

# Out Of Hours Works Protocol

Noise and Vibration Management Sub-Plan –  
Appendix D3

Western Harbour Tunnel Package 2 Project  
SSI 8863

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# 1 Introduction

This Out-of-Hours Work Protocol (herein referred to as the Protocol) for the Western Harbour Tunnel (the Project) has been prepared in accordance with the Minister's Conditions of Approval (MCoA) E68(c)(ii) and E69, to define the process for assessment and approval of work undertaken outside of standard construction working hours (out-of-hours work, OOHW) that is not subject to an Environment Protection Licence (EPL).

OOHW have the potential to exceed relevant noise management levels (NMLs) determined in accordance with the approach outlined in the Interim Construction Noise Guidelines (DECC, 2009) (ICNG). As OOHW has the potential to impact on the amenity of adjacent sensitive receivers, the work requires assessment and approval prior to commencement.

MCoA E69 requires that this Protocol is prepared in consultation with the ER, AA and the EPA and approved by the Planning Secretary.

## 2 Purpose

The Project MCoA E66 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
- At no time on Sundays or public holidays.

However, MCoA E68 recognises there are times where works outside the above hours are unavoidable and may be undertaken under specific circumstances.

OOHW has the potential to exceed noise management levels (NMLs) determined in accordance with the approach outlined in the Interim Construction Noise Guidelines (DECC, 2009) (ICNG), and requires assessment and approval prior to commencement. This Protocol provides the process by which this assessment and approval must be undertaken for OOHW not subject to an EPL.

In accordance with MCoA E69, this Protocol defines the process for the assessment and approval of work that is not subject to an EPL and needs to occur outside of the time periods stipulated above (i.e. needs to occur during an OOHW period).

## 3 Scope

The MCoA that relate to construction noise and vibration and how they are being addressed by the Project are provided in the NVMP. MCoA relevant to this OOHW Protocol are provided in Table 3-1. A cross-reference is included to indicate where each condition is addressed in this OOHW Protocol or other project management document.

Table 3-1 MCoA's relevant to this Protocol.

MCoA	Requirement	Where addressed
A34	<p>The approved AA must:</p> <p>(d) review all proposed night-time works to determine if sleep disturbance would occur and recommend measures to avoid sleep disturbance or appropriate additional alternative mitigation measures</p>	Section 9
E66	<p>Work must only be undertaken during the following hours:</p> <p>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</p>	Section 2
E68 (c)	<p>Notwithstanding Conditions E66 and E67 work may be undertaken outside the hours specified in any of the following circumstances:</p> <p>(c) By Approval, including:</p> <p>(i) <del>where different construction hours are permitted or required under an EPL in force in respect of the CSSI;</del> or                      (ii) works which are not subject to an EPL that are approved under an Out-of-Hours Work Protocol as required by Condition E69; or                      (iii) <del>negotiated agreements with directly affected residents and sensitive land user(s).</del></p>	This document
E69	<p>An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work which is outside the hours defined in Conditions E66, and that are not subject to an EPL. 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:</p>	This document
	<p>(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:</p> <p>(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;</p>	Section 6
	<p>(b) a process for the consideration of out-of-hours work against the relevant NML and vibration criteria;</p>	Section 6
	<p>(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 E83.                      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;</p>	Section 9 Section 10.2
	<p>(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</p>	Section 8
	<p>(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.                      This condition does not apply if the requirements of Condition E68(b) are met.</p>	Section 10

