

Sydney Metro West, Power Enabling Works

Out Of Hours Works Protocol

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Revision Draft C

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Contents

1. Introduction	4
1.1 Scope	4
1.2 Protocol Review and Approval	5
1.3 Roles and Responsibilities	6
2. Management Documents and Requirements	6
2.1 Ministers Conditions of Approval	6
2.2 Sydney Metro Construction Noise and Vibration Standard	10
2.3 Sydney Metro Out of Hours Works Assessment Procedure	10
2.4 Construction Noise and Vibration Management Plan	10
2.5 Detailed Noise and Vibration Impact Statements (DNVIS)	10
3. OOHW Assessment and Approval	11
3.1 OOHW	11
3.2 OOHW Justification	11
3.3 OOHW Permit	12
3.4 OOHW Review and Approval	12
3.5 Emergency Works	15
4. OOHW Impact assessment	17
4.1 Noise and vibration assessment criteria	17
4.2 Noise and vibration assessment	17
5. High and low risk activities approval	18
5.1 External Approval Authorities for OOHW	20
6. Mitigation measures and consultation	21
6.1 Mitigation	21
6.2 Consultation	21
6.3 Community Notifications	21
6.4 Negotiated Agreements	22
7. Scheduling and respite	23
7.1 Respite	23
7.2 Scheduling	24
8. OOHW Monitoring	25

Tables

Table 1 Requirements of MCoA D38	4
Table 2 Relevant MCoAs to the Protocol	6
Table 3 Classification of Low and High risk OOHW	19
Table 4 Risk Level Considerations	20

Figures

Figure 1 OOHW Process flow chart	14
Figure 2 Emergency OOHW flowchart	16

Appendices

Appendix A OOHW Permit 26

1. Introduction

This Out-of-Hours Work (OOHW) Protocol (herein referred to as the Protocol) for the Sydney Metro West Power Supply Works (the Project) 'The Bays' package has been prepared in accordance with Ministers Conditions of Approval (MCoA) D38.

This Protocol defines the process for assessment and approval of work undertaken outside standard construction hours (out-of-hours work) that is not subject to an Environment Protection Licence (EPL) and should be read in conjunction with the Construction Noise and Vibration Management Plan (CNVMP).

This document has also been written to align with Sydney Metro documents, including:

- Sydney Metro Construction Noise and Vibration Standard (SM ES-PW-310/4.0) (Sydney Metro, 2020)
- Out of Hours Works Assessment Procedure (SM-20-00098866) (Sydney Metro, 2016)

1.1 Scope

This Protocol is prepared for all works proposed to be undertaken outside of approved construction hours, with the exclusion of those where requirements of Condition D37(b) (being 'Low Impact') are met. More detail on Low Impact OOHW is provided in Section 6.3.3 of the CEMP.

This document applies for works not subject to an EPL. As the activities approved for the Project are not included under the definitions of a Scheduled Activity under the Protection of the Environment Operations Act (1997), an EPL is not proposed to be obtained for any works for this Project.

This Protocol applies to The Bays however does not apply to works undertaken on behalf of Sydney Metro for any other areas (i.e. Eastern Creek Pre-Cast Yard) for which these MCoA do not apply.

This Protocol outlines the consideration, management and approval of works outside the approved construction hours, as required under the MCoA D38. The requirements of MCoA D38 and where they are addressed in this document are provided in Table 1.

Table 1 Requirements of MCoA D38

MCoA	Requirement	Where addressed
D38	An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work which are outside the hours defined in Conditions D35 and D36 of this schedule. The Protocol must be approved by the Planning Secretary before commencement of the out-of-hours work. The Protocol must be prepared in consultation with the ER, AA and EPA. The Protocol must provide:	This Protocol Section 1.2

MCoA	Requirement	Where addressed
(a)	identification of low and high-risk activities and an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: (i) the ER and AA review all proposed out-of-hours activities and confirm their risk levels; (ii) low risk activities can be approved by the ER in consultation with the AA; and (iii) high risk activities that are approved by the Planning Secretary;	Section 5
(b)	a process for the consideration of out-of-hours work against the relevant NML and vibration criteria;	Section 4
(c)	a process for selecting and implementing mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of Condition D50 of this schedule. The measures must take into account the predicted noise levels and the likely frequency and duration of the out-of-hours works that sensitive land user(s) would be exposed to, including the number of noise awakening events;	Section 6
(d)	procedures to facilitate the coordination of out-of-hours work including those approved by an EPL or undertaken by a third party, to ensure appropriate respite is provided; and	Section 7
(e)	notification arrangements for affected receivers for all approved out-of-hours works and notification to the Planning Secretary of approved low risk out-of-hours works.	Section 6.2 and 6.3
	This condition does not apply if the requirements of Condition D37(b) of this schedule are met.	Note
	<i>Note: Out-of-hours work is any work that occurs outside the construction hours identified in Condition D35 and D36 of this schedule.</i>	Note

1.2 Protocol Review and Approval

In accordance with MCoA D38 the Out of Hours Work Protocol must meet the following consultation, review and approval requirements:

- Be prepared in consultation with the NSW Environment Protection Authority (EPA)
- Be prepared in consultation with the Acoustic Advisor (AA) and Environmental Representative (ER)
- Be approved by the Planning Secretary before the commencement of the OOHW.

This document has been provided to the EPA for consultation and both the AA and ER have reviewed and commented on this document prior to submission and approval from the Planning Secretary. The AA has provided endorsement of this document as part of the CNVMP.

1.3 Roles and Responsibilities

Acoustics Advisor - MCoA A32 requires an AA to be appointed. The AA is to act as an independent point of contact for all noise and vibration matters under the planning approval. Refer to MCoA A36 for a comprehensive description of the AA's responsibilities.

[Section 5](#) includes descriptions of the AA's responsibilities with respect to reviewing and identifying risk level for OOHW.

Environmental Representative - The CSSI planning approval conditions require an ER to be appointed to the project. The ER is to act as an independent point of contact for all environmental and planning approval compliance matters. Refer to MCoA A30 for a comprehensive list of the ER's responsibilities.

[Section 5](#) includes descriptions of the ER's responsibilities with respect to reviewing and approving OOHW.

Place Manager (Community) – A Sydney Metro Place Manager has been allocated to the Project. The Place Manager is responsible for ensuring that all project communication requirements with the surrounding community are being complied.

