

# APPENDIX

# E

## Outline Construction Environmental Management Plan

ILLABO TO STOCKINBINGAL ENVIRONMENTAL IMPACT STATEMENT



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# Appendix E CEMP outline

## E.1 Context

Inland Rail operates within the broader ARTC environmental management system. ARTC manages its environmental responsibilities and environmental performance by implementing an environmental management system that is consistent with the principles contained within the ISO 14000 series and standards.

The *Inland Rail Environment and Sustainability Policy* guides the planning, design and implementation of the Inland Rail Program. It outlines the organisation's commitment to effectively manage any risks that may lead to an impact on the environment during construction and operation of Inland Rail.

Consistent with this policy, ARTC has developed a *Construction Environmental Management Framework* to provide for a high standard of environmental performance during construction of all Inland Rail projects. In accordance with the framework, contractors will be required to develop, implement and maintain a construction environmental management plan (CEMP) that meets the requirements of the respective contract, the *Construction Environmental Management Framework* and the conditions of approval for the project. Construction is required to be completed in accordance with the most recent version of the CEMP approved by the relevant administering authority, where required.

## E.2 Outline construction environmental management plan

The management of environmental impacts during construction would be documented in the CEMP, to be prepared by the construction contractor. The CEMP would provide a centralised mechanism through which all potential construction-related environmental impacts will be managed. It would also provide the overall framework for the system and procedures to ensure that environmental impacts are minimised, and that legislative and approval requirements are fulfilled.

The CEMP would include detailed management plans (environmental sub-plans), which would detail how specific environmental issues are to be managed during construction in accordance with the mitigation measures provided in the EIS and the conditions of approval. It would be prepared in accordance with the *Inland Rail Construction Environmental Management Framework* and all relevant approvals for the proposal, and include:

- ▶ environmental obligations
- ▶ all applicable conditions of approval
- ▶ required licences, approvals and permits
- ▶ all applicable environmental assessment mitigation measures
- ▶ environmental aspects and impacts associated with project scope of works
- ▶ allocation and statement of ARTC and contractor obligations
- ▶ environmental management roles and responsibilities
- ▶ coverage of identified risks by environmental controls and mitigations
- ▶ environmental training needs
- ▶ obligations of reporting to ARTC
- ▶ emergency response incident management and non-compliance processes
- ▶ hold point list, as supplied by ARTC
- ▶ complaints and enquiries procedure
- ▶ incident and emergencies procedure
- ▶ document change and version control for the CEMP.

Contractors would develop and document a process of periodically reviewing the CEMP. This process would focus on identifying opportunities for continual improvement of processes and practices to ensure that the CEMP is relevant to contractors' activities. The process would address how legislative changes and environmental incident corrective actions will be addressed via an update to the CEMP. Any changes to the CEMP would be reported as part of contractors' monthly environmental reports.

Contractors would be required to submit a copy of the CEMP to Inland Rail for review prior to submission to regulatory authorities required by the applicable conditions of approval.

## E.2.1 Environmental performance

The management measures detailed in the CEMP would be monitored during construction to confirm their effectiveness and whether any additional measures are required. Site inspections would be regularly undertaken to check and update erosion and sediment control measures, as necessary. Environmental site monitoring would also be undertaken to confirm project impacts and existing environmental values in accordance with monitoring commitments made in this document. The CEMP would provide for an internal compliance monitoring program where the construction contractor would periodically monitor and report on project performance against conditions of approval. Independent external audits would also be carried out in accordance with ISO 19011:2003 *Guidelines for Quality and/or Environmental Management Systems Auditing* every six months.

## E.2.2 Non-conformance and corrective action

For any environmental issues that arise, corrective and preventative actions must be implemented. Corrective and preventative actions might be developed to address issues or initiate environmental management improvement opportunities identified as a result of incidents, inspections and monitoring, and audit findings and other reviews.

The CEMP would document the corrective and preventative action procedures that will be implemented during construction of the project.

## E.2.3 Continual improvement

The CEMP and sub-plans would be reviewed and updated as required in response to audit findings, compliance monitoring results, incidents and inspections that identify corrective and preventative actions. This would include regular management reviews by the construction contractor and an annual review conducted by the contractor as part of the continual improvement process.

