

# Out of Hours Work Protocol

Redfern Station Upgrade – New Southern Concourse

Revision 5 – FINAL

14 December 2020

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**Document control**

**Version control**

| Revision       | Date     | Description                     | Approval |
|----------------|----------|---------------------------------|----------|
| FINAL<br>DRAFT | 30.11.20 | Final draft submission          |          |
| FINAL          | 14.12.20 | Update to address DPIE comments |          |

# Glossary / Abbreviations

| Abbreviations          | Expanded Text                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AA                     | Acoustic Advisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Background noise level | The underlying level of noise present in the ambient noise, when extraneous noise is removed in the absence of noise under investigation. This is described using the $L_{A90}$ descriptor                                                                                                                                                                                                                                                                                       |
| CEMF                   | Construction Environmental Management Framework                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| CNVIS                  | Construction Noise and Vibration Impact Statement                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Monitoring Program     | Construction Noise and Vibration Monitoring Program                                                                                                                                                                                                                                                                                                                                                                                                                              |
| CNMP                   | Construction Noise and Vibration Management Plan Program                                                                                                                                                                                                                                                                                                                                                                                                                         |
| CNVS                   | <i>Construction Noise and Vibration Strategy</i> (TfNSW, 2019)                                                                                                                                                                                                                                                                                                                                                                                                                   |
| CoA                    | Conditions of Approval                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| dB(A)                  | A measure of A-weighted sound levels                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| DPIE                   | Department of Planning, Industry and Environment                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EPA                    | Environment Protection Authority (NSW)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| EP&A Act               | <i>Environmental Planning and Assessment Act 1979</i> (NSW)                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ER                     | Environmental Representative                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ICNG                   | <i>Interim Construction Noise Guideline</i> (DECC, 2009)                                                                                                                                                                                                                                                                                                                                                                                                                         |
| $L_{A1}$               | The A-weighted sound pressure level that is exceeded for 1% of a measurement interval (such as 1 minute, shown as $L_{A1(1\text{minute})}$ )                                                                                                                                                                                                                                                                                                                                     |
| $L_{Aeq}$              | The A-weighted equivalent continuous (energy average) sound pressure level of the construction works under consideration over a defined period (such as 15-minutes, shown as $L_{Aeq(15\text{ minute})}$ ). Other descriptors may be used providing they can be justified as representing the characteristics of the construction noise. Note that during verification monitoring the $L_{Aeq}$ should exclude other sources such as from industry, road, rail and the community |
| $L_{A90}$              | The “Background Noise Level” in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The $L_{Aeq(15\text{ minute})}$ construction noise objectives are based on an allowance margin above the $L_{A90}$ background noise levels, see Rating background noise level definition                                                                                      |
| NCA                    | Noise Catchment Area                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                    |                                                                                                                                                                                                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NML                | Noise Management Level as defined by the NSW EPA and in compliance with the ICNG. NMLs may be referred to as noise objectives in this document                                                                                       |
| OOHW               | Out of Hours Work (work outside the standard hours of construction stipulated in the planning approval conditions)                                                                                                                   |
| POEO Act           | <i>Protection of the Environment Operations Act 1997</i> (NSW)                                                                                                                                                                       |
| REMM               | Revised Environmental Mitigation Measure                                                                                                                                                                                             |
| Secretary          | The Secretary of the New South Wales Department of Planning, Industry and Environment                                                                                                                                                |
| Sensitive receiver | A sensitive receiver may refer to persons, facilities, structures or organisms that can be impacted by noise and/or vibration such as residents, students, specialist medical equipment, heritage structures and marine mammals etc. |
| SSI                | State Significant Infrastructure                                                                                                                                                                                                     |
| TfNSW              | Transport for New South Wales                                                                                                                                                                                                        |
| Vibration          | The term for the perception of continuous, impulsive or intermittent shaking, pulsing or trembling caused by construction activities. Vibration to be measured and assessed as outlined in Appendix A of this strategy               |

# 1 Introduction

## 1.1 Context

This Out of Hours Protocol (Protocol) sets out the process for preparing, considering, assessing, managing and approving work on the Redfern Station Upgrade – New Southern Concourse (the Project) that is undertaken outside of standard construction hours (i.e. Out of Hours) that are subject to the State Significant Infrastructure (SSI) planning approval.

## 1.2 Purpose of this report

This Protocol has been developed to comply with relevant requirements of the SSI Conditions of Approval (CoAs). Table 1-1 indicates where these requirements have been addressed.

**Table 1-1 Out of Hours Work CoA**

| CoA / REMM | Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | How addressed                                                                                                                                                                                                      |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CoA D14    | Work must only be undertaken during the following standard construction hours:<br><br>(a) 7:00 am to 6:00 pm Mondays to Fridays, inclusive;<br>(b) 8:00 am to 6:00 pm Saturdays; and<br>(c) at no time on Sundays or public holidays.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Section 2.1 identifies the standard hours of work in accordance with CoA D14.                                                                                                                                      |
| CoA D15    | Except as permitted by an EPL or an Out-of-Hours Work Protocol (where an EPL does not apply), highly noise intensive Work that results in an exceedance of the applicable noise management level (NML) at the same receiver must only be undertaken:<br><br>(a) between the hours of 8:00 am to 6:00 pm Monday to Friday;<br>(b) between the hours of 8:00 am to 1:00 pm Saturday; and<br>(c) if continuously, then not exceeding three (3) hours, with a minimum cessation of work of not less than one (1) hour.<br><br>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 | Section 2.4 identifies the standard hours for highly noise intensive works in accordance with CoA D15.                                                                                                             |
| CoA D16    | Notwithstanding <b>Condition D14</b> , Work may be undertaken outside the hours specified in the following circumstances:<br><br>(a) for the delivery of materials required by the NSW Police Force or other appropriate authority for safety reasons; or<br>(b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or<br>(c) where the relevant road authority has advised the Proponent in writing that a road occupancy licence will not be issued during the hours specified in <b>Condition D14</b> and the Works are undertaken in accordance with <b>Condition D19</b> ; or                | Section 2.2 addresses clauses a, b, e, g, and h as exemptions to standard working hours, and clause c, d, f is addressed through this Protocol.<br><br>Note that this project will not be undertaken under an EPL. |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                   |
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|         | <p>(d) where the rail authority has advised the Proponent in writing that a Rail Possession is required and approval has been given to complete Work during the rail possession, and the works are undertaken in accordance with <b>Condition D19</b>; or</p> <p>(e) where different construction hours are permitted or required under an EPL in force in respect of the SSI; or</p> <p>(f) where an EPL is not required or in force, Work approved under an <b>Out-of-Hours Work Protocol</b> developed in accordance with <b>Condition D19</b>; or</p> <p>(g) construction that causes:</p> <p>(i) <math>L_{Aeq(15 \text{ minute})}</math> noise levels no more than 5 dB(A) above the rating background level at any residence in accordance with the <i>Interim Construction Noise Guideline</i> (DECC, 2009), and</p> <p>(ii) <math>L_{Aeq(15 \text{ minute})}</math> noise levels no more than the 'Noise affected' noise management levels specified in Table 3 of the <i>Interim Construction Noise Guideline</i> (DECC, 2009) at other sensitive land uses, and</p> <p>(iii) continuous or impulsive vibration values, measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.2 of <i>Assessing Vibration: a technical guideline</i> (DEC, 2006), and</p> <p>(iv) intermittent vibration values measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.4 of <i>Assessing Vibration: a technical guideline</i> (DEC, 2006); or</p> <p>(h) where negotiated agreements with directly affected residents and other sensitive land uses have been reached.</p> <p><i>Note: Section 5.24(1)(e) of the EP&amp;A Act requires that an EPL be substantially consistent with this approval.</i></p> |                                                                   |
| CoA D17 | <p>On becoming aware of the need for emergency work in accordance with <b>Condition D16(b)</b> the Proponent must notify the ER, Planning Secretary and the EPA of the reasons for such work as soon as possible after the works have commenced. The Proponent must use best endeavours to notify all noise and/or vibration affected sensitive receivers of the likely impact and duration of those works as soon as possible after the works have commenced.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Section 2.6 outlines the notification process for Emergency Work. |
| CoA D18 | <p>In order to undertake Work outside the hours specified in <b>Condition D14</b> the Proponent must identify appropriate respite periods for the out-of-hours Work in consultation with the affected community on a regular basis. The consultation on respite periods must include (but not be limited to) providing the community with:</p> <p>a) an indicative schedule of likely out-of-hours Work for a period no less than three (3) months;</p> <p>b) a description of the potential Work, location and duration;</p> <p>c) the noise characteristics and likely noise levels of the Work; and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section 3.5.2 outlines community consultation on respite periods. |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                  |
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|         | <p>d) likely mitigation and management measures to be implemented.</p> <p>The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hours Work must be submitted to the Planning Secretary for information prior to Work scheduled for the subject period being undertaken.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                  |
| CoA D19 | <p>An <b>Out-of-Hours Work Protocol</b> must be prepared to identify a process for the consideration, management and approval of Work which is outside the hours defined in <b>Condition D14</b>, and that is not subject to an EPL. The Protocol must be submitted to the Planning Secretary for approval at least five (5) business days before commencement of out-of-hours works. Out-of-hours work must not be undertaken until the Out-of-hours Work Protocol has been approved. The Protocol must identify Work activities in terms of their risk of adverse impacts on sensitive receivers and include:</p> <ul style="list-style-type: none"> <li>(a) a process for the consideration of out-of-hours Work against the relevant NML and vibration criteria, including the determination of low, medium and high-risk activities;</li> <li>(b) a process for the identification, selection and implementation of mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of <b>Conditions D18 and D20</b>. The measures must take into account the predicted noise and vibration levels and the likely frequency and duration that sensitive receivers would be exposed to residual impacts, including the number of noise-awakening events;</li> <li>(c) 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;</li> <li>(d) an approval process that considers the risk of activities, proposed mitigation, management and coordination of work, including where - <ul style="list-style-type: none"> <li>(i) low risk activities can be approved by the <b>ER</b>, and</li> <li>(ii) medium and high-risk activities can be approved by the ER and the approval submitted to the Planning Secretary for information before the Work commences; and</li> </ul> </li> <li>(e) notification arrangements for affected sensitive receivers and the EPA for all approved out-of-hours Works.</li> </ul> | <p>Section 3.2 and 3.3 outlines relevant NML and vibration criteria, respectively. Including the determination of low, medium and high-risk activities, and the implementation of appropriate mitigation measures.</p> <p>The approval process is outlined in Section 3.4.</p> <p>The notification requirements are included in Section 3.5.</p> |