Quickway Environmental Manager – The Quickway Environment Manager is responsible for ensuring environmental risks of the Project are identified and appropriate mitigation measures implemented. The Environment Manager is also responsible for ensuring environmental compliance with statutory, approval and proponent requirements. It is their duty to obtain and update all environmental licences, approvals and permits as required.

Sydney Metro Environmental Manager - The Sydney Metro Environment Manager is responsible for ensuring that all environmental management requirements associated with this Project are being complied.

2. Management Documents and Requirements

2.1 Ministers Conditions of Approval

The Ministers CoA relevant to this Protocol are listed in Table 2 below.

Table 2 Relevant MCoAs to the Protocol

MCoA	Requirement	Document Reference
D35	Work must only be undertaken during the following hours: (a) 7:00am to 6:00pm Mondays to Fridays, inclusive; (b) 8:00am to 6:00pm Saturdays; and (c) at no time on Sundays or public holidays.	Section 3.1

MCoA	Requirement	Document Reference
D36	<p>Except as permitted by an EPL, highly noise intensive work that results in an exceedance of the applicable NML at the same receiver must only be undertaken:</p> <p>(a) between the hours of 8:00 am to 6:00 pm Monday to Friday;</p> <p>(b) between the hours of 8:00 am to 1:00 pm Saturday; and</p> <p>(c) if continuously, then not exceeding three (3) hours, with a minimum cessation of work of not less than one (1) hour.</p> <p>For the purposes of this condition, 'continuously' includes any period during which there is less than one (1) hour between ceasing and recommencing any of the work.</p>	Section 7.1
D37	<p>Notwithstanding Conditions D35 and D36 of this schedule work may be undertaken outside the hours specified in the following circumstances:</p>	Section 3.1
a)	<p>(a) Safety and Emergencies, including:</p> <p>(i) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or</p> <p>(ii) 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.</p> <p>On becoming aware of the need for emergency work in accordance with (a)(ii) above, the AA, the ER, the Planning Secretary and the EPA must be notified of the reasons for such work. The Proponent must use best endeavours to notify as soon as practicable all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of those work.</p>	<p>Note, as per MCoA D38 this Protocol does not apply to those works meeting the definition of Low Impact OOHV.</p>
b)	<p>(b) Low impact, including:</p> <p>(i) construction that causes LAeq(15 minute) noise levels: no more than 5 dB(A) above the rating background level at any residence in accordance with the ICNG, and no more than the 'Noise affected' NMLs specified in Table 3 of the ICNG at other sensitive land user(s); and</p> <p>(ii) construction that causes LAFmax(15 minute) noise levels no more than 15 dB(A) above the rating background level at any residence; or</p> <p>(iii) construction that causes: continuous or impulsive vibration values, measured at the most affected residence are no more than the preferred values for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), or intermittent vibration values measured at the most affected residence are no more than the preferred values for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006).</p>	
c)	<p>(c) By Approval, including:</p> <p>(i) where different construction hours are permitted or required under an EPL in force in respect of the CSSI; or</p> <p>(ii) works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition D38 of this schedule; or</p> <p>(iii) negotiated agreements with directly affected residents and sensitive land user(s).</p>	

MCoA	Requirement	Document Reference
d)	<p>(d) By Prescribed Activity, including:</p> <p>(i) tunnelling (excluding cut and cover tunnelling and surface works) are permitted 24 hours a day, seven days a week; or</p> <p>(ii) concrete batching at the Clyde construction site is permitted 24 hours a day, seven days a week; or</p> <p>(iii) delivery of material that is required to be delivered outside of standard construction hours in Condition D35 of this schedule to directly support tunnelling activities, except between the hours 10:00 pm and 7:00 am to / from the Five Dock and Westmead construction sites and to / from Burwood North construction site using any roads / streets other than directly from Parramatta Road; or</p> <p>(iv) haulage of spoil except between the hours of 10:00 pm and 7:00 am to / from the Five Dock and Westmead construction sites and to / from Burwood North construction site using any roads / streets other than directly from Parramatta Road; or</p> <p>(v) work within an acoustic shed where there is no exceedance of noise levels under Low impact circumstances identified in (b) above.</p>	Section 3.1
D39	<p>All reasonable and feasible mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria:</p> <p>(a) construction 'Noise affected' noise management levels established using the Interim Construction Noise Guideline (DECC, 2009);</p> <p>(b) vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure);</p> <p>(c) Australian Standard AS 2187.2 - 2006 "Explosives - Storage and Use - Use of Explosives" (for human exposure);</p> <p>(d) BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2" as they are "applicable to Australian conditions"; and</p> <p>(e) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage for structurally unsound heritage items).</p> <p>Any work identified as exceeding the noise management levels and / or vibration criteria must be managed in accordance with the Noise and Vibration CEMP Sub-plan.</p> <p>Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level.</p>	Section 6
D40	<p>All reasonable and feasible mitigation measures must be applied when the following residential ground-borne noise levels are exceeded:</p> <p>(a) evening (6:00 pm to 10:00 pm) — internal LAeq(15 minute): 40 dB(A); and</p> <p>(b) night (10:00 pm to 7:00 am) — internal LAeq(15 minute): 35 dB(A).</p> <p>The mitigation measures must be outlined in the Noise and Vibration CEMP Sub-plan, including in any Out-of-Hours Work Protocol, required by Condition D38 of this schedule.</p>	Section 6

MCoA	Requirement	Document Reference
D41	Noise generating work 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) resulting in noise levels above the NMLs must not be timetabled within sensitive periods, unless other reasonable arrangements with the affected institutions are made at no cost to the affected institution.	Section 6.1
D43	Detailed Noise and Vibration Impact Statements (DNVIS) must be prepared for any work that may exceed the NMLs, vibration criteria and / or ground-borne noise levels specified in Conditions D39 and D40 of this schedule at any residence outside construction hours identified in Condition D35 of this schedule, or where receivers will be highly noise affected. The DNVIS must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the works. A copy of the DNVIS must be provided to the AA and ER before the commencement of the associated works. The Planning Secretary and the EPA may request a copy (ies) of the DNVIS.	The DNVIS
D50	<p>All work undertaken for the delivery of Stage 1 of the CSSI, including those undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. The Proponent must:</p> <ul style="list-style-type: none"> (a) reschedule any work to provide respite to impacted noise sensitive receivers so that the respite is achieved in accordance with Condition D51 of this schedule; or (b) consider the provision of alternative respite or mitigation to impacted noise sensitive receivers; and (c) provide documentary evidence to the AA in support of any decision made by the Proponent in relation to respite or mitigation. <p>The consideration of respite must also include all other approved Critical SSI, SSI and SSD projects which may cause cumulative and / or consecutive impacts at receivers affected by the delivery of Stage 1 of the CSSI.</p>	Section 7.2
D51	<p>In order to undertake out-of-hours work outside the work hours specified under Condition D35 of this schedule, appropriate respite periods for the out-of-hours work must be identified in consultation with the community at each affected location on a regular basis. This consultation must include (but not be limited to) providing the community with:</p> <ul style="list-style-type: none"> (a) a progressive schedule for periods no less than three (3) months, of likely out-of-hours work; (b) a description of the potential work, location and duration of the out-of-hours work; (c) the noise characteristics and likely noise levels of the work; and (d) likely mitigation and management measures which aim to achieve the relevant NMLs under Condition D39 (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers). <p>The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour work must be provided to the AA, EPA and the Planning Secretary.</p> <p>Note: Respite periods can be any combination of days or hours where out-of-hours work would not be more than 5 dB(A) above the RBL at any residence.</p>	Section 7.1