MCoA	Requirement	Where addressed
E70	<p>Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration objectives:</p> <ul style="list-style-type: none"> <li>a) construction 'Noise affected' NML established using the Interim Construction Noise Guideline (DECC, 2009);</li> <li>b) vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure);</li> <li>c) Australian Standard AS 2187.2 - 2006 "Explosives - Storage and Use - Use of Explosives";</li> <li>d) BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2" as they are "applicable to Australian conditions"; and</li> <li>e) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures (for structural damage). 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.</li> </ul> <p>Any work identified as exceeding the noise management levels and/or vibration criteria must be managed in accordance with this Sub-plan. Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction NML.</p>	Section 9
E82	<p>All work undertaken for the delivery 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"> <li>a) reschedule any work to provide respite to impacted noise sensitive land user(s) so that the respite is achieved in accordance with Condition E83; or</li> <li>b) consider the provision of alternative respite or mitigation to impacted noise sensitive land user(s); and</li> <li>c) provide documentary evidence to the AA in support of any decision made by the Proponent in relation to respite or mitigation.</li> </ul> <p>The consideration of respite must also include all other CSSI, SSI and SSD projects which may cause cumulative and/or consecutive impacts at receivers affected by the delivery of the CSSI.</p>	Section 8 Section 10.2
E83	<p>In order to undertake out-of-hours work outside the hours specified under Condition E66, the Proponent must identify appropriate respite periods for the out-of-hours work in consultation with the community at each affected location on a regular basis.</p> <p>This consultation must include (but not be limited to) providing the community with:</p> <ul style="list-style-type: none"> <li>a) a progressive schedule for periods no less than three months, of likely out-of-hours work;</li> <li>b) a description of the potential work, location and duration of the out-of-hours work;</li> <li>c) the noise characteristics and likely noise levels of the work; and</li> <li>d) likely mitigation and management measures which aim to achieve the relevant noise management levels under Condition E70 (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers).</li> </ul> <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, ER, EPA and the Planning Secretary.</p>	Section 8

MCoA	Requirement	Where addressed
	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 rating background noise level at any residence.	
E88	Out-of-Hours Work along the Warringah Freeway corridor which results in an exceedance of the relevant NML at the same sensitive land user(s) may be undertaken in accordance with the following criteria: a) two consecutive evenings and/or nights per week; or b) three non-consecutive evenings and/or nights per week; or c) 10 evenings and/or nights per month; or d) except as identified by an EPL; or e) in accordance with an agreement with a potentially impacted receiver(s) as required by Condition E68(c)(iii) or Condition E83.	Section 6

## 4 OOHW Justification

Construction work associated with the Project will be undertaken in accordance with the assessment and management approach outlined in the ICNG and the Roads and Maritime Construction Noise and Vibration Guideline (CNVG).

The approved construction hours for the Project are outlined in MCoA E66. Where work is proposed outside of these hours, it must be appropriately justified with consideration to the ICNG and in accordance with MCoA E68. The ICNG outlines five categories of work that might be undertaken out of hours. OOHW may be required on public infrastructure projects, such as on road construction projects, to sustain the operational integrity of roads.

Justification for any activities proposed as OOHW must be established to the satisfaction of the Environmental Representative (ER) and the Acoustic Advisor.

## 5 OOHW Process

For any proposed OOHW subject to this Protocol, the following process will be implemented:

1. When it is identified that OOHW are required and are not subject to an EPL, an OOHW Permit will be prepared, detailing:
  - The proposed activity
  - location (including a diagram or figure)
  - identification of any particularly sensitive receivers
  - start and finish times
  - duration (within and across OOHW periods)
  - plant and equipment required
  - Noise and vibration assessment predictions (as described in Section 7)
  - Justification for the need to carry out the specific work as OOHW, including works that are high risk to construction personnel or public safety, high risk to road network operational performance, high risk to integrity of utility network, requirements under a Road Occupancy Licence

- Standard and additional mitigation measures (as described in Section 9)
2. The Environment Manager will review the OOHW Permit prior to issuing to the Environmental Representative (ER) and Acoustic Advisor (AA).
  3. Approval of the OOHW Permit will follow the process outlined in Section 6 of this Protocol.
  4. Community consultation and notification will be undertaken in accordance with the Community Communication Strategy and Section 10 of this Protocol.
  5. Following approval, the activity will be undertaken in accordance with Section 11.