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|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CoA<br>D20 | <p>D1 Additional mitigation measures such as temporary alternative accommodation, must be offered/ made available to residents affected by out-of-hours Work (including where utility works are being undertaken for the SSI or Work is being undertaken during a rail possession or under a road occupancy licence) where the construction noise levels, between:</p> <ul style="list-style-type: none"> <li>(a) 10:00 pm and 7:00 am, Monday to Friday;</li> <li>(b) 10:00 pm Saturday to 8:00 am Sunday; and</li> <li>(c) 6:00 pm Sunday and public holidays to 7:00 am the following day unless that day is Saturday then to 8:00 am,</li> </ul> <p>are predicted to exceed the NML by 25 dB(A) or are greater than 75 dBA (<math>L_{Aeq}(15 \text{ min})</math>), whichever is the lesser.</p> <p>The NML must be reduced by 5 dB where the noise contains annoying characteristics and increased by 10 dB if the property has received at-property noise treatment. The noise levels and duration requirements identified in this condition may be changed through an EPL applying to the SSI.</p> | Additional mitigation measures are summarised in Table 3-3, in Section 3.2.                                                                                                 |
| CoA<br>D21 | The Proponent must consult with proponents or applicants of other State significant development and infrastructure projects within 200 metres of the SSI and take reasonable steps to coordinate Work, including utility Work, to minimise cumulative noise and vibration impacts and maximise respite for affected sensitive receivers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Consultation and coordination requirements are included in Section 3.6.                                                                                                     |
| CoA<br>D22 | Noise and vibration 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 or vibration levels above the relevant criteria must not be timetabled within sensitive periods, unless other reasonable arrangements with the affected institutions are made at no cost to the affected institution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Consultation requirements are included in Section 3.5                                                                                                                       |
| CoA<br>D23 | <p>All work undertaken for the delivery of the SSI, 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 receivers so that the respite is achieved in accordance with Condition D18 and D20; or</li> <li>b) consider the provision of alternative respite or mitigation to impacted noise sensitive receivers; and</li> <li>c) provide documentary evidence to the ER in support of any decision made by the Proponent in relation to respite or mitigation.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           | Section 3.6 provides further details on the coordination of OOHW to achieve respite and/or alternative mitigation, including providing evidence of any decisions to the ER. |
| CoA<br>D24 | <p>Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria:</p> <ul style="list-style-type: none"> <li>(a) construction 'Noise affected' noise management levels established using the <i>Interim Construction Noise Guideline</i> (DECC, 2009);</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Noise management levels and vibration criteria are included in the Construction Noise and Vibration Management Plan.                                                        |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                    |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p>(b) vibration criteria established using the <i>Assessing vibration: a technical guideline</i> (DEC, 2006) (for human exposure);</p> <p>(c) Australian Standard AS 2187.2 - 2006 “<i>Explosives - Storage and Use - Use of Explosives</i>”;</p> <p>(d) BS 7385 Part 2-1993 “<i>Evaluation and measurement for vibration in buildings Part 2</i>” as they are “applicable to Australian conditions”; and</p> <p>(e) the vibration limits set out in the <i>German Standard DIN 4150-3: Structural Vibration- effects of vibration on structures</i> (for structural damage).</p> <p>Any Work identified as exceeding the noise management levels and/or vibration criteria must be managed in accordance with the <b>Noise and Vibration CEMP Sub-plan</b>.</p> <p><i>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.</i></p> | Additional mitigation measures are summarised in Table 3-1, in Section 3.2.                                                                                                                        |
| CoA D25 | <p>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 <math>L_{Aeq(15 \text{ minute})}</math>: 40 dB(A); and</p> <p>(b) night (10:00 pm to 7:00 am) — internal <math>L_{Aeq(15 \text{ minute})}</math>: 35 dB(A).</p> <p>The mitigation measures must be outlined in the <b>Noise and Vibration CEMP Sub-plan</b>, including in any <b>Out-of-Hours Work Protocol</b>, required by <b>Condition D19</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Mitigation measures for ground borne noise have been included in Section 3.2.                                                                                                                      |
| CoA D26 | <p>Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before Work that generates vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owners and occupiers are to be provided a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the <b>Noise and Vibration CEMP Sub-plan</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                       | Mitigation measures for vibration has been included in Section 3.3. Refer to Construction Noise and Vibration Management Plan for management of structures during vibration generating activities. |
| CoA D27 | <p>The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic and structural damage. In the event that the vibration testing and monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, amend the methodology and/or implement additional mitigation measures to prevent damage.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Mitigation measures for vibration has been included in Section 3.3. Refer to Construction Noise and Vibration Management Plan for management of structures during vibration generating activities. |

**Note: Refer to Attachment A for compliance with relevant REMMMs.**

## **1.3 Protocol Consultation, Endorsement and Approval**

The consultation and the approval requirements of this Protocol are summarised below.

### **1.3.1 Endorsement**

Following determination of the project, the Protocol will be updated in consultation with the Independent Environmental Representative (ER) and Acoustic Advisor (AA).

Endorsement of this Protocol from TfNSW, the AA, and the ER is to be included as attachment to the approved document version.

### **1.3.2 Approval**

In accordance with the Draft CoA D19, work must not be undertaken before approval of the Protocol by the Secretary. This Protocol is to be updated accordingly following determination of the Project and incorporate the relevant requirements of the SSI Conditions of Approval.

Approval of this Protocol is to be attached to the document version approved by the Secretary.

### **1.3.3 Protocol amendments**

Any minor amendments to the Protocol may be approved by the ER and submitted to the Secretary for information. What constitutes a “minor” amendment is subject to the discretion of the ER, but includes changes that:

- Are editorial in nature
- Do not increase the type or magnitude of impact on the environment or community when considered individually or cumulatively
- Do not compromise the ability of the Project to meet approval or legislative requirements.