2.2 Sydney Metro Construction Noise and Vibration Standard

Sydney Metro has developed a Construction Noise and Vibration Standard (CNVS) to:

- Establish a framework for managing construction noise and vibration impacts and adopting appropriate mitigation measures (including minimum requirements);
- Form part of the Project's Environmental Impact Statement;
- Form part of the contract requirements that Sydney Metro's Principal Contractors must comply with; and
- Set minimum requirements around all works undertaken outside approved hours, including the need for and development of Detailed Construction Noise Impacts Statements (DNVIS).

The CNVS establishes a consistent strategy for the assessment, mitigation and monitoring of noise and vibration generated by construction activities. It defines a minimum standard for managing noise and vibration impacts that considers currently best practice guidelines and other regulatory requirements. It is included in all Sydney Metro Environmental Assessments. This Protocol has been prepared in accordance with the CNVS.

2.3 Sydney Metro Out of Hours Works Assessment Procedure

Sydney Metro has prepared an Out of Hours Works Assessment Procedure. This procedure outlines the process for preparing, assessing and approving Sydney Metro OOWH works.

This Protocol has been prepared in accordance with the Sydney Metro Out of Hours Works Assessment Procedure

2.4 Construction Noise and Vibration Management Plan

In accordance with MCoA C5 Quickway has prepared a Construction Noise and Vibration Management Plan (CNVMP), which forms part of the Construction Environmental Management Plan (CEMP) suite of documentation.

The function of the CNVMP is to provide a strategic overview of how the requirements of the CNVS will be applied to activities or locations for the Project, as well as meeting relevant requirements under the MCoA and Environmental Impact Statement. The CNVMP includes an outline of how quantitative noise and vibration assessments will be undertaken across worksites and/or activities, and an indicative construction schedule. The CNVMP also links to the community and stakeholder consultation processes and explains how receivers will be consulted throughout the construction phase with regard to impacts and mitigations.

2.5 Detailed Noise and Vibration Impact Statements (DNVIS)

While quantitative noise assessments are documented in initial environmental assessments (the EIS), a more refined assessment is undertaken as part of a DNVIS prepared under MCoA D43, based upon an improved understanding of the exact equipment and construction methodology to be used for the Project, not known at the time of the preparation of the EIS.

In accordance with the CNVS, the DNVIS is required to be developed to support applications for OOHW. In this context, the DNVIS has been prepared to address all expected OOHW activities and activities generating highly noise affected impacts on receivers, for the entirety of the Project. The DNVIS:

- assesses and documents the anticipated noise impacts at noise sensitive receivers of proposed construction activities, prior to the commencement of those activities.
- removes assumptions made in the Environmental Impact Assessment including the Noise and Vibration Technical Paper.
- is written with a focus on specific activities or locations and considers works carried out inside and outside of standard working hours.
- includes mitigation measures identified through consultation with affected sensitive land user(s).

The AA will review and endorse the DNVIS (as per AA role described at MCoA A36(e)) and a copy of the DNVIS must be provided to the AA and ER before the commencement of the associated works.

The DNVIS includes a noise and vibration assessment of the proposed works, however it is acknowledged that additional OOHW or minor changes to proposed methodologies may occur. Additionally, the DNVIS is written at the commencement of the Project, at which point specific dates and approvals (for example, Road Occupancy Licenses) may not be known. As such, the DNVIS is supported by the Quickway Out-of-Hours Work Permit, which is prepared closer to the time of the works and provides a record with of compliance with the requirements of this Protocol (refer to Section 3.3 for additional information).

3. OOHW Assessment and Approval

3.1 OOHW

OOHW are any works that are undertaken outside of approved hours defined in the Project MCoA. This may be required for a variety of reasons, including oversized deliveries, emergency works, reduced impacts on the community and/or environment, etc.

MCoA D35 establishes works are to be carried out only during the following hours:

- 7:00am to 6:00pm Mondays to Fridays, inclusive;
- 8:00am to 6:00pm Saturdays; and
- at no time on Sundays or public holidays.

MCoA D37 recognises there are times where works outside the above hours are unavoidable and may be undertaken under specific circumstances, including:

- In the case of safety and other emergencies
- Low Impact Works for which noise and vibration activities are below a set criteria
- By approval under this Protocol or by negotiated agreements
- By prescribed activity

Due to greater community sensitivity to noise and vibration impacts from works undertaken outside approved hours, an OOHW process is required to address preparing, assessing and approving all OOHW prior to their commencement.

3.2 OOHW Justification

Construction work associated with the Project will be undertaken in accordance with the assessment and management approach outlined in the Interim Construction Noise Guidelines (ICNG). The ICNG requires

that work proposed outside of approved construction hours must be appropriately justified. In general, OOHW undertaken during public infrastructure projects, necessary to sustain the operational integrity of roads, is considered justified in the ICNG.

3.3 OOHW Permit

As per MCoA D38(a) approval of OOHW is dependent upon the types of activity proposed. The works must be categorised by risk and the approved framework as follows:

- i. the ER and AA review all proposed out-of-hours activities and confirm their risk levels;
- ii. low risk activities can be approved by the ER in consultation with the AA; and
- iii. high risk activities are approved by the Planning Secretary;

To facilitate this process, the Quickway Out-of-Hours Work Permit will be utilised (refer to [Appendix A](#)).

