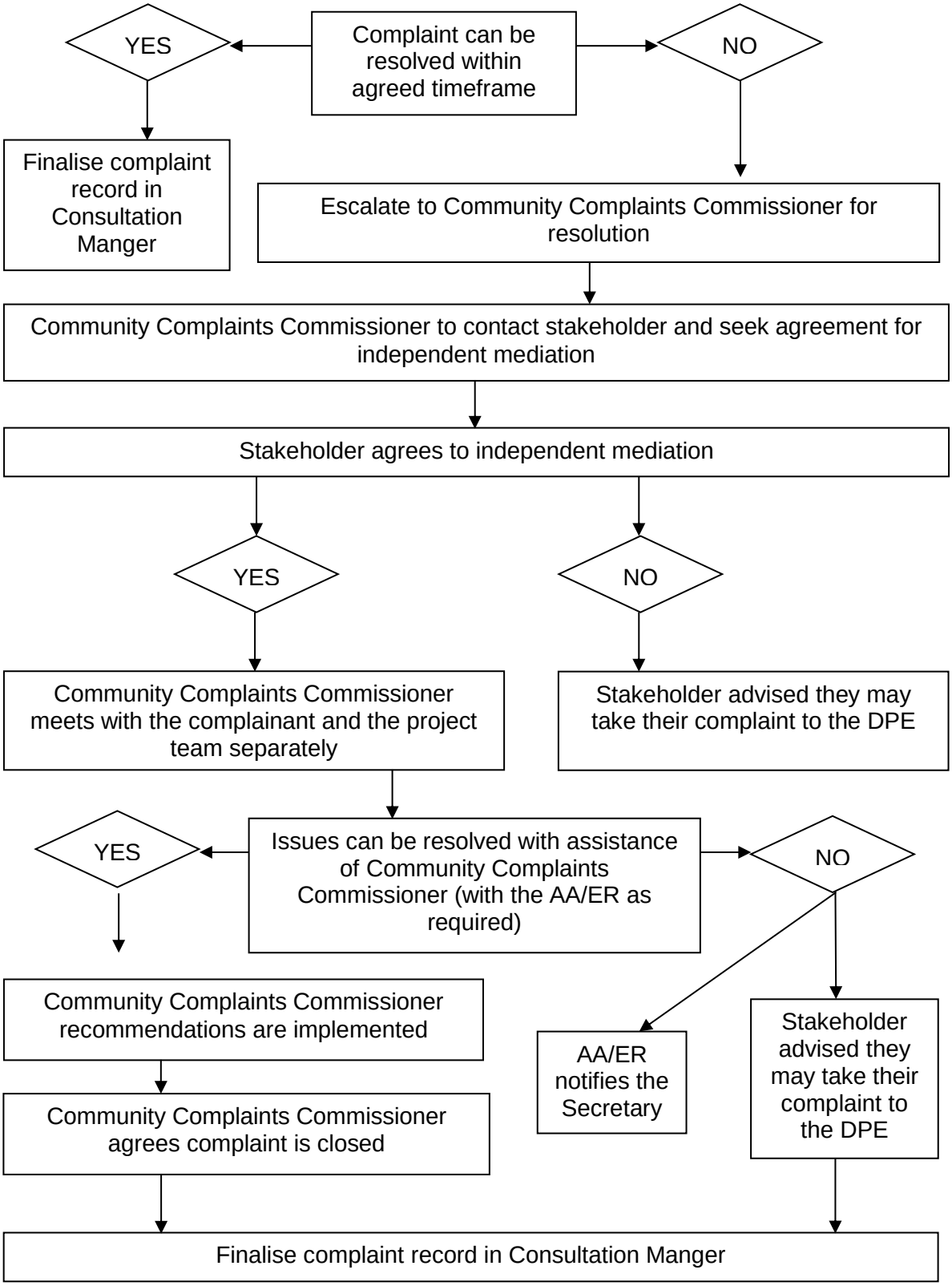
The role of the **Community Complaints Commissioner** will be to:

- Provide a neutral third party to help resolve complaints;
- Assist in negotiating a mutually acceptable agreement between the complainant, the Sydney Metro Project Communications team and the relevant contractor team;
- Make recommendations about the resolution of individual complaints;
- Ensure the recommendations have been implemented by the project team once they have been approved;
- Keep a record of all complaints which have been referred to them and the actions taken to manage those complaints;
- Refer to the Acoustics Advisor and the Environmental Representative as required by the specific project approval; and
- Provide reports of these actions to the Secretary on request.

The Community Complaints Commissioner will not act before Sydney Metro has provided an initial response to a complaint and will not consider issues such as property acquisition where other dispute processes are provided for, or clear government policy and resolution processes are available, or matters which are not within the scope of the Project.

5.2 How to escalate a complaint

**DPE – Department of Planning and Environment (formerly Department of Planning and Infrastructure – DoPI)*



6 Complaints Register

In accordance with project planning approvals, all complaints are recorded a complaint register. For the purposes of Sydney Metro, complaints are recorded on the Consultation Manager database.