### **1.3.4 Major protocol amendments**

Any major amendments to the Protocol must be submitted to the Secretary for approval.

## **1.4 Accountabilities**

The Novo Rail Alliance Environment and Sustainability Manager is accountable for this Protocol. Accountability includes monitoring its effectiveness and performing a formal document review.

Roles reporting to the Novo Rail Alliance Environment and Sustainability Manager are accountable for ensuring the requirements of this document are implemented within their area of responsibility. The roles that are accountable for specific projects (e.g. Project Managers) include ensuring associated sub-contractors comply with the requirements of this document.

Roles and responsibilities are outlined in Section 1.6.

## **1.5 Governance**

This Protocol should be read and implemented in conjunction with the following documents:

- Redfern Station Upgrade – New Southern Concourse Construction Environmental Management Framework (CEMF), TfNSW, 2020
- TfNSW Construction Noise and Vibration Strategy (CNVS), TfNSW, 2019
- Construction Noise and Vibration Management Plan (CNVMP)
- Construction Noise and Vibration Impact Statements (CNVIS)

### **1.5.1 Redfern Station Upgrade – New Southern Concourse Construction Environmental Management Framework (CEMF), TfNSW, 2020**

The Construction Environmental Management Framework (CEMF) sets out the environmental, stakeholder and community management requirements for construction. It provides a “road map” and linkage document between the planning approval documentation and the construction environmental management documentation, including this Protocol.

### **1.5.2 TfNSW Construction Noise and Vibration Strategy**

The Project will be implemented in general accordance with the CNVS. Where discrepancies between the SSI Approval and the CNVS exist, this Protocol, which specifically aligns to the project-specific Conditions of Approval, takes precedence over the CNVS where inconsistencies occur.

All relevant Standard and Additional Mitigation Measures of the CNVS will apply to OOHW to minimise impacts to the local community and stakeholders, which are identified within Sections 8.1 and 8.2 of the CNVS. Construction noise mitigation measures must be implemented in accordance with Tables 4, 5, 6 and 7 of the CNVS, regardless of the number of sensitive receivers impacted. Additional Mitigation Measures that specifically relate to OOHW and residual impacts are described in Section 3 of this Protocol.

### **1.5.3 Construction Noise and Vibration Management Sub-plan**

A CNVMP will be prepared in accordance with CoA C6. The CNVMP will provide project specific controls and management process to minimise potential noise and vibration impacts during construction. The CNVMP will include a Noise and Vibration Monitoring Program, required in accordance with CoA C8, which typically outline how noise and vibration monitoring will be undertaken, how the results of monitoring will be reported and procedures to identify and implement additional mitigation measures as necessary.

### **1.5.4 Construction Noise and Vibration Impact Statement(s)**

A CNVIS is a location and activity specific document that provides an assessment of the anticipated noise and vibration impacts at sensitive receivers of proposed construction activities. A CNVIS is to be prepared for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers.

All OOHW, must be supported by a CNVIS or other acoustic assessment prepared in general accordance with the guidance in Section 7 of the CNVS. During development of the CNVIS to support proposed OOHW, the contractor must consider the assessment steps provided in Sections 6, 7 and 8 of the CNVS, including the identification of all applicable mitigation measures such as those required by the CoA, REMMs and the Standard and Additional Mitigation Measures outlined in Section 8.1 and 8.2 of the CNVS. The aim of this assessment is to minimise the impact of noise and vibration on sensitive receivers because of OOHW. It is noted that applied Standard and Additional Mitigation Measures may be modified as a result of community consultation outcomes and detailed in the OOHW Application (see Section 3 for more details).

## **1.6 Roles and Responsibilities**

Key roles and responsibilities associated with this Protocol are summarised in Table 1-2.

**Table 1-2 Roles and responsibilities**

| Role | Responsibility |
|------|----------------|
|------|----------------|

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TfNSW Senior Manger Community Engagement                                       | The TfNSW Senior Manager Community Engagement is responsible for ensuring that all communication requirements with the community are being complied with, including in relation to OOHW.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Novo Rail Community Engagement Manager                                         | The Novo Rail Community Engagement Manager is responsible for the implementation of communication and stakeholder engagement requirements relevant to the Project, including coordination and preparation of community consultation and notifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| TfNSW Senior Manager Environment<br><br>TfNSW Environment and Planning Manager | <p>TfNSW Senior Manager Environment, is responsible for monitoring effectiveness of the Protocol.</p> <p>The TfNSW Environment and Planning Manager reports to the SME and is responsible for monitoring the implementation of this Protocol, and ensuring Novo Rail complies with the requirements of this Protocol.</p> <p>Correspondence with DPIE and EPA will be undertaken by TfNSW Senior Manager Environment or TfNSW Environment and Planning Manager.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Novo Rail Environment and Sustainability Manager                               | <p>Novo Rail Environment and Sustainability Manager, is accountable for this Protocol. Accountability includes monitoring its effectiveness and performing a formal document review. The Novo Rail Environment and Sustainability Manager is accountable for the preparation and implementation of noise and vibration assessments, plans and protocols including:</p> <ul style="list-style-type: none"> <li>• Construction Noise and Vibration Management Sub-plan (CoA C6)</li> <li>• Out-of-Hours Work Protocol (Condition D19)</li> <li>• Construction Noise and Vibration Impact Statements</li> </ul> <p>The Novo Rail Environment and Sustainability Manager(s) is also responsible for implementation of this Protocol, including:</p> <ul style="list-style-type: none"> <li>• Preparation of CNVIS for works proposed outside of the standard hours</li> <li>• Submission of an OOHW application via the TfNSW online OOHW Tool</li> </ul> |
| Environmental Representative                                                   | <p>Condition A25 of the Draft CoA requires an ER to be appointed to the project to represent the NSW Department of Planning, Industry and Environment (DPIE). The ER is to act as the Secretary's independent point of contact for all environmental and planning approval compliance matters.</p> <p>CoA A29 provides a comprehensive list of the ER's responsibilities.</p> <p>This includes consultation of this Protocol, and review and endorsement of OOHW applications submitted in accordance with this Protocol.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Secretary of the NSW Department of Planning, Industry and Environment          | The Secretary is responsible for approval of this Protocol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Acoustic Advisor                                                               | The project has engaged an acoustic advisor who will review and endorse all OOHW applications submitted in accordance with this protocol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## 2 Hours of work

### 2.1 Standard hours of work

Work must only be undertaken during the following standard construction hours:

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

### 2.2 Exemptions to standard working hours

CoA D16 allows works to be undertaken outside of the hours defined in CoA D14 and D15 in the following circumstances:

- a. for the delivery of materials required by the NSW Police Force or other appropriate authority for safety reasons; or
- b. where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or
- c. where different construction hours are permitted or required under an EPL in force in respect of the SSI; or
- d. construction that causes:
  - i. LAeq(15 minute) noise levels no more than 5 dB(A) above the rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009), and
  - ii. LAeq(15 minute) noise levels no more than the 'Noise affected' noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC, 2009) at other sensitive land uses, and
  - iii. continuous or impulsive vibration values, measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.2 of Assessing Vibration: a technical guideline (DEC, 2006), and
  - iv. intermittent vibration values measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.4 of Assessing Vibration: a technical guideline (DEC, 2006); or
- e. where negotiated agreements with directly affected residents and other sensitive land uses have been reached.

Condition D16 allows out-of-hours work to be regulated through this Protocol to include, but are not limited to:

- f. where the relevant road authority has advised the Proponent in writing that a road occupancy licence will not be issued during the hours specified in Condition D14 and the Works are undertaken in accordance with Condition D19; or
- g. where the rail authority has advised the Proponent in writing that a Rail Possession is required and approval has been given to complete Work during the rail possession, and the works are undertaken in accordance with Condition D19; or
- h. where an EPL is not required or in force, Work approved under an Out-of-Hours Work Protocol developed in accordance with Condition D19.

## 2.3 Out of hours work

Work outside of standard construction hours is defined as Out-of-Hours Work (OOHW) and can be divided into two periods of sensitivity, namely 'OOHW Period 1' and 'OOHW Period 2'.