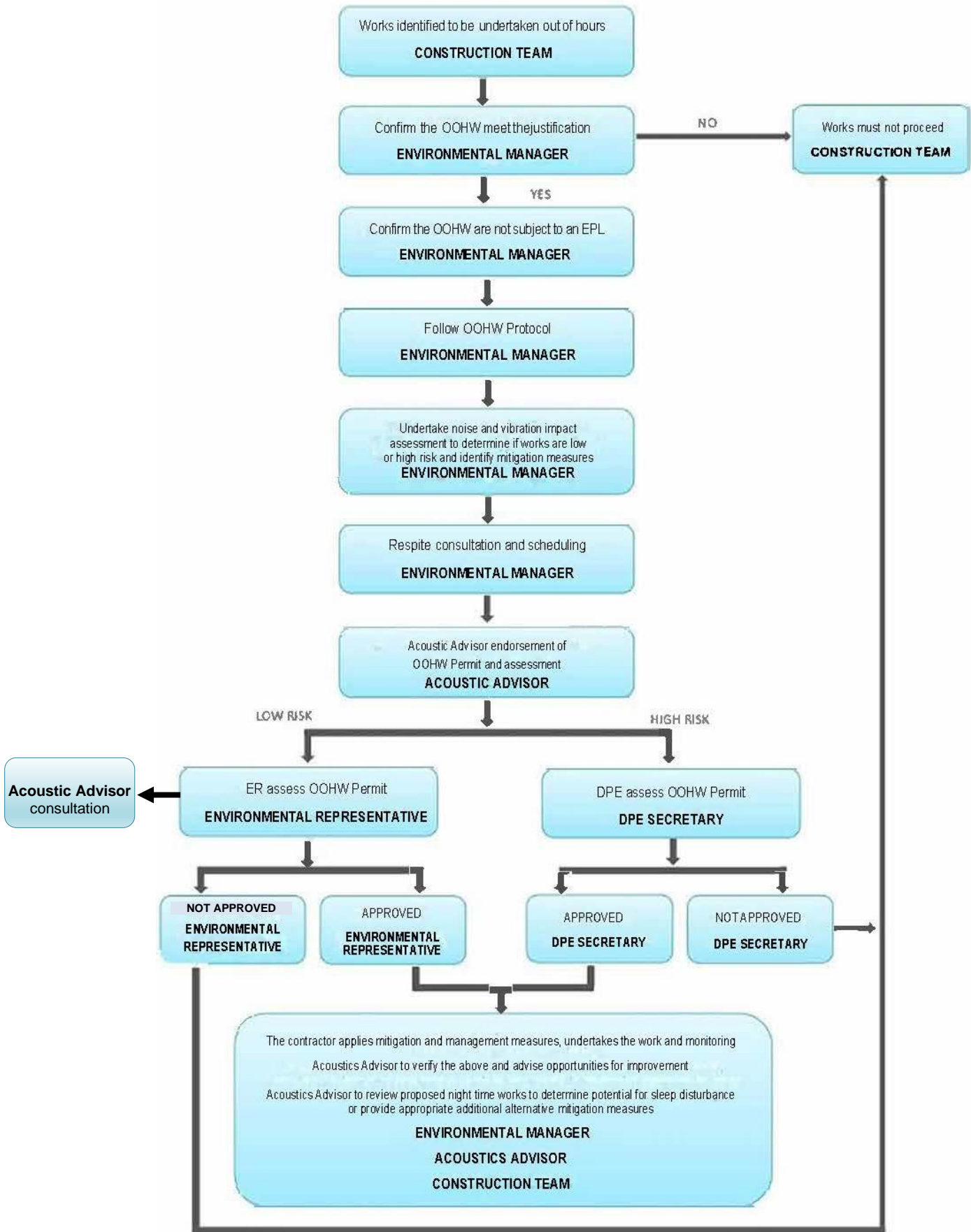


Figure 5-1 Approval process for OOHW subject to this Protocol

## 6 Risk determination

To identify the appropriate approval pathway, a determination of risk will be made based on the following two-step process:

- **Step 1:** Prediction of Impact Classification (Table 6-1) using noise and vibration modelling (described in Section 7)
- **Step 2:** Allocate Risk Category based on the Impact Classification and OOHW periods as shown in the relevant table for works for inside or outside the Warringah Freeway road corridor. Categories include:
  - a. **Low risk:** as defined under MCoA E69(a)(ii) the Environmental Representative (ER) has the authority to approve low risk OOHW activities in consultation with the Acoustic Advisor.
  - b. **High risk:** activities are approved by the Planning Secretary.

Exceptions to these limits for works assessed under this Protocol only apply in accordance with an agreement with a potentially impacted receivers, in which case risk will be determined in accordance with the conditions of that agreement.

The Impact Classifications will be determined based on the relevant period of works and associated RBLs, being:

### **OOHW Period 1:**

- Monday to Friday: 6pm to 10pm (i.e. 'Evening');
- Saturday: 7am to 8am and 6pm to 10pm (i.e. 'Evening'); and
- Sunday and Public Holidays: 8am to 6pm (i.e. 'Day');

### **OOHW Period 2 (i.e. 'Night'):**

- Monday to Friday: after 10pm and prior to 7am;
- Saturday: after 10pm and prior to 8am; and
- Sunday and Public Holidays: after 6pm and prior to 8am.