## E.2.4 Outline of CEMP sub-plans

The CEMP would comprise a main CEMP document, issue-specific sub-plans, activity-specific procedures and strategies, and site-based control maps. The CEMP, issue-specific sub plans and strategies and plans proposed to manage the impacts identified in the EIS, in accordance with the mitigation measures, are shown in Figure E-1.



FIGURE E-1: CONSTRUCTION PLANS AND STRATEGIES

An outline of the required sub-plans, and a guide to the general construction management measures required in each, is provided in Table E-1. The requirement to prepare these plans is specified by the mitigation measures in relevant EIS chapters, which have been compiled into Chapter 27: Environmental management and mitigation of the EIS, or in Chapter 5 of Appendix I for the workforce accommodation camp assessment. The conditions of approval may require different or additional matters to be addressed in the CEMP or sub-plans.

**TABLE E-1: GENERAL CONSTRUCTION MANAGEMENT MEASURES**

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
<b>1. General</b>	The CEMP would outline the construction conditions and temporary environmental protection measures to manage the impact of construction activities. It would be consistent with the mitigation and management measures documented in this EIS, conditions of the approval, the conditions of any licences or permits issued by government authorities, and ARTC's environmental management system.	Site induction	<p>All employees, contractors and subcontractors would receive an environmental induction, which would include:</p> <ul style="list-style-type: none"> <li>▶ all proposal-specific and standard noise and vibration mitigation measures</li> <li>▶ relevant conditions of licences, approvals, determinations etc.</li> <li>▶ permissible hours of work</li> <li>▶ any limitations on high noise generating activities</li> <li>▶ location of nearest sensitive receivers</li> <li>▶ heritage requirements</li> <li>▶ construction employee areas</li> <li>▶ designated loading/unloading areas and procedures</li> <li>▶ construction traffic routes</li> <li>▶ site opening/closing times (including deliveries)</li> <li>▶ environmental incident procedures.</li> </ul>
		Roles and responsibilities	<ul style="list-style-type: none"> <li>▶ The CEMP would identify all members of the Inland Rail and construction team, including roles and responsibilities relevant to implementation of the CEMP.</li> <li>▶ Contact details would be provided, including contacts in the case of emergencies or incidents as well as out-of-hours contacts.</li> </ul>
		Reporting and communication	<ul style="list-style-type: none"> <li>▶ The CEMP would outline reporting requirements for different levels of environment incidents, as well as the required procedure for emergency and incident management, non-compliance management and corrective and preventative actions.</li> <li>▶ Any additional training requirements would be identified (in addition to the site induction).</li> <li>▶ Reporting requirements would be included, including for the control of environmental records.</li> </ul>
		Monitoring and auditing	<ul style="list-style-type: none"> <li>▶ The CEMP would identify monitoring, auditing and inspecting requirements, and determine the framework for the management of key environmental issues for construction.</li> </ul>
		Environmental control maps	<ul style="list-style-type: none"> <li>▶ The location of sensitive areas (for example heritage items and trees/vegetation to be retained) would be clearly identified on environmental control maps, which would be supplied to construction managers and workers.</li> </ul>
		Working hours and out of recommended standard working hours protocol	<ul style="list-style-type: none"> <li>▶ Permissible working hours and activities would be defined.</li> <li>▶ A protocol for works undertaken outside recommended standard construction working hours (as per Department of Environment and Climate Change, 2009) would be prepared in accordance with the conditions of approval.</li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
2. Soil and water	<p>The soil and water management plan and the groundwater mitigation and management plan would detail how potential impacts on soils, erosion, sedimentation, watercourses and water quality (surface and groundwater) would be mitigated and managed during construction.</p> <p>The plan would consider site-specific conditions including dispersive soils and potential treatment options during construction.</p> <p>The plan would provide for incident management in relation to potential water quality contamination incidents.</p> <p>It would include procedures to manage the impact of the proposal on flooding, and would take into account the requirements of relevant guidelines, including:</p> <ul style="list-style-type: none"> <li>▶ <i>Managing Urban Stormwater: Soils and Construction Volume 1</i> (Landcom, 2004)</li> <li>▶ <i>Managing Urban Stormwater: Soils and Construction Volume 2A: Installation of Services</i> (DECC, 2008)</li> <li>▶ <i>Managing Urban Stormwater: Soils and Construction Volume 2C: Unsealed roads</i> (DECC, 2008)</li> <li>▶ <i>Erosion and sediment control on unsealed roads</i> (OEH, 2012a)</li> <li>▶ <i>Technical Guideline: Temporary stormwater drainage for road construction</i> (RMS, 2011)</li> <li>▶ <i>Waste Classification Guidelines</i> (EPA, 2014a).</li> </ul>	<p>Erosion of exposed soils and sediment management</p>	<ul style="list-style-type: none"> <li>▶ Sediment and erosion control devices would be installed to minimise mobilisation and transport of sediment in accordance with <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004).</li> <li>▶ Maintenance and checking of the erosion and sedimentation controls would be undertaken on a regular basis and any subsequent records retained. Sediment would be cleared from behind barriers/sand bags on a regular basis as required and all controls would be managed to ensure they work effectively at all times.</li> <li>▶ The area of exposed surfaces would be minimised. Disturbed areas would be stabilised progressively to ensure that no areas remain unstable for any extended length of time.</li> <li>▶ Soil and sediment that accumulates in erosion and sediment control structures would be reused where practicable during site reinstatement, unless it is contaminated or otherwise inappropriate for reuse.</li> <li>▶ Work would cease, where practicable, during heavy rainfall events when there is a risk of sediment loss off site or ground disturbance due to waterlogged conditions.</li> <li>▶ Equipment, plant and materials would be placed in designated lay-down areas where they are least likely to cause erosion.</li> <li>▶ Erosion control devices would be removed as part of the final site clean-up. This would include removing any sediment in drainage lines that has been trapped by erosion control devices, and restoring disturbed areas.</li> <li>▶ Exposed surfaces would be stabilised, and final landscaping implemented, as soon as practicable.</li> <li>▶ A dam dewatering protocol would be implemented, including: <ul style="list-style-type: none"> <li>▶ options for reuse of water in the dam</li> <li>▶ licensing and approval requirements, where relevant</li> <li>▶ the quality and quantity of the water to be released, where relevant</li> <li>▶ strategies to minimise impacts on native, threatened or protected species</li> <li>▶ strategies to minimise spread of nuisance flora and fauna species.</li> </ul> </li> </ul>
		Stockpile management	<ul style="list-style-type: none"> <li>▶ Stockpiles would be managed by implementing sediment and erosion control devices in accordance with <i>Managing Urban Stormwater, Soils and Construction</i> (Landcom, 2004).</li> <li>▶ No stockpiles of materials or storage of fuels or chemicals would be located within high/medium flood risk areas or flow paths.</li> </ul>



Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
		Spill/incident management	<ul style="list-style-type: none"> <li>▶ Spill kits would be maintained onsite at all times.</li> <li>▶ Machinery would be checked daily to ensure that no oil, fuel or other liquids are leaking.</li> <li>▶ Refuelling of plant and equipment would be undertaken within designated areas with appropriate controls.</li> <li>▶ Visual monitoring of local water quality (such as turbidity, hydrocarbon spills/slicks) would be undertaken on a regular basis to identify any potential spills.</li> <li>▶ Vehicle wash down and/or cement truck washout would occur in a designated bunded area or offsite.</li> </ul>
		Groundwater	<ul style="list-style-type: none"> <li>▶ Any groundwater encountered during construction would be managed and disposed of in accordance with the <i>Waste Classification Guidelines</i> (EPA, 2014a). Groundwater would be managed to ensure it does not cause pollution of waters in accordance with section 120 of the <i>Protection of the Environment Operations Act 1997</i> (POEO Act).</li> <li>▶ If dewatering is required during construction, the water would be tested, and treated if necessary, prior to re-use, discharge or disposal in accordance with the testing results.</li> </ul>
3. Contamination and hazardous materials	<p>A contaminated land and hazardous materials plan would detail how potential and actual contaminated soils and materials would be managed during construction to minimise the potential for significant on and off-site impacts. It would include the listed management measures.</p> <p>Construction hazard and risk issues associated with the use and storage of hazardous materials would be addressed through risk management measures developed in accordance with relevant Department of Planning and Environment (DPE) guidelines, Australian and ISO standards.</p> <p>The plan would take into account the requirements of relevant legislation and guidelines, including:</p> <ul style="list-style-type: none"> <li>▶ POEO Act and the <i>Waste Avoidance and Resource Recovery Act 2001</i></li> <li>▶ <i>Waste Classification Guidelines</i> (EPA, 2014a)</li> <li>▶ <i>National Environment Protection (Assessment of Site Contamination)</i></li> </ul>	Hazardous materials	<ul style="list-style-type: none"> <li>▶ Any hazardous materials that are to remain onsite would be surveyed and recorded on a hazardous building material register. A risk assessment would be undertaken and a management plan implemented, including any remediation measures. The register and management plan would be maintained and updated in accordance with the relevant WorkCover codes of practice.</li> <li>▶ Where required, any materials classified as Hazardous Waste would be treated, or an immobilisation approval obtained, in accordance with Part 10 of the Protection of the Environment Operations (Waste) Regulation 2014 prior to offsite disposal.</li> <li>▶ In the event synthetic material fibres are found on site, they would be handled and disposed of in accordance with the <i>National Code of Practice for the Safe Use of Synthetic Mineral Fibres</i> (National Occupational Health and Safety Commission, 1990).</li> <li>▶ The storage of hazardous materials, and refuelling and maintenance of construction plant and equipment, would be undertaken in clearly marked designated areas that are designed to contain spills and leaks.</li> <li>▶ The storage of hazardous materials and dangerous goods would be undertaken in accordance with all relevant Australian Standards and regulatory requirements.</li> <li>▶ Fuels, chemicals and liquids would be appropriately stored, in accordance with the following requirements: <ul style="list-style-type: none"> <li>▶ would be stored on an impervious base that must be able to withstand fuel or chemical spills without degradation</li> <li>▶ the fuels and chemicals stored must be compatible (i.e. will not react with each other)</li> <li>▶ the safety data sheets would be consulted</li> </ul> </li> </ul>



Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
	<p><i>Amendment Measure 2013 (No. 1)</i> (NEPM) (National Environment Protection Council, 2013)</p> <ul style="list-style-type: none"> <li>▶ WorkCover NSW</li> <li>▶ AS 1940-2004: <i>The Storage and Handling of Flammable and Combustible Liquids</i> (Standards Australia, 2004)</li> <li>▶ AS 3780-2008: <i>The Storage and Handling of Corrosive Substances</i> (Standards Australia, 2008)</li> <li>▶ Dangerous Goods (Storage and Handling) Regulation 2012.</li> </ul>		<ul style="list-style-type: none"> <li>▶ for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume, within the bund</li> <li>▶ the storage facility would be undercover</li> <li>▶ all containers would be labelled with the details of the contents</li> <li>▶ safety data sheets would be available at the site</li> <li>▶ the storage facility would be inspected for compliance to the above requirements.</li> <li>▶ Spill kits would be kept at fuel, oil and chemical storage locations.</li> <li>▶ The removal, handling and disposal of any asbestos containing materials would be undertaken by an appropriately licensed contractor, and in accordance with: <ul style="list-style-type: none"> <li>▶ Code of Practice for the Safe Removal of Asbestos 2005</li> <li>▶ Code of Practice for the Management and Control of Asbestos in Workplaces 2005.</li> </ul> </li> </ul>
		Incident management	<ul style="list-style-type: none"> <li>▶ Spill kits, appropriate for the type and volume of hazardous materials stored or in use, would be readily available and accessible to construction workers.</li> <li>▶ All hazardous materials, spills and leaks would be reported to site managers, and actions would be immediately taken to remedy spills and leaks.</li> <li>▶ Training in the use of spill kits would be given to all personnel involved in the storage, distribution or use of hazardous materials.</li> <li>▶ Incidents would be managed in accordance with the conditions of approval for the proposal.</li> </ul>
		Unexpected finds	<ul style="list-style-type: none"> <li>▶ An unexpected finds procedure would be prepared and included in the CEMP to assist with the identification, reporting, assessment, management, health and safety implications, remediation, and/or disposal (at an appropriately licensed facility) of any potentially contaminated soil and/or water. This would include specifying appropriate reporting requirements in accordance with the <i>Guidelines to the Duty to Report Contamination</i> under the <i>Contaminated Land Management Act 1997</i> (EPA, 2015).</li> <li>▶ In the event that indicators of contamination are encountered during construction (such as odours or visually contaminated materials), work in the affected area would cease immediately, and the procedures detailed in the Unexpected Finds Protocol would be implemented. Unexpected soil contamination could include: <ul style="list-style-type: none"> <li>▶ unexpected staining or odours</li> <li>▶ potential asbestos containing materials</li> <li>▶ underground storage tanks, buried drums or machinery, etc.</li> </ul> </li> <li>▶ The unexpected finds procedure would include the following general approach: <ul style="list-style-type: none"> <li>▶ site workers would make the area safe, stop work, and notify the construction supervisor, who would quarantine/fence the area, notify staff onsite and the project manager</li> </ul> </li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
			<ul style="list-style-type: none"> <li>▶ the project manager or their representative would notify an appropriately qualified environmental consultant who would carry out an assessment of the nature and extent of the unexpected contamination</li> <li>▶ remediation would be undertaken as required and as advised by the environmental consultant</li> <li>▶ works may only recommence at the site after approval has been obtained by the environmental consultant and the project manager</li> <li>▶ validation of the remediation would be carried out to assess the success of the remediation works.</li> </ul>
		General contamination management	<ul style="list-style-type: none"> <li>▶ Awareness training would be provided for all onsite staff to assist in the identification of potentially contaminated material.</li> <li>▶ Machinery would be checked daily to ensure that no oil, fuel or other liquids are leaking.</li> <li>▶ Refuelling of plant and equipment would be undertaken within a designated refuelling point.</li> </ul>