OOHW Period 1 is defined as:

- 6:00pm to 10:00pm Monday to Friday (evening)
- 7:00am to 8:00am (day) and 6:00pm to 10:00pm (evening) on Saturday
- 8:00am to 6:00pm (day) on Sunday and public holidays.

OOHW Period 2 is defined as:

- 12:00am to 7:00am and 10:00pm to 12:00am (nights) Monday to Friday
- 12:00am to 8:00am and 10:00pm to 12:00am (nights) Saturdays
- 12:00am to 8:00am and 6:00pm to 12:00am (nights) Sundays and public holidays.

## 2.4 Highly noise intensive work

Highly noise intensive work is any activity which is defined as annoying under the *Interim Construction Noise Guideline* (DECC, 2009) including:

- (a) use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work;
- (b) grinding metal, concrete or masonry;
- (c) rock drilling;
- (d) line drilling;
- (e) vibratory rolling;
- (f) bitumen milling or profiling;
- (g) jackhammering, rock hammering or rock breaking; and impact piling.

CoA D12 restricts highly noise intensive works that result in exceedances of the applicable NMLs at the same sensitive receiver to the following:

- (a) between the hours of 8:00 am to 6:00 pm Monday to Friday;
- (b) between the hours of 8:00 am to 1:00 pm Saturday; and
- (c) if continuously, then not exceeding three (3) hours, with a minimum cessation of work of not less than one (1) hour.

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.

Highly noise intensive work is only permitted outside of these hours by through this Protocol.

## 2.5 Hierarchy of working hours

Working in the rail environment requires work to be done OOH for the safety of rail and construction workers and to minimise disruptions to customers, pedestrians and motorists. Some of the works would also need to be undertaken during rail possession periods (when trains are not running) to minimise disruption to rail operations and risk to rail worker safety. These shut downs generally occur during standard weekend possessions or overnight between the last and first trains. Examples of works that would be required in possessions and may occur inside or outside standard construction hours include overhead wiring works, provision of cabling for required services, concourse and lift installation and some work on platforms.

To determine when work activities can be done, Novo Rail will consider the safety risk of activities within the rail corridor and select the appropriate OOHW Period based on the hierarchy outlined in the TfNSW CNVS:

1. Sunday and public holiday day periods between 8am and 6pm (Period 1 day)
2. Weekday evening periods between 6pm and 10pm (Period 1 evening)
3. Weekend evening periods between 6pm and 10pm (Saturdays Period 1 /Sundays Period 2)
4. Weekend night periods between 10pm and 8am (Period 2)
5. Work during the weekday evening and night and scheduling the noisiest work first (between 6pm and 10pm) to minimise sleep disturbance impacts in the night period between 10pm and 7am) (Period 1 and Period 2)
6. All other times outside recommended standard hours.

## **2.6 Emergency works**

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

- An emergency (i.e. an unforeseen occurrence; a sudden and urgent occasion for action); and
- Required to avoid injury, loss of life, damage or loss of property or prevent environmental harm.

On becoming aware of the need for emergency work in accordance with Condition D17, the Contractor must notify the TfNSW and the ER of the reasons for such work. This notification should be in the form of a written email or text message to TfNSW and the ER, and follow up phone call or email as required to explain the situation. TfNSW will notify the Planning Secretary and EPA in accordance with Condition D17.

As a form of mitigation, the contractor will use best endeavours to notify all affected sensitive receivers of the likely impact and duration of the emergency works. These notifications will generally be prepared by the contractor using a small hand-completed information card for distribution to properties immediately adjacent to or impacted by the emergency works. These cards should include the following details as a minimum:

- Scope
- Location
- Hours
- Duration
- Types of equipment to be used
- Likely impacts
- The project 24-hour Telephone Contact Number, postal address and email address.

The day after any emergency works, the applicant is to provide a written emergency works report to TfNSW and the ER in accordance with Environmental Incident Classification and Reporting – 9TP-PR-105.

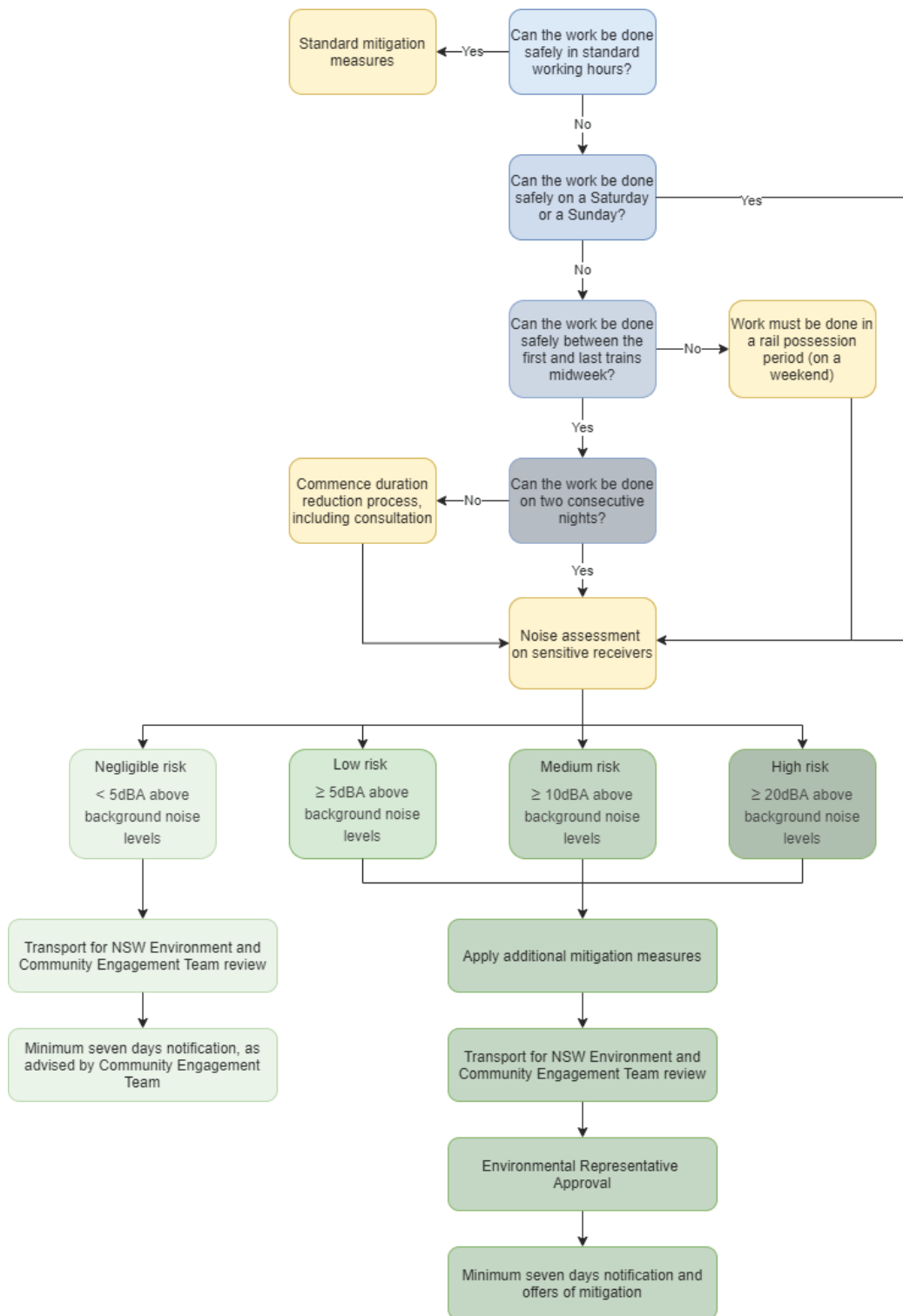
The emergency works report is to include as a minimum:

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

- Review of programmed works schedule following an occurrence of emergency works with the aim of achieving the required standard respite requirements.

## **3 OOHW Protocol**

Figure 3-1 illustrates the OOHW Protocol process, and Sections 3.1 to 3.3 provide further guidance on OOHW assessment, mitigation and approval.