Table 6-1 Initial Impact Classification, Risk Category and approval pathways for OOH works subject to this Protocol

Impact Classification	Airborne Noise		Vibration (intermittent)	Risk Category and Approval Pathway
	NML Exceedance (LAeq 15 min)	Sleep disturbance (LAMax15minute)	Exceedance of Night VDV Criteria	
A - NML Compliant	-	-	-	No additional approvals required
B – Noticeable	1-5	RBL + 15 dBA	-	No additional approvals required
C- Clearly Audible	5-15	Exceeds RBL + 15 dBA but does not exceed 65 dBA	>Preferred <sup>1</sup>	Low Risk <sup>2</sup> : <ul style="list-style-type: none"> <li>Review by AA and ER</li> <li>Approval by ER</li> </ul>
D- Moderately Intrusive	15-25			
E - Highly Intrusive	25+	Exceeds 65 dBA	>Maximum <sup>1</sup>	High Risk: <ul style="list-style-type: none"> <li>Review by AA and ER</li> <li>Approval by Planning Secretary</li> </ul>

<sup>1</sup> Refer to Table 2.4 of ‘Assessing Vibration – A Technical Guideline’

<sup>2</sup> The following restrictions (known as the 2/3/10 schedule) will apply for works that are determined to be Low Risk unless otherwise determined by the AA and ER, or in accordance with an agreement with potentially impacted receiver(s) in accordance with Condition E68(c)(iii) or Condition E83:

- two consecutive evenings and/or nights per week; or
- three non-consecutive evenings and/or nights per week; or
- 10 evenings and/or nights per month.

In accordance with MCoA E69(a)(i), the ER and AA will review all proposed out-of-hours activities to confirm the Risk Classification is appropriate. In this review the AA and ER will include but may not be limited to the considerations as described in Table 6-2.

Table 6-2 Considerations of risk classification

Theme	Consideration
Exceedance	The degree of predicted exceedance above the noise or vibration criteria (i.e. an increase of <2dBA is generally considered an inaudible change) and the length of this exceedance.
Timing, duration and schedule	Timing of the proposed works, including consideration of evening and morning shoulder periods. Total duration of the works required. Schedule of works in consideration of the 2/3/10 standard schedule.
Past Experience	Are modelling outputs generally conservative or underestimated.
Location	Are ambient noise levels and noise environment such that sleep disturbance likelihood is low (i.e. adjacent to major roads).
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 maybe schedules at the same time or immediately before or after the special event (e.g. festivals, public gatherings etc.)
Community feedback	Community preference (i.e. to have the works completed quickly rather than over an extended duration). Community feedback for similar works or in the same location.
Third Party Permits	Mandatory requirements under third party permits, such as Road Occupancy Licenses.

Following approval of all OOH works, the OOHW Permit will be provided to the construction team by the Environment Manager and the Planning Secretary will be informed by TfNSW of all upcoming low risk out-of-hours works in an agreed format. This will likely 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 TfNSW in consultation with DPE.

## 7 OOHW impact assessment

### 7.1 Noise and Vibration criteria

Guidelines for establishing project-specific noise and vibration criteria to guide the application of mitigation measures are described in the NVMP and include the following.

- 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)
- Vibration (human comfort) - Assessing vibration: a technical guideline (DEC, 2006)
- Building damage - BS 7385 Part 2-1993 'Evaluation and measurement for vibration in buildings Part 2' as they are 'applicable to Australian conditions'

- 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)
- Additional mitigation for residual impacts - RMS Construction Noise and Vibration Guideline – Version 1, 2016.

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

Ground Borne Noise and Vibration criteria adopted for the project are also summarised in the NVMP.

## 7.2 Noise and Vibration assessment

### 7.2.1 Assessment method

A noise assessment to determine the noise impacts of the proposed OOHW will be undertaken in the case of all planned OOHW using 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 3D noise modelling in Soundplan noise prediction software, and includes all terrain, buildings, noise walls as well as air and ground absorption for accurate results.

Each assessment of proposed out of hours works will incorporate quantitative prediction of the noise level and extent of noise impact that OOHW 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 on the minimum safe working distance of any selected vibration-intensive equipment. Advice will be provided on whether the human comfort, cosmetic damage or heritage criteria may be exceeded, with appropriate mitigation measures recommended.