6.1 Complaint identification number

A unique identification number should be assigned to each new complaint to help track the complaint in Consultation Manager. The complaint identification number is created using the date (Year/Month/Day) and first four letters of the complainant's surname (or 'ANON' where the stakeholder does not want their contact details recorded).

For example, this is the complaint identification number for a complaint from 'Smith' on the 22 October 2016.

1	6	1	0	2	2	S	M	I	T

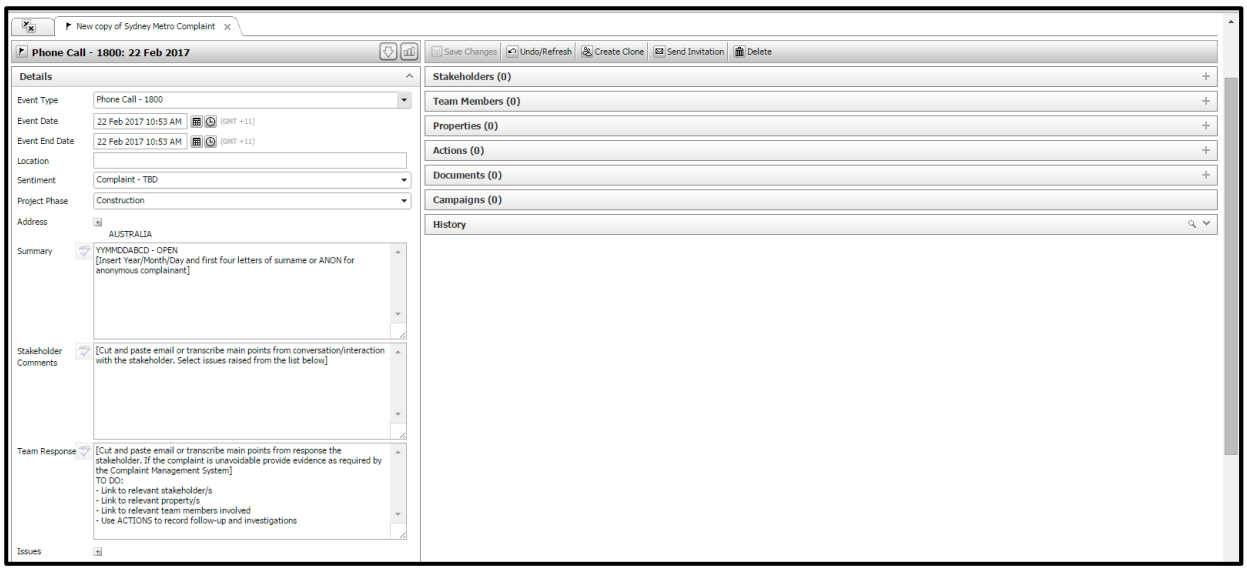
6.2 Consultation Manager

All complaints must be recorded in Consultation Manager in accordance with Consultation Manager data entry procedure. This is necessary to enable management of the complaint and monitoring of response times.

6.2.1 Template

A template complaint entry has been created in Consultation Manager to help with data entry. To open the template:

Follow (then delete) the instructions:



At a minimum, your entry should look like this:

- **Event Type**: [Select how the complaint was received ie: phone or email].
- **Event Date**: The date/time the complaint was received (not the date/time it was entered).
- **Event End Date:** The date/time the complaint was CLOSED.
- **Location**: Not required – leave blank.
- **Sentiment**: Select the type of complaint [Avoidable, Not related, TBD (to be determined) or Unavoidable]
- **Project phase**: [Select phase]
- **Summary**: [Insert complaint identification number] - [insert status – (Open/Closed)].
- **Stakeholder Comments**:
  - **Phone call** – record all details from the stakeholder complaint form (use sub-headings).
  - **Email** – Cut and paste the email including header details.
  - **Letter/fax** – Paraphrase main points and include Objective document reference number.
- **Team Response**: Details of any actions undertaken or proposed or investigations occurring.
- **Issues**: Select one or more issues from the list that were relevant to the complaint
- **Project**: [Select the relevant project/s].
- **Stakeholders**: Add all stakeholders involved in the complaint.
- **Team members**: Add all team members involved in handling the complaint.
- **Properties**: Add the stakeholder's property (if relevant ie: the stakeholder has a property linked to their profile).
- **Actions**: Use 'actions' to record tasks and follow-up correspondence, For example:
  - To notify the Sydney Metro Project Communications team including Place Managers (as required), Executive Director Communication and Engagement, the Environmental

Representative and the Principal Manager, Sustainability and Environmental Planning that the complaint has been received

- Follow-up phone calls or emails to the complainant to resolve the complaint
- Internal investigations to resolve the complaint
- The evidence required to support the classification of the complaint as unavoidable
- Complaint referrals to other contractors or team members
- Complaint escalation to Sydney Metro or the Community Complaints Commissioner.

Any new complaints made by the same stakeholder should be recorded separately and have their own complaint identification number.