**Figure 3-1 OOHW Protocol Flowchart, subject to approval**

### 3.1 Assessment

The air borne noise, ground-borne and vibration assessment methodology is detailed in the CNVS Section 7.2.5, Table 4. Further details are outlined in Section 3.1.1 and 3.1.2.

### 3.1.1 Noise Assessment

Following consideration of the 'Hierarchy of working hours' in Section 2.5, and OOHW is determined as required with appropriate justification (e.g. based on working safely within the rail corridor and minimising disruption), a CNVIS (or equivalent noise assessment) is to be completed in accordance with Section 7 of the CNVS for the proposed OOHW activities. The assessment will predict the extent of noise impact the construction activities will have on potentially affected sensitive receivers based on inputs of the location and types of construction machinery operating inside a NCA.

Project specific construction noise criteria (noise management levels, NML) and sleep disturbance criteria have been calculated for each NCA within the project area and are summarised in Table 3-1. Construction noise management level criteria for non-residential, commercial and industrial receivers are contained in Table 3-2.

**Table 3-1 Construction noise management levels for the project for residential receivers**

| Noise catchment area | Period  | RBL, $L_{A90}$ dB(A) | Standard hours noise management levels, $L_{Aeq,15min}$ , dB(A) | Out-of-hours noise management levels, $L_{Aeq,15min}$ , dB(A) |
|----------------------|---------|----------------------|-----------------------------------------------------------------|---------------------------------------------------------------|
| 1                    | Day     | 42                   | 52 (75 – highly noise affected level)                           | 47                                                            |
|                      | Evening | 37                   | -                                                               | 42                                                            |
|                      | Night   | 32                   | -                                                               | 37                                                            |
| 2                    | Day     | 41                   | 51 (75 – highly noise affected level)                           | 46                                                            |
|                      | Evening | 39                   | -                                                               | 44                                                            |
|                      | Night   | 35                   | -                                                               | 40                                                            |
| 3                    | Day     | 53                   | 63 (75 – highly noise affected level)                           | 58                                                            |
|                      | Evening | 51                   | -                                                               | 56                                                            |
|                      | Night   | 39                   | -                                                               | 44                                                            |
| 4                    | Day     | 53                   | 63 (75 – highly noise affected level)                           | 58                                                            |
|                      | Evening | 51                   | -                                                               | 56                                                            |
|                      | Night   | 39                   | -                                                               | 44                                                            |
| 5                    | Day     | 44                   | 54 (75 – highly noise affected level)                           | 49                                                            |
|                      | Evening | 44                   | -                                                               | 49                                                            |
|                      | Night   | 37                   | -                                                               | 42                                                            |

**Table 3-2 Construction noise management levels for non-residential, commercial and industrial receivers for the project**

| Land use                                                                                                                                                                                      | Construction noise management level, LAeq (15 min) (applies when properties are in use)                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Classrooms in schools and other educational institutions                                                                                                                                      | 45 dB(A) (Internal noise level)<br>Equivalent to 55 dB(A) (external) with windows open <sup>1</sup>                                  |
| Places of worship                                                                                                                                                                             | Internal noise level 45 dB(A)<br>Equivalent to 55 dB(A) (external) with windows open <sup>1</sup>                                    |
| Active recreation areas characterised by sporting activities and activities which generate their own noise, making them less sensitive to external noise intrusion                            | External noise level 65 dB(A)                                                                                                        |
| Passive recreation areas characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example reading, meditation | External noise level 60 dB(A)                                                                                                        |
| Community centres                                                                                                                                                                             | Depends on the intended use of the centre. Refer to the recommended “maximum” internal levels in AS/NZS 2107:2016 for specific uses. |
| Industrial premises                                                                                                                                                                           | External noise level 75 dB(A)                                                                                                        |
| Offices, retail outlets                                                                                                                                                                       | External noise level 70 dB(A)                                                                                                        |
| Other noise sensitive land uses as identified in AS/NZS 2107:2016                                                                                                                             | Refer to the noise levels in AS/NS 2107:2016 for specific uses.                                                                      |

### 3.1.2 Vibration assessment

An assessment of vibration intensive activities that may impact sensitive receivers or structures will be required for out of hours vibration intensive works. The proposed OOHV activities will be assessed for compliance with safe working distances for:

- cosmetic and/or structural impacts (including safe working distances)
- human comfort impacts due to vibration and ground borne noise.

Assessment will be undertaken in accordance with the safe working distance guide in Table 3-4. The safe working distances presented in Table 3-4 are indicative and will vary depending on the item of plant (particularly its power rating) and local geotechnical conditions. In accordance with CoA D24 measures must be applied when the following residential vibration dosage for assessing human comfort levels are exceeded:

- a) Day/evening (7:00 am to 10:00 pm) –  $VDV_{max}$ :  $0.4 \text{ m/s}^{1.75}$ ; and
- b) Night (10:00 pm to 7:00 am) –  $VDV_{max}$ :  $0.2 \text{ m/s}^{1.75}$

Vibration measurements shall be undertaken in accordance with the procedures documented in the *EPA's Assessing Vibration – a technical guideline* (2006) and *BS7385 Part 2-1993 Evaluation and measurement for vibration in buildings*.

## 3.2 Noise Mitigation

The results of the noise assessment may identify negligible, low, medium or high risk OOHW and trigger the need for additional mitigation measures for nearby sensitive receivers. Depending on the exceedance above typical background noise levels additional mitigation could include, for example, specific notification, verification monitoring, respite periods, respite offers or alternate accommodation in accordance with the TfNSW CNVS. An extract of the TfNSW CNVS detailing the mitigation measures applicable to low, medium and high risk OOHW is provided in Table 3-3.

**Table 3-3 TfNSW CNVS Additional Mitigation Measures (airborne noise)**

| Construction hours                                                                                        | Risk       | dB(A) above RBL | dB(A) above NML | Additional management measures                                      |
|-----------------------------------------------------------------------------------------------------------|------------|-----------------|-----------------|---------------------------------------------------------------------|
| <b>OOHW Period 1</b><br><br>Monday-Friday (6pm -10pm)<br>Saturday (7am-8am, 6pm-10pm)<br>Sunday (8am-6pm) | Negligible | 5 to 10         | <5              | -                                                                   |
|                                                                                                           | Low        | >10 to 20       | 5 to 15         | PN, RP <sup>#</sup> , DR <sup>#</sup>                               |
|                                                                                                           | Medium     | >20 to 30       | >15 to 25       | PN, V, SN, RO, RP <sup>#</sup> , DR <sup>#</sup>                    |
|                                                                                                           | High       | >30             | ≥25             | PN, V, SN, RO, RP <sup>#</sup> , DR <sup>#</sup>                    |
| <b>OOHW Period 2</b><br><br>Monday-Saturday (10pm-7am, 10pm-12am)<br>Sunday/PH (12am-8am, 6pm-12am)       | Negligible | 5 to 10         | <5              | PN                                                                  |
|                                                                                                           | Low        | >10 to 20       | 5 to 15         | PN, V, SN, RO <sup>^</sup> , RP <sup>#</sup> , DR <sup>#</sup>      |
|                                                                                                           | Medium     | >20 to 30       | >15 to 25       | PN, V, SN, RO <sup>^</sup> , RP <sup>#</sup> , DR <sup>#</sup>      |
|                                                                                                           | High       | >30             | ≥25             | PN, V, SN, RO <sup>^</sup> , RP <sup>#</sup> , DR <sup>#</sup> , AA |

Notes:

- PN = Project notification, SN = Specific notification, individual briefings or phone call, V = Verification monitoring, DR = Duration reduction, RP = Respite period, RO = Project respite offer, AA = Alternative accommodation
- <sup>#</sup> Respite periods and duration reduction are not applicable when works are carried out during OOHW Period 1 Day only (i.e. Saturday 6am-7am & 1pm-6pm, Sundays / Public Holidays 8am-6pm)
- <sup>^</sup> Respite offers during OOHW Period 2 are only applicable for evening periods (i.e. Sundays / Public Holidays 6pm-10pm), and may not be required if a respite offer has already been made for the immediately preceding OOHW Period 1.