### 7.2.1 Reporting

A report for each assessment is automatically generated and 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 standard 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 Construction Noise and Vibration Guideline (CNVG) and predicted levels of exceedance at each identified sensitive receiver.

## 8 Coordination and respite

Respite from noise and vibration outside standard hours is critical for the community.

Works undertaken as part of this OOHW Protocol will be scheduled to minimise or avoid any reduction in respite due to other works, which may have been approved via other pathways, such as EPL variation [MCoA E38(c)(i)] or negotiated agreement [MCoA E68(c)(iii)].

OOHW activities must therefore not be scheduled to reduce respite due to other approved works. Non-work periods providing respite must be preserved. Where works are approved through other pathways these need to be taken into account in determining respite in relation to OOHW.

Additionally, in accordance with MCoA E82, the consideration of respite must also include all other Critical State Significant Infrastructure, State Significant Infrastructure and State Significant Development projects, as well as works by third parties undertaken for the delivery of the Project, which may cause cumulative and/or consecutive impacts at receivers affected by the delivery of the Project.

Scheduling of OOHW 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.

In accordance with MCoA E83, appropriate respite periods should be informed through consultation with affected community, which includes providing the community with:

- (a) a progressive schedule for periods no less than three 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 noise management levels under Condition E70 (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 must be provided to the AA, ER, EPA and the Planning Secretary.

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 rating background noise level at any residence.

## 9 Mitigation

Works outside standard 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 potential for adverse impacts on the community.

ACCIONA will implement all reasonable and feasible measures for noise mitigation and management described in the NVMP regardless of predicted noise levels. These actions will include:

- 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 Construction Noise and Vibration Monitoring Program.

In addition to the above standard mitigation measures, following the noise and vibration assessment the most appropriate reasonable and feasible management measures will be determined in accordance with the NVMP, ICNG, and the standard mitigation measures set out in Appendix B of the CNVG.

In addition, the CNVG directs that the Project should consider implementing the additional mitigation measures detailed in Appendix C of the CNVG where feasible and reasonable, and as outlined in Table 9-1, Table 9-2, and Table 9-3.

In accordance with the CNVG, the additional mitigation measures (AMMs) are defined as follows:

- **Notification (N):** consists of a letterbox drop (or equivalent) detailing work activities, time periods over which these will occur, impacts and mitigation measures.
- **Specific Notification (SN):** provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops.
- **Phone Calls (PC):** detailing relevant information made to identified/affected stakeholders.
- **Respite Offers (RO):** to provide residents with respite from ongoing impact. In accordance with MCoA E83 note, respite can be any combination of days or hours where out-of-hours works would not be more than 5dBA above the rating background level (Table 2, noticeable category).
- **Respite Period 1 (R1):** where out-of-hours construction noise in OOHW Period 1 is generally limited to no more than three consecutive evenings per week.
- **Respite Period 2 (R2):** where out-of-hours construction noise in OOHW Period 2 is generally limited to two consecutive nights.
- **Duration Respite (DR):** where an agreement with the community has been made, it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly (refer Section 7.1).
- **Alternative Accommodation (AltA):** will be offered to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a case-by-case basis. Additional aspects for consideration shall include whether the highly intrusive activities occur throughout the night or before midnight.
- **Verification (V):** includes the measurement of the background noise level and construction noise to verify that actual noise levels do not exceed predicted noise levels, and that applied mitigation measures are appropriate.

It should be noted that the sensitive receivers may have personal circumstances, which means that the approach to specific additional mitigation measures may not be suitable. This will be identified as part of the community consultation on preferred respite, required under MCoA E83 and detailed in Section 8. As such, the Communications and Stakeholder Manager has the authority to amend the approach for specific sensitive receivers by taking into account the personal circumstances that may apply.

In accordance with MCoA A34, the AA will regularly monitor and review the preparation and implementation of this OOHW protocol, including the nominated mitigation measures, and will consider and recommend any necessary improvements that may be made to avoid or minimise

adverse noise and vibration impacts, including sleep disturbance. This will ensure that appropriate noise and vibration mitigation measures are applied throughout the delivery of the Project.