7 Reporting on complaints

7.1 Daily reporting to Transport for NSW

Contractors are required to report daily on complaints received to the following project team members:

- Sydney Metro Principal Manager, Project Communications
- Environmental Representative
- Acoustic Advisor (C&SW only)
- Sydney Metro Principal Manager, Sustainability and Environmental Planning
- Sydney Metro Contract Officer, Project Communications.

The ***Daily Complaints Report*** must as a minimum address and detail: Information on complaints received

- Types of complaints (‘Avoidable’ or ‘Unavoidable’)
- Response times
- Details of any actions undertaken or proposed or investigations occurring.

Daily reports should be issued regardless of the number of complaints received. If no complaints are received contractors are still required to issue a ‘Nil complaints’ report.

7.2 Daily complaint reporting to the EPA

Contractors are required to report daily on complaints received to the Environmental Protection Authority. Details of reporting requirements are outline in the individual contractors Environmental Protection Licences.

7.3 Monthly reporting to Transport for NSW

All complaints should be reported on a monthly basis to the following project team members:

- Sydney Metro Principal Manager, Project Communications
- Sydney Metro Contract Officer, Project Communications

The ***Monthly Complaints Report*** must as a minimum address and detail:

- Number of complaints received
- Types of complaints (‘Avoidable’ or ‘Unavoidable’)
- Status of the complaints
- Issues raised
- Action taken to resolve or proposed actions
- Location of complainant

- Response times
- Investigations outstanding
- How lessons learnt are being applied across the project to avoid the complaint recurring.

Appendix A Environmental Representative endorsement letter

HBI Healthy Buildings International Pty Ltd
A.C.N. 003 270 693 A.B.N. 39 003 270 693

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Mr Stuart Hodgson
Principal Manager,
Program Sustainability Environment & Planning
Sydney Metro
Transport for NSW
PO Box 588
NORTH RYDE BC NSW 1670

16 March 2017

Ref: 170108_OCCS_CMS

Dear Stuart

RE: Endorsement of Sydney Metro Overarching Community Communications Strategy and Complaints Management System

Thank you for providing the following documents for Environmental Representative (ER) review and endorsement as required by the Condition of Approval A24 (d) of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017).

- Sydney Metro City & Southwest Overarching Community Communications Strategy (Rev 5.2, 15 March 2017); and
- Complaints Management System (Rev 6.2, 15 March 2017)

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed and provided comment on these documents and now consider them appropriate for implementation as an overarching program for managing community information, consultation and involvement, and well as complaint management across the Sydney Metro City & Southwest project.

Note that the Overarching Community Communications Strategy requires Specific Community Communications Strategies to be developed and implemented for each works package. As each specific strategy is developed to meet the delivery program, these will also be reviewed, endorsed by the ER, and submitted to the Secretary for approval as required.

Yours sincerely

Jo Robertson

ENDORSEMENT

CITY & SOUTHWEST ACOUSTIC ADVISOR (Interim)

Review of	**Construction Noise and Vibration Management Plan for Delta demolition works**	**Document reference:**	Demolition Noise and Vibration Management Plan prepared by Osterman Consulting for Delta Pty Ltd, report number 0116-041-01, Rev H
Prepared by:	Dave Anderson		
Date of issue:	25 August 2017		

As approved (interim) Acoustic Advisor for the Sydney Metro City & Southwest project, I previously endorsed the Construction Noise and Vibration Management Plan for the Delta demolition works, as required under A27 (d) of the project approval conditions.

The plan has since been updated to address comments I have raised regarding vibration limits for heritage structures as well as some additional comments by Department of Planning and Environment. In my view, Revision H of the plan addresses these comments and I endorse it.

Dave Anderson, interim City & Southwest Acoustic Advisor

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Mr Stuart Hodgson
Principal Manager,
Program Sustainability Environment & Planning
Sydney Metro
Transport for NSW
PO Box 588
NORTH RYDE BC NSW 1670

25 August 2017

Ref: 170108_CNVMP Rev H -Delta

Dear Stuart

RE: Endorsement of Updated Delta Construction Noise and Vibration Management Sub Plan (Rev H) for Demolition Package A and C - Sydney Metro City & Southwest

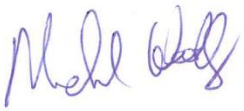
Thank you for providing the following document for Environmental Representative (ER) review and endorsement as required by the Condition of Approval C7 of the Sydney Metro City & Southwest project (SSI – 15_7400 January 9 2017):

- Delta *Construction Noise and Vibration Management Sub Plan (*Revision H dated 25 August 2017)

The purpose of the update of the document was to address DPE comments in the original approval letter dated 5 June 2017. I note endorsement of the Delta *Construction Noise and Vibration Management Sub Plan* Revision H has been received from the approved Acoustic Advisor (endorsement dated 25 August 2017).

As an approved ER for the Sydney Metro City & Southwest project, I have reviewed the document and, with reference to the AA endorsement, consider that revision H of the document responds to the conditions of the DPE Approval. This review has not considered technical aspects of the plan, as these have been assumed to be addressed by the Acoustic Advisor.

Yours sincerely



Michael Woolley
Environmental Representative – Sydney Metro – City and South West