The OOHW Permit is to be used for all OOHW applications to ensure due diligence is undertaken by requiring the applicant to:

- Provide justification for the works to be undertaken outside of approved hours;
- Adequately assess the noise impacts at nearest receivers;
- Demonstrate mitigation measures being implemented; and
- Request formal review and approval by TfNSW prior to commencement.

The OOHW Permit ensures that a preliminary quantitative noise assessment is undertaken for every application, supported by the DNVIS and noise and vibration impact assessments as described in this Protocol.

Once prepared the OOHW Permit is submitted to the Place Manager, Sydney Metro Environment Manager, AA and ER for review. Any of the reviewers 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).

3.4 OOHW Review and Approval

All OOHW work for The Bays Project requires review and endorsement by the AA and, in accordance with MCoA D38, approval by either the ER, or in the case of 'high risk' works, by the Secretary. The requirements of these conditions are to be specifically addressed in each OOHW application as relevant.

Further details about the classification of 'high risk' work is detailed in [Section 5](#).

For any proposed OOHW, process identified as described below and shown in [Figure 1](#) will be undertaken:

1. An OOHW Permit will be prepared that summarises the activities, equipment required, location and duration and includes a detailed justification for works.
2. The OOHW Permit will be submitted to the Environment Team to include assessment outcomes. Where an existing activity has been assessed under the DNVIS, no further assessment is required. New activities or changes activities described in the DNVIS will be assessed (refer to [Section 4](#)) to determine predicted noise impacts and appropriate mitigation measures (refer to [Section 6.1](#)).

3. The Quickway Environment Manager will determine whether the justification for the OOHW works is satisfactory and that the noise assessment and mitigation measures are appropriate, and will allocate the appropriate risk category.
4. The OOHW Permit will be submitted to the ER/AA/Sydney Metro for review and confirmation of risk allocation (ER and AA only). The AA will endorse the OOHW Permit and if confirmed as low risk, the ER will approve, or if confirmed as high risk, approval will be sought from the Planning Secretary (refer to [Section 5](#)).
5. Community consultation and notification will be undertaken in accordance with the Project Communication Strategy (refer to [Section 6](#)).
6. Mitigation measures and monitoring as identified in the OOHW Permit will be undertaken during the works (refer to [Section 8](#) and the Project's Construction Noise and Vibration Monitoring Program).

The process for undertaking planned OOHW is provided in [Figure 1](#).

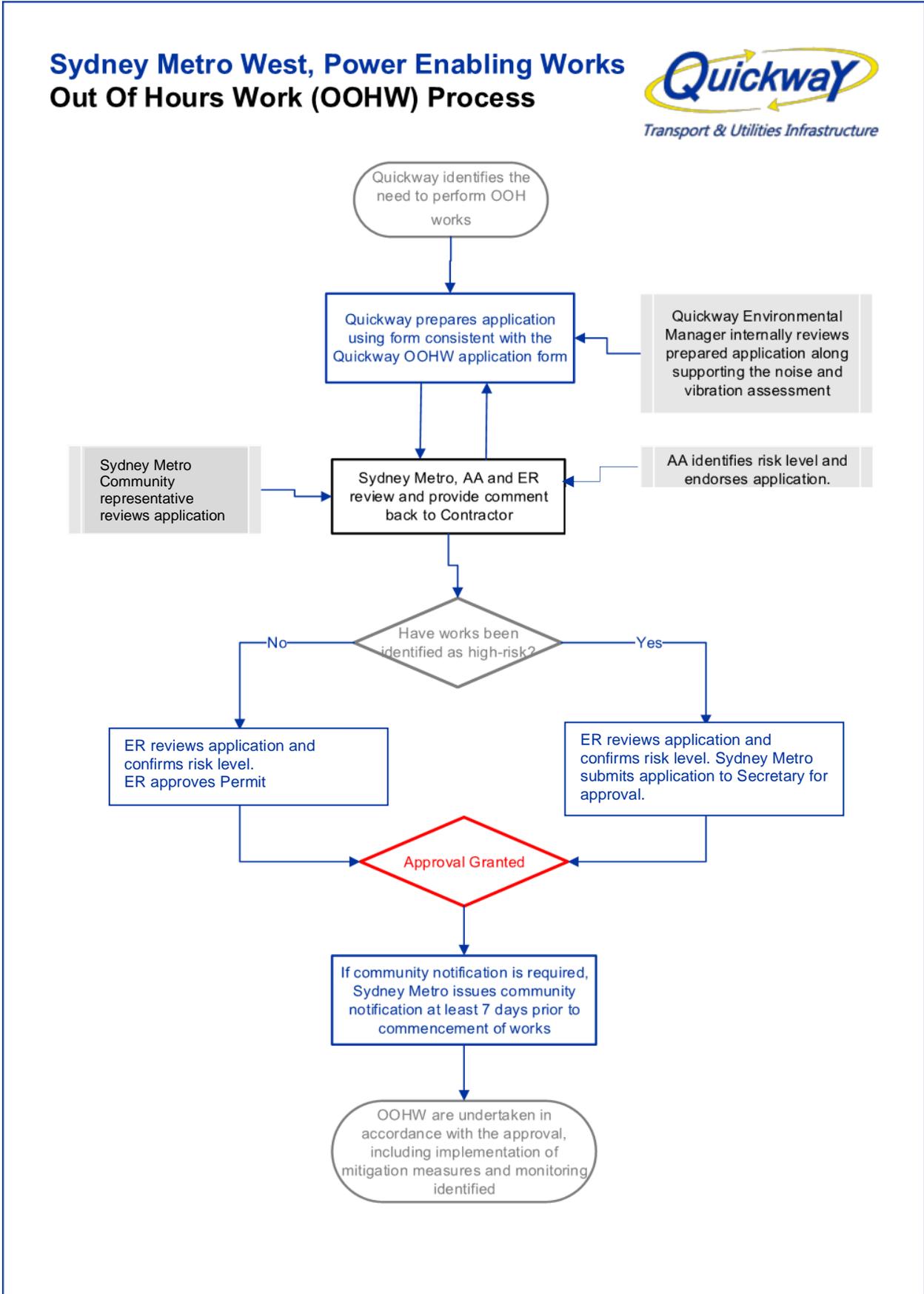


Figure 1 OOHW Process flow chart

3.5 Emergency Works

Occasionally there may be a need to undertake emergency works outside of standard working hours, including:

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

On becoming aware of the need for emergency work in accordance with (a)(ii) above, Quickway will notify Sydney Metro, the AA, the ER, and Sydney Metro will notify the Planning Secretary and the EPA (if required) providing the reasons for such work.