Table 9-1 Triggers for additional mitigation measures- airborne noise

Predicted Airborne (LAeq, 15min) noise level at receiver			Additional Mitigation Measures
Perception	dBA above RBL	dBA above NML	Type <sup>1</sup>
<b>All hours</b>			
75 dBA or greater			N,V,PC,RO
<b>Approved Hours: Mon - Fri (7am - 6pm), Sat (8am - 6pm), Sun/Pub Hol (Nil)</b>			
Noticeable	5 to <10	0	-
Clearly Audible	10 to <20	<10	-
Moderately Intrusive	20 to 30	10 to 20	N, V
Highly Intrusive	> 30	> 20	N, V
<b>OOHW Period 1: Mon - Fri (6pm - 10pm), Sat (7am - 8am &amp; 6pm - 10pm), Sun/Pub Hol (8am - 6pm)</b>			
Noticeable	5 to <10	< 5	-
Clearly Audible	10 to <20	5 to <15	N, R1, DR
Moderately Intrusive	20 to 30	15 to 25	V, N, R1, DR
Highly Intrusive	> 30	> 25	V, IB, N, R1, DR, PC, SN
<b>OOHW Period 2: Mon - Fri (10pm - 7am), Sat (10pm - 8am), Sun/Pub Hol (6pm - 7am)</b>			
Noticeable	5 to <10	< 5	N
Clearly Audible	10 to <20	5 to <15	V, N, R2, DR
Moderately Intrusive	20 to 30	15 to 25	V, IB, N, PC, SN, R2, DR
Highly Intrusive	> 30	> 25	AltA, V, IB, N, PC, SN, R2, DR

Notes:

1. AltA = Alternative Accommodation, V = Verification, IB = Individual Briefings, N = Notification, R1 = Respite period 1, R2 = Respite Period 2, DR = Duration Respite, PC = Phone Calls, SN = Specific Notifications.
2. NML = Noise Management Level, HA = Highly Affected (>75 dBA – applies to residences only).

Table 9-2 Vibration - Additional Mitigation Measures Matrix

Predicted vibration level at receiver		Additional Mitigation Measures	
Perception	Trigger	Type <sup>1</sup>	Apply to <sup>2</sup>
<b>Approved Hours: Mon - Fri (7am - 6pm), Sat (8am - 6pm), Sun/Pub Hol (Nil)</b>			
Predicted Vibration Exceeds Human Comfort Screening Levels		V, N, RO	All
Predicted Vibration Exceeds Structural Damage Screening Levels		V, AC	All
<b>OOHW Period 1: Mon - Fri (6pm - 10pm), Sat (7am - 8am &amp; 6pm - 10pm), Sun/Pub Hol (8am - 6pm)</b>			
Predicted Vibration Exceeds Human Comfort Screening Levels		V, IB, N, RO, PC, RO, SN	All
Predicted Vibration Exceeds Structural Damage Screening Levels		V, AC	All
<b>OOHW Period 2: Mon - Fri (10pm - 7am), Sat (10pm - 8am), Sun/Pub Hol (6pm - 7am)</b>			
Predicted Vibration Exceeds Human Comfort Screening Levels		AltA, V, IB, N, PC, RO, SN	All
Predicted Vibration Exceeds Structural Damage Screening Levels		V, AC	All

Notes:

1. AltA = Alternative Accommodation, AC = Alternative Construction Methodology, V = Validation of predicted levels, IB = Individual Briefings, N = Notification, RO = Respite Offer (project specific), PC = Phone Calls, SN = Specific Notifications.
2. All affected receivers.

Table 9-3 Ground-borne Noise - Additional Mitigation Measures Matrix

Predicted Ground-borne (LAeq, 15min) noise level at receiver		Additional Mitigation Measures	
Perception	dBA above GB NML	Type <sup>1</sup>	Apply to <sup>2</sup>
<b>Approved Hours: Mon - Fri (7am - 6pm), Sat (8am - 6pm), Sun/Pub Hol (Nil)</b>			
N/A	Vibration only applicable during approved hours		
<b>OOHW Period 1: Mon - Fri (6pm - 10pm), Sat (7am - 8am &amp; 6pm - 10pm), Sun/Pub Hol (8am - 6pm)</b>			
Clearly Audible	<10	N	All
Moderately Intrusive	10 to 20	V, N, R1, DR, SN	All
Highly Intrusive	>20	V, IB, N, PC, SN, R1, DR	All
<b>OOHW Period 2: Mon - Fri (10pm - 7am), Sat (10pm - 8am), Sun/Pub Hol (6pm - 7am)</b>			
Clearly Audible	<10	V, N, SN	All
Moderately Intrusive	10 to 20	AltA, V, IB, N, PC, RP, SN, R2, DR	All
Highly Intrusive	>20	AltA, V, IB, N, PC, RP, SN, R2, DR	All