As per CoA D20, the NML is to be reduced by 5dB(A) when the noise is defined as having annoying characteristics. In accordance with the ICNG the following plant and plant and activities are proven to have annoying characteristics, and therefore the NML will decrease by 5dB(A) during:

- use of 'beeper' style reversing or movement alarms, particularly at night-time. Noting that alternative reversing options should be considered prior to utilising 'beeper' style alarms.
- use of power saws, such as used for cutting timber, rail lines, masonry, road pavement or steel work
- grinding metal, concrete or masonry
- rock drilling

- line drilling
- vibratory rolling
- rail tamping and regulating
- bitumen milling or profiling
- jackhammering, rock hammering or rock breaking
- Impact piling.

### **Ground-borne noise**

In accordance with CoA D25 measures must be applied when the following residential ground-borne noise levels are exceeded:

- a) evening (6:00 pm to 10:00 pm) — internal  $L_{Aeq(15 \text{ minute})}$ : 40 dB(A); and
- b) night (10:00 pm to 7:00 am) — internal  $L_{Aeq(15 \text{ minute})}$ : 35 dB(A).

The ground-borne noise is only applicable when ground-borne noise levels are higher than airborne noise levels. It is not anticipated that ground-borne noise will exceed air-borne noise levels for the Project. Table 10 of the *TfNSW Construction Noise and Vibration Strategy* should be referred to for applicable additional mitigation measures in the circumstances when ground borne noise is predicted to exceed the airborne noise level.

#### **3.2.1 Respite Periods and Duration Reduction**

OOHW will abide by the TfNSW CNVS restriction of no more than 3 consecutive evenings and no more than 2 consecutive nights in any one week so that receivers within the same noise catchment area to provide adequate respite periods between OOHW. A minimum respite period of 4 evenings shall be implemented between periods of evening works and 5 nights shall be implemented between periods of night works.

In cases where there is the need and strong justification to work more than 2 consecutive nights or 3 consecutive evenings, outside of the longer rail possessions, the Construction Contractor may consider Duration Reduction. Duration Reduction is defined in the CNVS as where it may be beneficial to the community to increase the number of consecutive evenings and/or nights to minimise the duration of an activity.

Under the Duration Reduction process impacted receivers will be consulted with regard to the work, locations, timing and any available options and evidence of community support for the Duration Reduction must be provided as justification. A community engagement strategy must be agreed with and implemented in consultation with TfNSW Community Engagement Representatives and the ER.

It is noted that respite periods and the Duration Reduction process shall not be implemented during the longer rail possessions during December 2020 and 2021 which are subject to Sydney Trains scheduling. However, utilising these longer rail possessions is predicted to reduce the overall construction program by 4 to 6 months in total.

### 3.3 Vibration Mitigation

An assessment of vibration intensive activities that may impact sensitive receivers or structures will be required for out of hours vibration intensive works. The proposed OOHW activities will be assessed for compliance with safe working distances for:

- cosmetic and/or structural impacts (including safe working distances)
- human comfort impacts due to vibration and ground borne noise

Assessment will be undertaken in accordance with the safe working distances for vibration intensive plant as a guide in Table 3-4. The safe working distances are only indicative and will vary depending on the item of plant used and the local geotechnical conditions. Vibration levels will vary when measured on site. In accordance with CoA D24 measures must be applied when the following residential vibration dosage for assessing human comfort levels are exceeded:

- c) Day/evening (7:00 am to 10:00 pm) –  $VDV_{max}: 0.4 \text{ m/s}^{1.75}$ ; and
- d) Night (10:00 pm to 7:00 am) –  $VDV_{max}: 0.2 \text{ m/s}^{1.75}$

Vibration measurements shall be undertaken in accordance with the procedures documented in the *EPA's Assessing Vibration – a technical guideline* (2006) and *BS7385 Part 2-1993 Evaluation and measurement for vibration in buildings*.

**Table 3-4 Vibration estimated safe working buffer distances (m)**

| Plant                   | Description | Cosmetic damage |             |            | Human response               |
|-------------------------|-------------|-----------------|-------------|------------|------------------------------|
|                         |             | Heritage        | residential | commercial |                              |
| Jackhammer              | Handheld    | 3 m             | 2 m         | 1 m        | Avoid contact with structure |
| Excavator               | Up to 34t   | 13 m            | 9 m         | 5 m        | 5 – 10 m                     |
| Piling (bored)          | Up to 100t  | 11 m            | 8 m         | 3 m        | 10 m                         |
| Heavy vehicles (trucks) | Up to 50t   | 5 m             | 3 m         | 1 m        | 25 m                         |
| Plate compactor         | Handheld    | 8 m             | 5 m         | 3 m        | 15 – 20 m                    |

### 3.4 Review and Approval

Novo Rail will utilise TfNSW's online OOHW Tool to process all OOHW applications. This allows for transparency and accountability and includes TfNSW and the Acoustic Advisor's review and approval prior to the ER approval.

Risk levels are assigned in accordance with Table 3-3 and are related to the predicted exceedance above NML. D16 allows work to take place out of hours if the noise or vibration levels meet the applicable NML at sensitive receiver locations. However, this Protocol requires that in this instance and when works are assessed to be a negligible risk an OOHW Application is submitted for review by TfNSW, the AA and the ER.

All low, medium and high risk OOHW are to be approved by the ER.

In accordance with CoA D19(d), all medium and high risk OOHW events, approved by the ER, are to be submitted to the Secretary for information before the work commences.

## **3.5 Consultation**

### **3.5.1 Business (and other non-residential)**

The following condition requires construction times (including OOHW) to be established, taking into consideration consultation with affected businesses:

*Noise and vibration 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 or vibration levels above the relevant criteria must not be timetabled within sensitive periods, unless other reasonable arrangements with the affected institutions are made at no cost to the affected institution.*

Any sensitive periods for potentially-affected community, religious, educational institutions and noise and vibration-sensitive businesses will be identified through door knocking, and ongoing consultation with the community during construction. A record will be maintained to identify specific requirements (including sensitive periods) relating to each organisation that may need to be considered during the Project.

Consultation mechanisms will be consistent with those nominated in the Communication Strategy and tailored to the affected community as advised by the Contractor Community Engagement Manager and TfNSW Community Engagement Managers.

### **3.5.2 Community Consultation on Respite Periods**

Notwithstanding the standard respite periods (Section 3.2.1), appropriate work and respite periods must be identified in consultation with the community at three monthly intervals (at a minimum) for the approved out-of-hours work. Condition D18 requires that this consultation must be ongoing and include (but not be limited to) providing the community with:

- a) an indicative schedule of likely out-of-hours work for a period no less than three (3) months;
- b) a description of the potential work, location and duration;
- c) the noise characteristics and likely noise levels of the work; and
- d) likely mitigation and management measures to be implemented.

To meet this condition an indicative three month schedule of likely out-of-hours work will be provided to the community, every three months in the regular monthly notification, commencing December 2020. The community will therefore receive a minimum one month notice of indicative out-of-hours work schedule. The schedule will include description, location and duration of the work. The project contact information will be included, so that the community can contact the project team with any feedback or concerns. Noise characteristics and likely mitigation and management measures to be implemented will be summarised with the schedule. Noise impacts will be assessed and specific mitigation measures (as per Table 3-3) for impacted residents and businesses will be communicated prior to the works commencing.

The outcomes of any feedback received from the community, the identified respite periods and the scheduling of the likely out-of-hour works must be provided to TfNSW, AA, and the ER as part of OOHW Applications. The Planning Sectary will be provided the outcomes prior to work commencing for the three month schedule. For example, outcomes of any feedback for March to May 2021 period will be issued to the Planning Sectary for information by 28 February 2021.

Consultation mechanisms will be consistent with those nominated in the Communication Strategy and tailored to the affected community as advised by the Contractor Community Engagement Manager and TfNSW Community Engagement Managers. The proposed engagement tools for the project include (but are not limited to) a project website, a 24 hour toll-free project information line, information brochures, fact sheets, phone calls, emails, online and face-to-face interaction will be used to achieve the consultation outcomes required and to inform respite preferences in accordance with Condition E37.