Best endeavours will be made to notify as soon as practicable all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of those work, with as much details as possible regarding:

- (a) Scope;
- (b) Location;
- (c) Hours;
- (d) Duration;
- (e) Types of equipment to be used; and
- (f) Likely impacts.

On the following workday of completion of any emergency works being undertaken, a summary will be provided to Sydney Metro, the AA and ER, including:

- (a) Date, time, duration and cause of the emergency;
- (b) Description of emergency works undertaken;
- (c) Mitigation measures implemented to address the impacts of the emergency works; and
- (d) Actions/Measures taken or to be taken to prevent or mitigate recurrence of the emergency.

The process for undertaking emergency OOHW is provided in [Figure 2](#).

Sydney Metro West, Power Enabling Works Emergency Out Of Hours Work (OOHW) Process

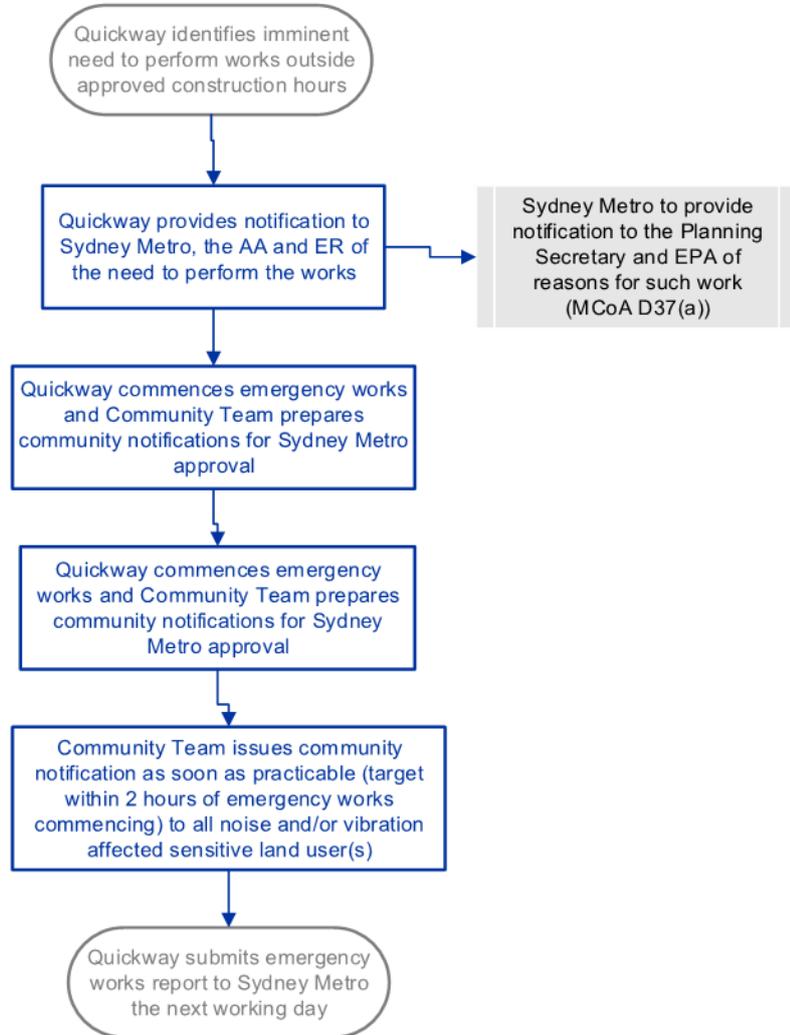


Figure 2 Emergency OOHW flowchart

4. OOHW Impact assessment

4.1 Noise and vibration assessment criteria

Guidelines for establishing project-specific noise and vibration criteria to guide the application of mitigation measures are described in Section 5 of the CNVMP and the Noise Vibration Monitoring Program (included in the CNVMP) and include the following.

- (a) Airborne and ground-borne noise - the Interim Construction Noise Guideline (DECC, 2009);

Note: *The Interim Construction Noise Guideline identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level (NML).*

- (b) Vibration (human comfort) - *Assessing vibration: a technical guideline* (DEC, 2006)
- (c) Building damage - BS 7385 Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" as they are "applicable to Australian conditions"
- (d) Heritage items - *German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures* (for structural damage) (applicable when a heritage-listed structure is identified in poor condition)
- (e) Additional mitigation for residual impacts - RMS Construction Noise and Vibration Guideline – Version 1, 2016

Project-specific noise management levels (NMLs) and sleep disturbance criteria have been calculated for each Noise Catchment Area (NCA) within the Project area and are summarised in Section 5.3 of the CNVMP. Construction NML criteria for non-residential, commercial and industrial receivers have also defined.

Vibration criteria adopted for the project are summarised in Section 5.4 of the CNVMP.

4.2 Noise and vibration assessment

4.2.1 Assessment Method

Where OOHW is proposed, modelling undertaken for the DNVIS will be used to predict noise and vibration impacts. Where the proposed OOHW activity is different from those presented in the DNVIS a noise assessment to determine the noise and vibration impacts of the proposed OOHW will be undertaken. These supplementary assessments will use an appropriately detailed noise prediction tool developed by the project acoustic consultant Hutchison Weller. KNOWnoise is a web-based noise prediction tool designed for use by the project team to complete its own assessment. This provides opportunity to proactively plan OOHW works and make adjustments as necessary.

KNOWnoise is based on the same 3D noise modelling done in Soundplan noise prediction software, as that done for the DNVIS, and is therefore considered an extension or replication of the modelling processes used for the DNVIS. KNOWnoise includes all terrain, buildings, noise walls as well as air and ground absorption for accurate results.

Each assessment of proposed OOHW will incorporate quantitative prediction of the noise level and extent of noise impact that activities will have on potentially affected sensitive receivers, based on inputs including location, and the types and number of construction machinery operating at any one time.

Vibration will be automatically assessed within KNOWnoise based initially on standard safe working distances of selected vibration-intensive equipment, and subsequent site laws updated into KNOWnoise following initial vibration monitoring (as described in the Noise and Vibration Monitoring Program). Advice will be provided on whether the human comfort, cosmetic damage or heritage criteria may be exceeded, with appropriate mitigation measures recommended.

Details on KNOWnoise are provided in Appendix D of the CNVMP.