Notes:

1. AltA = Alternative Accommodation, V = Validation of predicted levels, IB = Individual Briefings, N = Notification, R1 = Respite period 1, R2 = Respite Period 2, DR = Duration Respite, PC = Phone Calls, SN = Specific Notifications.
2. All affected receivers.

## 10 Consultation and Notification

### 10.1 External consultation

As per MCoA E69(e) the Planning Secretary will be kept informed of approved low risk out-of-hours works through routine meetings and/or written information from TfNSW. The preferred format will be agreed with DPE.

### 10.2 General consultation

The Communications Team will use a range of communication tools to provide clear, effective and timely information to the predicted affected sensitive receivers and stakeholders. The method of communication will be chosen based on the nature of works and the potential impacts. All community consultation would be carried out in accordance with the Communication Strategy and as required by this Protocol.

Consultation with the affected community will be undertaken which will involve the following measures:

- Receivers potentially affected by known upcoming OOHW will be notified in line with the Community Consultation Strategy
  - Consultation on respite requirements as required under MCoA E83 (as described in Section 8)
- The circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers.
- Best endeavours to notify all noise and/or vibration affected sensitive land user(s) of the likely impact and duration of emergency works undertaken under MCoA E68(a)(ii).
- Notification of noise generating work in the vicinity of non-residential sensitive receivers (including community, religious, educational institutions and noise and vibration-sensitive businesses and medical facilities) resulting in noise levels above the NMLs to identify potential sensitive periods as required under MCoA E72.

### 10.3 Negotiated Agreement

In accordance with CoA E68(c)(iii) variation to working hours may occur following negotiated agreements. Such agreements would allow OOHW to occur outside of the provisions of Respite 1 and Respite 2 or the limitations of two consecutive evenings and/or nights per week, three non-consecutive evenings and/or nights per week, 10 evenings and/or nights per month, for an accelerated program of OOHW thus reducing the overall works period.

To complete works under this pathway, consultation must occur with 'directly affected residents and sensitive land user(s)' to seek agreement in writing to permit the proposed works to proceed. The agreement must detail:

- The proposed works
- Expected impacts in clear, simple English based on noise modelling
- Expected duration of the works
- Any expected benefits for the receivers
- Any other concurrent OOHW that will be occurring
- Any other OOHW that will be occurring on the nights preceding and following the proposed works or, if the proposed work precedes or follows a weekend period, any other OOHW that will be occurring on the weekend.

Agreement must be reached with the majority of potentially affected sensitive receivers, being those which modelling has predicted to be impacted by noise greater than the NML at the time of the works, which will be determined in consultation with the AA and ER on a case-by-case basis.

Negotiated agreements will be undertaken in accordance with the Community Communications Strategy prepared under CoA B1.

### 10.4 Notification requirements

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 CNVG 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.

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.

## 11 OOHW Management

Prior to, and during the OOHW, the AA will verify that the above approach has been followed and advise opportunities for improvement in accordance with MCoA A34(f) and MCoA A34(c), respectively.

Noise and vibration monitoring of OOHW may be required (as identified on the OOHW Permit). In this case, monitoring will be conducted as described in accordance with the Project's Noise and Vibration Monitoring Program (Appendix D2 of the NVMP).

Monitored noise and vibration levels will be analysed against the predictions of the OOHW Permit. Where monitoring identifies exceedances of these predictions, corrective action will be taken immediately, including stop works, review mitigation measures and/or construction activities and revise appropriately.

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

## 12 Reporting

Noise and vibration complaints will be reported in accordance with the Project Communication Strategy.

Construction Monitoring Reports will be prepared and submitted to DPE and relevant regulatory authorities for information, in line with MCoA C21 and as described in the Noise and Vibration Monitoring Program.

The Acoustic Advisor provides a Monthly Noise and Vibration Report detailing the Acoustic Advisor's actions and decisions on matters for which the Acoustic Advisor is responsible, in accordance with MCoA A34(h)(v).