<b>4. Traffic, transport and access</b>	<p>The traffic, transport, and access management plan would detail how traffic, public transport and access would be managed during construction to minimise the potential for significant impacts.</p> <p>It would include measures relating to construction vehicle and traffic movements, parking and access requirements for construction personnel, safety signage, and training of personnel in traffic management.</p> <p>It would cover all construction zones and worksites, including the construction compounds and workforce accommodation camp.</p>	Construction site traffic	<ul style="list-style-type: none"> <li>▶ Traffic and access would be managed in accordance with <i>Traffic Control at Work Sites</i> (NSW RMS, 2018a) and in consultation with NSW Roads and Maritime Services (RMS), and local councils.</li> <li>▶ Adequate road signage would be provided to inform drivers of the work, timing and alternative access arrangements.</li> <li>▶ Measures to manage traffic flows around the area affected by construction would be provided, including required regulatory and directional signposting, line marking, variable message signs, and all other necessary traffic control devices.</li> <li>▶ The plan would specify routes to be used by heavy construction-related vehicles to minimise impacts on sensitive land uses and the local community.</li> <li>▶ Construction vehicles would park within the construction compound where practicable.</li> <li>▶ The timing of deliveries accessing the site would be programmed to ensure there is sufficient space within the proposal site to accommodate deliveries.</li> <li>▶ The queuing and idling of construction vehicles would be minimised.</li> <li>▶ Designated queuing and idling areas would be determined near the work site to minimise disruption to the local community.</li> <li>▶ Adequate sight lines would be provided to allow for safe entry and exit from the construction sites.</li> <li>▶ Access to all private properties adjacent to the proposal site would be maintained during construction, unless otherwise agreed with relevant property owners.</li> <li>▶ Councils, RMS, and emergency services would be liaised with at an early stage to establish requirements and measures to be adopted to maintain emergency vehicle movements.</li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
			<ul style="list-style-type: none"> <li>▶ Contractors, including transport/deliveries contractors, would be provided with a copy of the traffic, transport and access management sub-plan to ensure disruptions to the local community are minimised.</li> </ul>
		Pedestrian and cyclists	<ul style="list-style-type: none"> <li>▶ The plan would include measures to maximise safety and access for pedestrians and cyclists, including details of alternative access arrangements.</li> <li>▶ Adequate road signage would be provided to inform pedestrians of the work, and ensure that the risk of accidents and disruption to surrounding land uses is minimised.</li> <li>▶ Adequate road signage would be provided to inform pedestrians and cyclists of the work, timing and alternative access arrangements.</li> <li>▶ Appropriate controls would be established where vehicles are required to cross footpaths to access construction sites. This may include manual supervision, physical barriers or temporary traffic signals as required.</li> </ul>
<b>5. Noise and vibration</b>	<p>The construction noise and vibration management plan would detail how potential noise and vibration impacts would be mitigated and managed during construction. The plan would include the listed management measures.</p> <p>Where the noise and vibration levels are predicted to exceed the criteria after implementation of the general work practices, the additional mitigation measures detailed in the <i>Inland Rail NSW Construction Noise and Vibration Management Framework and Inland Rail Noise and Vibration Strategy</i> would be implemented.</p> <p>The requirements of relevant standards and guidelines, including <i>AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites</i> (Standards Australia, 2010) and the <i>Interim Construction Noise Guideline</i> (Department of Environment and Climate Change, 2009) would be addressed.</p> <p>The plan would also include reference the working hours protocol (item 1) and the complaints management procedures specified in the communication and complaints management plan (refer to item 8).</p>	Notification and behaviour	<ul style="list-style-type: none"> <li>▶ Notification undertaken during construction would inform relevant stakeholders of the work locations and timing, and the potential for noise impacts.</li> <li>▶ Construction sites and compounds located within 200 metres of sensitive receivers would be managed to minimise noise generating activities, including unnecessary shouting, loud stereos/radios, dropping of materials from height, throwing of metal items, and slamming of doors, particularly at the start and finish of shifts.</li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
		Construction hours and scheduling	<ul style="list-style-type: none"> <li>▶ The relevant noise and vibration criteria would be defined.</li> <li>▶ For work undertaken in the vicinity of receivers where 'highly noise affected' impacts are predicted: <ul style="list-style-type: none"> <li>▶ high noise and vibration generating activities would only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block</li> <li>▶ no more than four consecutive nights of high noise and/or vibration generating work would be undertaken over any seven day period, unless otherwise approved by ARTC.</li> </ul> </li> </ul>