4.2.2 Reporting

A report for each assessment is automatically generated and must be attached to the OOHW permit application and includes:

- details of the nature and scope of each activity, including times, location(s) of works, duration,
- plant and equipment to be used with estimated equipment sound power levels (including 5 dB penalty where applicable for annoying characteristics)
- justification of the need to work outside approved hours
- relevant noise management levels and vibration criteria
- an evaluation of predicted noise levels with a summary of the number of exceedances and predicted maximum noise levels
- assessment of sleep disturbance
- assessment of vibration (whether works are likely to be within safe working distances for selected plant)
- recommended standard and additional mitigation measures. Additional mitigation measures will be recommended based on the CNVS and predicted levels of exceedance at each identified sensitive receiver.

5. High and low risk activities approval

The proposed OOHW will be classified as either low or high risk, which will then be subject to the relevant approval pathway:

1. Low risk activities can be approved by the ER in consultation with the AA, and
2. High risk activities are approved by the Planning Secretary.

The following definition of high and low risk activities has been prepared to minimise the frequency and duration of works with unacceptable noise and/or vibration impacts, as shown in Table 3.

Table 3 Classification of Low and High risk OOHW

Low risk	High risk
<p>Works that do not trigger the three 'high risk' criteria for residential receivers</p> <p>Works that are not considered high risk following consultation with the AA and Sydney Metro Communications Manager</p>	<p>As a default risk level, OOHW will be categorised as 'high risk' if all of the following three criteria apply:</p> <ul style="list-style-type: none"> • 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 OOHW 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 OOHW is categorised as High Impact (e.g. prolonged high noise and/or vibration intensive activities), <p>For non-residential receivers, OOHW may be considered as 'high risk' if undertaken during trading hours and in close proximity to their place of business (for example, during Saturday evening trading hours). Since each non-residential receiver has different business needs, it is imperative that the Sydney Metro Communications Manager and the AA discuss each OOHW application to better understand how the proposed OOHW would impact the business.</p>

As part of their review, using the default risk level as a 'starting point', the AA and ER will consider all other relevant factors to confirm or adjust the nominated risk level. These relevant factors include:

- Those identified in Section 6.4 of the CNVS
- Those listed in [Table 4](#) of this document;
- Third Party permits; and
- Any other factors the AA considered relevant in their professional opinion.

These factors may cause the default risk level to be modified from either 'high risk' to 'low risk' (or vice-versa), as the AA/ER deems appropriate in their professional opinion.

Once the AA & ER has confirmed the final risk level for the OOHW application and indicated the risk level on the application (including any risk identification commentary), they will sign and date the application in the format of *endorsement* for the AA and *review* for the ER. Following this, approval will be granted by the ER in consultation with the AA (for low risk works) or DPIE (for high risk works).

Table 4 Risk Level Considerations

Type	Risk Level Considerations
Predicted Noise Exceedance	The degree of predicted noise level exceedance above the RBL or NML as appropriate
Certainty	Whether RBLs, NMLs 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	Whether negotiated agreements have been obtained in accordance with MCoA D38
Potential Sleep Disturbance	Whether the activity is likely to exceed the Project's sleep disturbance criteria
Non-Residential Receivers	Whether the impacted non-residential receivers operate within the same time period as scheduled OOHW.
Special Events	The timing and location of special events in the area of the proposed OOHW may be schedules at the same time or immediately before or after the special event (e.g. festivals, public gatherings etc.)

Following approval by the ER or the Planning Secretary, the approved OOHW Permit will be provided to the construction team by the Quickway Environment Manager. Mitigation measures that relate to the OOHW will be:

- Implemented prior to OOHW (such as specific conditions that relate to the community).
- Communicated to relevant workforce and site personnel before each shift to introduce/reinforce work restrictions, management measures and expected workforce behaviour.
- Implemented during OOHW and monitored by the Quickway Environment Team to confirm/validate the noise predictions where required by the permit.

Following the OOHW, Quickway will review any lessons learnt and monitoring data to help inform future OOHW activities and mitigation measures and minimise impacts.

5.1 External Approval Authorities for OOHW

In accordance with CoA D38(a)(iii), if the proposed OOHW includes high risk activities, approval of the OOHW will be sought from the Secretary.

Additionally, the Planning Secretary will be informed by Sydney Metro of all upcoming low risk out-of-hours works in an agreed format. This is likely to take the format of a weekly submission or presentation of a four week look-ahead of works, however the final process for provision of this information will be determined by Sydney Metro in consultation with DPIE.

6. Mitigation measures and consultation

6.1 Mitigation

Works outside approved hours are typically undertaken at a time most people are more sensitive to noise and vibration and background levels of noise are quieter. This increases the level of risk for adverse impacts on the community.

Quickway will implement all reasonable and feasible measures for noise mitigation and management described in its CNVMP (Section 8) regardless of predicted noise levels. These actions will include as a minimum:

- management of behaviour such as avoiding shouting and swearing, turning off idling equipment when not in use, avoiding impulsive noise (metal on metal contact),
- selection of quieter equipment such as smaller, lower powered, newer, or better maintained.
- examining alternative technologies and methods to complete activities more quietly
- programming to avoid noisy activities after midnight as far as practicable (such as hammering, sawing etc)
- use of screens and enclosures to reduce noise emissions from equipment.
- adequate consultation and notification (as described below)
- noise and vibration monitoring in line with the Noise and Vibration Monitoring Program (Appendix B of the CNVMP).

In addition to the above standard mitigation measures, the additional mitigation measures described in the CNVS (Section 5) and referenced in Section 8.2 of the CNVMP will be implemented as far as they are reasonable and feasible.

6.2 Consultation

Consultation on respite with the affected community will be undertaken to meet the requirements of MCoA D51, as described in Section 7.1.

In line with MCoA D41, noise generating work 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) resulting in noise levels above the NMLs must not be timetabled within sensitive periods, unless other reasonable arrangements with the affected institutions are made at no cost to the affected institution. Sensitive periods and potential alternative arrangements will be determined by the consultation process described on the Community Consultation Strategy to be implemented by Sydney Metro.

6.3 Community Notifications

Community notifications can be used as a mitigation measure for receivers of noise and vibration impacts as a result of OOHW.

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. Specific notifications of OOHW events will be issued to potentially affected sensitive receivers at least five days, and not more than 14 working days, prior to the OOHW commencing.

OOHW notifications will be prepared generally in accordance with the CNVS and will:

- Be undertaken by letterbox drop or email
- Clearly outline the reason that the work is required to be undertaken outside standard construction hours specified
- Include a diagram that clearly identifies the location of the proposed works in relation to nearby cross streets and local landmarks
- Include details of relevant time restrictions that apply to the proposed works
- Clearly outline in plain English, the location, nature, type of work, scope and days and dates and hours of the proposed works
- Detail the expected noise impact of the works on potentially affected noise sensitive receivers
- Detail mitigation and management measures and proposed respite periods
- Clearly state how complaints may be made and additional information obtained
- Include the number of the 24-hour telephone complaints line, site contact (where available and the Project website address).