### **3.5.3 Community Notification**

Community notifications are used to inform receivers of noise and vibration impacts from OOHW. The community will be notified at least 7 days prior to the works commencing for all low, medium and high risk OOHW. Community notifications usually comprise of letterbox-dropped or hand-distributed notification letters to identified stakeholders prior to the commencement of work. 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. All community notifications will include contact details so members of the community have the opportunity to find out more information, ask questions and provide feedback. Community notification requirements are outlined in the TfNSW CNVS and the Consultation Strategy. Community notifications are to be implemented in accordance with these documents. Community notifications for approved OOHW applications will be provided to the EPA for information.

## **3.6 Coordination**

In accordance with CoA D23, coordination of OOHW will occur to provide respite, minimise the duration and impact on sensitive receivers, and taking into account community consultation. Novo Rail are to coordinate OOHW in a manner that minimises the cumulative noise impacts, considers the outcomes of community and stakeholder consultation, ensures compliance with conditions of approval including mitigation measures and aligns with the best practice management principles of the CNVS. The ER and AA will be consulted on coordination of OOHW. The principles of coordination of OOHW will be:

- Providing respite to impacted sensitive receivers so that standard respite periods of the Conditions of Approval are achieved;
- Consult and advise the AA and ER of decisions relating to respite and mitigation, including any documentary evidence as necessary; and
- Where reasonable and feasible, works shall be coordinated with other construction projects to manage respite in noise catchments, as per Section 3.6.1.

### **3.6.1 Other State significant development and infrastructure projects**

As per CoA21, other state significant development and infrastructure projects within 200 metres of the Project will be consulted with, to ensure reasonable steps are taken to coordinate work, including utility work, to minimise cumulative noise and vibration impacts and maximise respite for affected sensitive receivers.

# Attachment A

| Reference | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | How addressed                                                                                                                                                                                             |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| REMM N1   | <p>A Construction Noise and Vibration Management Sub-Plan (CNVMP) would be prepared as part of the CEMP. The CNVMP would include all feasible and reasonable safeguards to manage noise emissions from the Project. The CNVMP would include, as a minimum, the following:</p> <ul style="list-style-type: none"> <li>• identification of nearby residences and other sensitive land uses</li> <li>• description of approved hours of work and an Out of Hours Protocol</li> <li>• description and identification of all construction activities, including work areas, equipment and duration (and provision for reassessment of noise and vibration impacts if required due to changes)</li> <li>• description of the work practices (generic and specific) that would be applied to minimise noise and vibration</li> <li>• works scheduling to minimise the noise impact on sensitive receivers, with consideration given to cumulative noise impacts (and provision for reassessment of noise and vibration impacts if required due to changes to work stages or other surrounding projects)</li> <li>• a complaints handling process</li> <li>• noise and vibration monitoring procedures, including for heritage-listed items/structures.</li> <li>• overview of community consultation required for identified noise intensive works. The CNVMP and CEMP must be updated as required to account for any changes in noise and vibration management issues and strategies</li> </ul> | <p>Partially addressed - The requirement for an Out of Hours Protocol is achieved in this Protocol. A Construction Noise and Vibration Management Sub-Plan (CNVMP) is being prepared for the Project.</p> |
| REMM N3   | <p>All nearby residents and sensitive receivers impacted by noise levels from the Project which are expected to exceed the NML would be consulted notified prior to the commencement of the particular activity, with the highest consideration given to those that are predicted to be most affected as a result of the works. The information provided to the receivers will include:</p> <ul style="list-style-type: none"> <li>• programmed times and locations of construction work</li> <li>• the hours of proposed works</li> <li>• construction noise and vibration impact predictions</li> <li>• construction noise and vibration mitigation measures being implemented on site.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>Partially addressed - Section 3.5.3 discusses the requirements for notification for OOHV. The CNVMP will identify the receivers.</p>                                                                   |

|         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|         | <p>Community consultation notification and management procedures regarding construction noise and vibration would be detailed in a Community Liaison Management Plan for the construction of the Project and would include a 24 hour hotline and complaints management process.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                           |
| REMM N6 | <p>The CNVMP would be implemented with the aim of meeting the construction noise management levels where feasible and reasonable. The following mitigation measures would be included in the CNVMP:</p> <ul style="list-style-type: none"> <li>• use of at-source noise attenuation around equipment where possible</li> <li>• where feasible and reasonable structures such as site sheds, earth bunds and fencing shall be used to shield residential receivers from noise (e.g. including along appropriate sections of the rail corridor fence line of Little Eveleigh Street and Marian Street, and through the use of 1.8 m high fencing around ancillary facility 3). Site topography shall be considered when situating plant</li> <li>• traffic flow (i.e. vehicle movements, including deliveries), parking and loading/unloading areas would be planned to minimise reversing movements within construction sites</li> <li>• loading and unloading of materials/deliveries would occur as far as possible from sensitive receivers</li> <li>• if site access points and roads are altered during detailed design, they would be selected to be as far as possible away from sensitive receivers within rail corridor access constraints</li> <li>• dedicated loading/unloading areas would be shielded if close to sensitive receivers wherever feasible and reasonable</li> <li>• delivery vehicles would be fitted with straps rather than chains for unloading, wherever possible.</li> <li>• non-tonal reversing beepers would be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work, including delivery vehicles</li> <li>• on-site storage capacity would be maximised to reduce the need for truck movements during sensitive times</li> <li>• the offset distance between noisy plant and adjacent sensitive receivers would be maximised</li> <li>• plant used intermittently would be throttled down or shut down</li> <li>• noise-emitting plant would be directed away from sensitive receivers where feasible and reasonable construction activities allow</li> <li>• the noise levels of plant and equipment must have operating sound power or sound pressure levels as presented in this EIS (Technical report 4 – Noise and vibration) that would meet the predicted noise levels</li> <li>• quieter and less vibration emitting construction methods would be used where feasible and</li> </ul> | <p>Partially addressed - Additional Management Measures for OOHV are outlined in Section 3.2. The CNVMP will address the remainder of this condition.</p> |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p>reasonable (e.g. rubber wheeled instead of steel tracked plant)</p> <ul style="list-style-type: none"> <li>• where practicable, materials would be pre-fabricated and/or prepared off-site to reduce noise with special audible characteristics occurring on site. Materials can then be delivered to site for installation.</li> </ul>                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                               |
| REMM N7  | <p>Work generating noise with special audible characteristics (such as jack hammers, rock breakers, piling rigs and diamond saws) and/or vibration levels would be scheduled during less sensitive time periods for receivers (for example, before 10:00 pm or as determined during community consultation) where feasible and reasonable, and also in accordance with the requirements of the CNVS and CEMF.</p>                                                                                                                                                                                                                                                             | <p>Section 2.4 discusses Highly Noise Intensive Work and the limitations to hours for this work.</p>                                                          |
| REMM N8  | <p>Vehicle movements would be routed away from sensitive receivers and scheduled during less sensitive times where feasible and reasonable. The speed of vehicles would be limited, and the use of engine compression brakes avoided.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>Refer to the CNVMP.</p>                                                                                                                                    |
| REMM N9  | <p>A noise and vibration monitoring program would be carried out for the duration of works in accordance with the CNVS, CNVMP and any approval and licence conditions.</p> <p>Monitoring of noise would be undertaken at appropriate intervals and in response to complaints during construction. In addition, vibration intensive work would not proceed within the site specific minimum working distances unless a permanent vibration monitoring system is installed approximately one metre from the building footprint, to warn operators (e.g. via flashing light, audible alarm, SMS) when vibration levels are approaching the peak particle velocity objective.</p> | <p>Additional Management Measures, including noise monitoring are outlined in Section 3.2. Vibration monitoring requirements are outlined in Section 3.3.</p> |
| REMM N10 | <p>In accordance with the CNVS, additional mitigation measures should would be implemented according to Table 13-22 and Table 13-23 (and Appendix B of Technical report 4 – Noise and vibration) of this EIS for sensitive receivers where noise levels are predicted to exceed applicable criteria</p>                                                                                                                                                                                                                                                                                                                                                                       | <p>Additional Management Measures, including noise monitoring are outlined in Section 3.2, in line with the CEMF OOHV protocol submitted with the RTS.</p>    |

# Attachment B

## Application Details

HB Hannah Barker

Application created date:  
10/12/2020

Activity description \*

Brief description of the works

Contractor \*

Please select...