		Equipment and plant	<ul style="list-style-type: none"> <li>▶ Quieter and less vibration emitting construction methods would be used where reasonable and feasible.</li> <li>▶ The noise levels of plant and equipment would have operating sound power or sound pressure levels that comply with the required criteria.</li> <li>▶ Simultaneous operation of noisy plant within range of sensitive receivers would be avoided.</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.</li> <li>▶ Stationary noise sources (such as pumps, compressors, fans etc.) would be enclosed or shielded while ensuring that the health and safety of workers is maintained.</li> <li>▶ Consider site topography when situating plant and use structures (such as site shed placement, earth bunds, fencing, noise barriers) to shield receivers from noise.</li> </ul>
		Traffic flow and deliveries	<ul style="list-style-type: none"> <li>▶ For construction sites located near sensitive receivers, plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.</li> <li>▶ Loading and unloading of materials/deliveries would occur as far as possible from sensitive receivers, and preferably during standard construction hours.</li> <li>▶ Site access points and roads would be selected to minimise impacts on sensitive receivers.</li> <li>▶ Where practicable, delivery vehicles would be fitted with straps rather than chains for unloading.</li> </ul>
		Measuring and monitoring	<ul style="list-style-type: none"> <li>▶ Blasting noise and ground vibration limits would be included and monitoring undertaken.</li> <li>▶ Attended vibration measurements would be undertaken at the commencement of vibration generating activities located in close proximity to sensitive receptors to confirm that vibration levels are within the acceptable range to minimize the risk of cosmetic building damage.</li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
		Vibration	<ul style="list-style-type: none"> <li>▶ Additional vibration and noise monitoring may be required in response to complaints.</li> <li>▶ Where construction is required within the safe working buffer distance, alternative work methods would be considered, such as the use of smaller equipment. If no alternative work method is feasible or reasonable, then compliance vibration monitoring would be undertaken.</li> <li>▶ Trial vibration testing would be undertaken as required, prior to undertaking any high vibration activities. Trials would be undertaken in non-sensitive areas and at a range of distances from the source. The results of the trial monitoring would be compared against predicted vibration levels and the potential for impact refined, if deemed appropriate.</li> <li>▶ The trial period may also be used to determine the effectiveness of source-based mitigation measures, such as changing and operating speed of the vibratory roller to generate a higher frequency of vibration, which may allow for a higher vibration threshold at the structure.</li> <li>▶ For identified properties within buffer distances, or where pre-construction monitoring indicates that vibration levels from construction activities would exceed the target levels, a dilapidation survey of potentially affected structures would be undertaken to enable post-construction verification.</li> </ul>
<b>6. Heritage (Aboriginal and non-Aboriginal)</b>	<p>The Aboriginal heritage management plan would detail how potential impacts on heritage would be mitigated and managed during construction.</p> <p>The plan would be prepared in consultation with relevant agencies and Aboriginal groups for management of Aboriginal heritage, and any previously unidentified items/areas of potential heritage significance identified during construction.</p> <p>It would incorporate the results of archaeological subsurface testing, salvage methodology and an unexpected finds procedure.</p> <p>The unexpected finds procedure would define requirements relating to potential human skeletal remains, in accordance with relevant guidelines, including:</p> <ul style="list-style-type: none"> <li>▶ <i>Policy Directive: Exhumation of Human Remains</i> (NSW Health, 2013)</li> <li>▶ Manual for the identification of Aboriginal remains (DEC, 2006c)</li> </ul>	General—built and non-Aboriginal heritage	<ul style="list-style-type: none"> <li>▶ All identified items within and in the immediate vicinity of the proposal site would be marked on the environmental control maps, site plans, fenced off where appropriate, and avoided.</li> <li>▶ The detailed construction methodologies would take into account mapped heritage items.</li> <li>▶ Heritage requirements would be included in the site induction.</li> </ul>