In accordance with MCoA D45, landowners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage will also be notified prior to OOHW that generate vibration commencing near those properties.

If the potential exceedance is to occur more than once, or extend over a period of 24 hours, landowners and occupiers would be provided a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the landowner and occupier.

6.4 Negotiated Agreements

A negotiated agreement for particular OOHW may be formed with the potentially affected sensitive receivers in accordance MCoA D37(c)(iii). These negotiated agreements would be undertaken and documented by the Sydney Metro Place Manager, and will be included as evidence for relevant OOHW applications.

A substantial majority of those sensitive receivers that are contactable need to agree to support the negotiated agreement for it to be considered. 'Contactable' is defined as having received correspondence (either verbal or written) from receivers within a two-week timeframe. The Land Use Survey (included in the CNVMP), noise and vibration assessment for OOHW (either as part of or in addition to the DNVIS) and the Place Manager will advise of potentially affected sensitive receivers to be contacted.

Upon approval of any OOHW applications containing negotiated agreements, Sydney Metro will forward the negotiated agreement documentation to the Secretary for information at least one week prior to the OOHW commencing.

7. Scheduling and respite

7.1 Respite

Providing respite is an important component of reducing impacts to potentially affected receivers. OOHW, including work undertaken by other projects, must be coordinated to ensure respite periods are not impacted (discussed further in Section 7.2).

Consultation will be critical in ensuring the community's expectations are managed, their concerns are heard, appropriate respite and other mitigation is implemented and works outside of approved hours are not unexpected. As per MCoA D51, appropriate respite periods for the OOHW will be identified in consultation with the community at each affected location on a regular basis. This consultation will include providing the community with:

- (a) a progressive schedule for periods no less than three (3) months, of likely out-of-hours work;
- (b) a description of the potential work, location and duration of the out-of-hours work;
- (c) the noise characteristics and likely noise levels of the work; and
- (d) likely mitigation and management measures which aim to achieve the relevant NMLs under MCoA D39 (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers).

The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour work will be provided to the AA, EPA, ER and the Planning Secretary.

Respite periods can be any combination of days or hours during which receivers are not impacted by works resulting in noise levels greater than 5 dB(A) above the RBL at any residence. There are three main forms of respite to be considered for the Project, described further below.

7.1.1 High noise or vibration emitting works

For high noise or vibration emitting works a respite scenario of three hours on followed by one hour off will be implemented in accordance with MCoA D36 and CNVS Section 4.2. This will apply to the following activities unless otherwise agreed by potentially impacted receivers:

- use of power saws, such as used for cutting timber, masonry, road pavement or steel work;
- grinding metal, concrete or masonry;
- rock drilling;
- line drilling;
- vibratory rolling;
- bitumen milling or profiling;
- jackhammering, rock hammering or rock breaking;
- rail tamping and regulating; and
- impact piling.

7.1.2 Project specific respite offers

The CNVS (Section 5) requires project specific respite offers are to be made for all OOHW that are predicted to generate impacts that exceed the criteria (refer to CNVS Section 5.1) for the applicable OOHW period. The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise or vibration a respite from an ongoing impact. Respite may be offered in the form of a reduction or absence of noise emissions for a period of time, or by removing the affected receiver from the noise emission point source (e.g. dinner/movie tickets).

If a project specific respite offer is required, a decision on the type of offer will be determined on a case-by-case basis and considering, but not limited to, the following factors:

- the predicted maximum exceedance level
- the predicted exceedance levels and associated duration and timings of those exceedance levels
- the overall duration of the predicted exceedance levels
- surrounding land uses
- community feedback
- any other OOHW (Sydney Metro or otherwise) that have affected or will affect the same receivers concurrently or within three days of either the start or end of the proposed OOHW.

7.1.3 Alternative Accommodation

As described in the CNVS (Section 5), alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts over an extended period of time. Specific triggers for alternative accommodation are provided in CNVS Section 5.1.

As per the project specific respite offers, alternative accommodation will be determined on a case-by-case basis, in consideration of the same contributing factors as listed in 7.1.2. Alternative accommodation will be offered by the Place Manager in consultation with each triggered receivers, to understand and align with their respite preferences.

7.2 Scheduling

As part of the noise and vibration assessment process under MCoA D50, Quickway will ensure all OOHW undertaken for the delivery of the CSSI, including works undertaken by a third party, are co-ordinated to implement appropriate respite and/or mitigation measures for potentially affected sensitive receivers and ensure respite would be coordinated to ensure agreed respite is provided.

Works undertaken as part of this OOHW Protocol will be scheduled to minimise or avoid any impact to agreed respite due to:

- other works, which may have been approved via other pathways, such as community agreement (MCoA D37(c)(iii)).
- works associated with other major projects (e.g. M4-M5 Link Rozelle Interchange) or known third parties works which may also reduce the respite provided to the community.

Scheduling of these activities will consider in each case the reduction in respite due to other approved works. Ideally, works will be scheduled to occur within the same OOHW period to preserve non-work

periods. To achieve this, consultation will be undertaken with the Environment Manager, Place Manager, Quickway engineers and where possible applicable third parties, to ensure works can be coordinated to satisfy MCoA D37(d).

Scheduling will be facilitated using KNOWnoise, which captures all works within a calendar view for simple communication of upcoming activities. All relevant team members will have access to KNOWnoise to schedule specific OOHW works.

Cumulative impacts from works being undertaken at the same time are also assessed within KNOWnoise.

8. OOHW Monitoring

Noise and vibration monitoring of OOHW will be conducted as determined by DNVIS or KNOWnoise assessments (see [Section 4.2](#)) or as triggered by the additional mitigation measures described in the CNVS. These monitoring requirements will be identified on the OOHW Permit.

Monitoring will be undertaken as described in the Project's Noise and Vibration Monitoring Program.