Contractor Contact Person \*

Please select...

Project id \*

Please select...

Program

-----

Application id

DDHW-1207

### A. Contact details

| Title    | Name | Mobile | Email |
|----------|------|--------|-------|
| No items |      |        |       |

### B. Justification for OOHW and alternatives considered

[+ Add Item](#) [- Delete](#)

Reason

No items

**Note:** Consideration must be given to the following hierarchy of preferred working hours for out of hours works (adapted from draft EPA Construction Noise Guideline 2017), and justification given as to why work cannot be scheduled during preferred periods:

1. **Saturday afternoon (1pm - 6pm)**
2. **Sunday (8am - 6pm)**
3. **Public holidays (8am - 6pm)**
4. **Week day evenings (6pm - 10pm)**
5. **Night times (10pm to 7am weekdays and 10pm to 8am Saturday, Sunday & public holidays)**

Alternatives Considered

### C. Details of work

Location \*

Description of works including activity, methodology and equipment \*

#### D. Proposed dates & time

| Hour commencing | 12:00 AM         | 1:00 AM | 2:00 AM | 3:00 AM | 4:00 AM | 5:00 AM | 6:00 AM | 7:00 AM           | 8:00 AM | 9:00 AM | 10:00 AM | 11:00 AM | 12:00 PM             | 1:00 PM | 2:00 PM                     | 3:00 PM | 4:00 PM          | 5:00 PM | 6:00 PM | 7:00 PM | 8:00 PM | 9:00 PM | 10:00 PM | 11:00 PM |
|-----------------|------------------|---------|---------|---------|---------|---------|---------|-------------------|---------|---------|----------|----------|----------------------|---------|-----------------------------|---------|------------------|---------|---------|---------|---------|---------|----------|----------|
| Monday          | OOHW<br>Period 2 |         |         |         |         |         |         | Standard<br>Hours |         |         |          |          |                      |         | OOHW<br>Period 1<br>Evening |         |                  |         |         |         |         |         |          |          |
| Tuesday         |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |
| Wednesday       |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |
| Thursday        |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |
| Friday          |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |
| Saturday        |                  |         |         |         |         |         |         |                   |         |         |          |          | OOHW Period 1<br>Day |         |                             |         | OOHW<br>Period 2 |         |         |         |         |         |          |          |
| Sunday          |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |
| Public Holiday  |                  |         |         |         |         |         |         |                   |         |         |          |          |                      |         |                             |         |                  |         |         |         |         |         |          |          |

[+ Add item](#) [- Delete](#)

|   | Start date & time | End date & time | Period 1                 | Period 2                 |
|---|-------------------|-----------------|--------------------------|--------------------------|
| 1 |                   |                 | <input type="checkbox"/> | <input type="checkbox"/> |

Description of proposed works during period

#### E. Site characteristics

Site specific characteristics

Features that may affect noise/vibration impacts on surrounding sensitive receivers including orientation of works, existing barriers, reflective surfaces, topography and other non-project related noise sources

Distance from OOHW noise source(s) to nearest sensitive receiver(s)

Dominant noise sources and/or sensitive receivers should be specified individually, if applicable

#### F. Associated impacts of proposed OOHW

[+ Add item](#) [- Delete](#)

Associated impact description

No items

Additional details and/or other associated impacts

## G. Mitigation measures

### 1. Scope specific mitigation measures

Scope specific mitigation measures 

### 2. Additional mitigation measures

 Add item  Delete

Additional mitigation measures 

No items

Additional details

## H. Supporting documents

1. The size of each attachment is limited to 5 Megabytes

2. File types should be limited to the following:

- Text files (Word docs, CSV, PDF etc. )
- Image files (JPEG, TIFF etc)
- Spreadsheets (XLS etc.)

 Noise assessment 

No attachments

Map included in noise assessment? ☐

 Maps 

No attachments

 Community notification (if complete)

No attachments

 Other

No attachments

Cancel

Save

Submit

# MCW Environmental Consulting Pty Ltd

---

mcwenvironmental@bigpond.com.au

17 December 2020

**Attention: Tara Wilcoxon**

Transport for NSW  
7 Harvest Street  
Macquarie Park NSW 2113

Email address: [REDACTED]

**Subject: Environmental Representative Endorsement – Out of Hours Work Protocol;  
Redfern Station Upgrade**

Thank you for providing the Out of Hours Work Protocol for the Redfern Station Upgrade Project which was approved by the Department of Planning, Industry and Environment (DPIE) on 10 December 2020. As requested by Transport for NSW (TfNSW) on 15 December 2020, as the approved Environmental Representative (ER) for the project, I have reviewed the document:

- Out of Hours Work Protocol (OOHW Protocol) Revision 5 – FINAL dated 14 December 2020.

The document and previous versions have been reviewed and updated following comment from the ER, TfNSW's Acoustic Advisor (AA) and DPIE. On the basis of these reviews, the document (Revision 5) is considered suitable to issue to DPIE for their consideration for approval. Pursuant to Section 1.3.1 of the Out of Hours Work Protocol, this letter provides Environment Representative endorsement of the document.

Yours sincerely,



**Michael Woolley**  
Environment Representative for the Redfern  
Station Upgrade

**ENDORSEMENT  
REDFERN STATION ACOUSTIC ADVISOR**

|                       |                                   |                            |                                                                                |
|-----------------------|-----------------------------------|----------------------------|--------------------------------------------------------------------------------|
| <b>Review of</b>      | <b>Out of Hours Work Protocol</b> | <b>Document reference:</b> | Redfern Station Upgrade Out of Hours Work Protocol version 5, 14 December 2020 |
| <b>Prepared by:</b>   | Sav Shimada                       |                            |                                                                                |
| <b>Date of issue:</b> | 15 December 2020                  |                            |                                                                                |

The Redfern Station Upgrade Project was approved by the Department of Planning, Industry and Environment (DPIE) on 10 December 2020.

As requested by Transport for NSW, I as Acoustic Advisor for the Redfern Station Upgrade project have reviewed and provided comment on previous drafts of the Out of Hours Work Protocol. I have now reviewed revision 5 of the Protocol and note that all my comments have been addressed.

I consider that revision 5 of this Protocol is appropriate for approval by the Environmental Representative.



Sav Shimada, Redfern Station Upgrade Acoustic Advisor



**Transport  
for NSW**

# MEMO

**TO:** Eddie Wu  
**FROM:** Justin Perrott  
**CC:** Tara Wilcoxon, Hannah Barker,  
**DATE:** 15 December 2020  
**SUBJECT:** Redfern Station Upgrade: New Southern Concourse - Endorsement of Out of Hours Work Protocol

Eddie,

I refer to the following document as submitted by Novorail for the Redfern Station Upgrade: New Southern Concourse (the Project), as detailed in the following table.

| Document                   | Revision | Date             |
|----------------------------|----------|------------------|
| Out of Hours Work Protocol | Rev 5    | 14 December 2020 |

The Plan has been prepared to address the following planning approvals and has been reviewed by TfNSW.

| Document                                                                                                                                    | Date             |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Infrastructure Approval for Redfern Station Upgrade (SSI 10041), (Minister for Planning and Public Spaces) including Conditions of Approval | 10 December 2020 |
| Redfern Station Upgrade – New Southern Concourse Environmental Impact Statement (Transport for NSW)                                         | May 2020         |
| Redfern Station Upgrade – New Southern Concourse Response to Submissions (Transport for NSW)                                                | September 2020   |
| Redfern Station Upgrade – New Southern Concourse Construction Environmental Management Framework (Transport for NSW).                       | October 2020     |

The document is **endorsed** for Work by TfNSW noting that the Acoustic Advisor and Environment Representative should provide independent endorsements.

Should you have any enquires in relation to this approval and the associated condition, please contact Tara Wilcoxon, Senior Manager, Environment on 0467 888 828 or email at [REDACTED]

Regards,

Justin Perrott,  
 Associate Director, Environmental Management  
 Safety Environment and Regulation  
 Transport for NSW