Appendix A OOHW Permit

Sydney Metro West, Power Enabling Works

Quickway Out of Hours Permit: The Bays 33kV

3869-SMW-PER-001

Revision Draft C

DOCUMENT CONTROL & APPROVAL			PROJECT NO.		3869
ISSUE	DATE	ISSUE DETAILS / REMARKS	AUTHOR	CHECKED	APPROVED
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Draft B	14/5/2021	For approval	E. Woodward	J. Maltese	
Draft C	08/06/2021	For approval	E. Woodward	J. Maltese	

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Contents

1. Permit Reference.....	3
2. Out of Hours Works (OOHW) Details.....	4
3. Noise and Vibration assessment outcomes and mitigation measures.....	5
4. Monitoring Summary	6
5. Cumulative Impacts	6
6. Community Consultation.....	6
7. Contractor's Signatures	7
8. Determination	8

Appendices

Appendix A	Location of Works Map	9
Appendix B	Receiver Noise Levels Table	10
Appendix C	Noise and Vibration Contour Maps	11
Appendix D	Community Notification	12
Appendix E	Evidence of Third-Party Approvals.....	13

1. Permit Reference

This Out of Hours Works Permit (the Permit) is to be used for review and approval of out of hours works (OOHW) on the Sydney Metro West project within The Bays Power Enabling Works scope.

This Permit is **not** required for the Eastern Creek Power Enabling Works scope – for which OOHW will be assessed under a General Noise and Vibration Impact Assessment (GNVIS).

Each Permit and all relevant information must be submitted to Sydney Metro by 15 business days prior to the commencement of the proposed OOHW work.

1	Permit Reference	
1a	Application Title: E.g. 'Smith St service relocation works'.	
1b	Application Number:	
1c	Application Date: (resubmission date in parentheses if applicable).	
1d	Revision Number:	
1e	Description of works location and layout figure attached as Appendix A (Y/N):	

2. Out of Hours Works (OOHW) Details

2 OOHW Details	
2a	Activity reference from DNVIS:
2b	<p>Are the works consistent with the description in the DNVIS (Y/N)?</p> <p>If 'No', detail any changes from the activity description provided in DNVIS:</p> <p>Or</p> <p>Description of activities if not included in DNVIS:</p> <ul style="list-style-type: none"> • Work methodologies • Plant/equipment to be used • Location of works or plant/equipment offset from receivers • Justification
2c	<p>Timing details, including:</p> <ul style="list-style-type: none"> • Duration - commencement and completion of total activity • Start and end times per shift • Breakdown of major activities across each shift including any activity/plant specific timing or duration restrictions to be applied <p>Please include this as a separate attachment if works exceed one shift.</p>
2d	<p>Are the works being undertaken under a Third Party permits (e.g. Road Occupancy Licenses)? (Y/N)</p> <p>Include evidence in Appendix E</p>
2e	<p>Applicable category of OOHW as described in MCoA D37 (Environmental Manager to assist)</p> <ul style="list-style-type: none"> (a) Safety and Emergencies (b) Low Impact (c) By Approval (d) By prescribed activity

3. Noise and Vibration assessment outcomes and mitigation measures

3 Noise and Vibration assessment outcomes and mitigation measures	
3a	<p>1. For works consistent with DNVIS attach:</p> <ol style="list-style-type: none"> a. relevant list of worst-case scenario receiver noise levels divided by required additional mitigation measures (AMM) (as per Sydney Metro CNVS) as Appendix B. b. Noise and vibration contour maps as Appendix C. <p>2. For works not consistent with DNVIS please complete a Noise and Vibration Model using KnowNoise and attach outcomes as Appendix B and C as described above. Process for modelling is described in DNVIS</p>
3b	Confirmation works comply with definition of Low Impact OOHV as per MCoA D37 (b)
3c	Outline the activity specific noise mitigation measures to be implemented for these works:
3d	Describe any AMM that are identified as applicable for consideration but not being implemented, with justification as to why not:
3e	Are any residential receivers or other sensitive receivers identified as triggering the noise sleep disturbance criteria as described in the DNVIS?:
3f	<p>Is there vibration generating activities proposed to be undertaken inside the following criteria, if yes please provide addresses?:</p> <ol style="list-style-type: none"> 1. 2.5mm/s PPV vibration contour (worst case scenario) for Heritage Items (note, The Valley Heritage Conservation Area is not applicable as a heritage item in this context.) 2. Vibration contour (worst case scenario) for the Human Comfort VDV criteria relevant to the proposed works (time and durations) as defined in the DNVIS. 3. Vibration contour (worst case scenario) for the Cosmetic Damage PPV criteria applicable to the proposed works (frequency) as described in the DNVIS.

4. Monitoring Summary

4 Monitoring Summary			
	Type of monitoring required: e.g. <ul style="list-style-type: none"> Noise or Vibration Attended or Unattended. 	Reason for monitoring, e.g. <ul style="list-style-type: none"> Heritage item Triggered by noise impacts Potential sleep disturbance Potential vibration impact 	Proposed location of monitoring (note subject to change based on location of closest sensitive receiver at the time the monitoring is occurring).
4a			
4b			
4c			

5. Cumulative Impacts

5 Cumulative Impacts	
5a	Will any other surface OOHW activities impact receivers identified in the noise contours, either concurrently or upon the following night period of the start or end of these proposed works?
5b	If yes, how have the proposed works been coordinated to ensure appropriate respite is provided?

6. Community Consultation

6 Community Consultation (Sydney Metro West Community Team)	
6a	What community consultation has been undertaken already?
6b	What community consultation is planned to be undertaken?
6c	If drafted already, attach applicable Community Notification as Appendix D .

7. Contractor's Signatures

7 Contractor's Signature				
Contractor's Identification of Risk Level: Does not apply to Low Impact OOHW	Circle:	LOW	or	HIGH
Justification for Risk Level: Does not apply to Low Impact OOHW				
Contractor's Signature:				
Name:				
Title:				
Contact Number:				
Date:				

8. Determination

		Step 2a: AA confirmation of risk level (does not apply to Low Impact OOHW)	Step 3a: ER confirmation of risk level (does not apply to Low Impact OOHW)	Step 4: Approval <ul style="list-style-type: none"> ER (Low Risk) DPIE (High Risk) N/A (Low Impact OOHW)
		AA confirmed risk level (circle): LOW or HIGH	ER confirmed risk level (circle): LOW or HIGH	
	Step 1: Review and Acceptance from Sydney Metro	Step 2b: AA Endorsement	Step 3b: ER Review	
Signature:				
Name:				
Role:				
Date:				
Comments:				
Conditions:				

Appendix A Location of Works Map

Appendix B Receiver Noise Levels Table

Appendix C Noise and Vibration Contour Maps

Appendix D Community Notification

Appendix E Evidence of Third-Party Approvals