Item/sub-plan	What the plan would address	Issue	Management measures to be included in the CEMP and implemented during construction
	<p>► Skeletal Remains: Guidelines for Management of Human Skeletal Remains (NSW Heritage Office, 1998).</p> <p>It would incorporate the results of archaeological subsurface testing and an unexpected finds procedure.</p> <p>All workers will undergo cultural heritage awareness training, which would incorporate both Aboriginal and non-Aboriginal heritage awareness training including the non-Aboriginal heritage items listed in the mitigation measures.</p>		
		Aboriginal heritage	<p>► The plan would be prepared in consultation with registered Aboriginal parties, incorporate the recommendations of the Aboriginal Cultural Heritage Assessment of the proposal, the mitigation measures provided in Chapter 27: Environmental management and mitigation, and the outcomes of any further investigations following detailed design.</p>
		Unexpected finds	<p>► An unexpected finds procedure would be developed and included in the CEMP to provide a consistent method for managing any unexpected heritage items (both Aboriginal and non-Aboriginal) discovered during construction, including potential heritage items or objects, and human skeletal remains.</p> <p>► The procedure would define responsibilities, tasks, reporting requirements, and relevant guidelines and requirements. It would include:</p> <ul style="list-style-type: none"> <li>► if previously unidentified Aboriginal or non-Aboriginal heritage/archaeological items, relics, burial sites or potential human skeletal remains are uncovered during construction works, all works in the vicinity of the find will cease and ARTC would be notified</li> <li>► an appropriate buffer area would be established around the find</li> <li>► appropriate advice would be sought from a suitably qualified heritage consultant/archaeologist (and in consultation with the relevant division of the Department of Planning and Environment, as required)</li> <li>► works in the vicinity of the find would not re-commence until clearance has been received from the heritage consultant/archaeologist and ARTC.</li> </ul> <p>► Procedures and notification requirements for potential human remains in accordance with relevant guidelines.</p>
<b>7. Visual amenity</b>	The urban design and landscape plan would provide measures to minimise the potential impacts of the proposal during construction.	General worksite management	<p>► Work sites would be maintained in a clean and tidy condition at all times.</p> <p>► Temporary hoardings, barriers, traffic management and signage would be removed when required.</p> <p>► On completion of construction, all work sites and other land occupied temporarily would be rehabilitated in accordance with the rehabilitation strategy.</p>

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		Lighting	<ul style="list-style-type: none"> <li>▶ Directional lighting would be mounted to avoid light spill into adjoining residences.</li> <li>▶ Lighting would be installed and maintained in accordance with AS 4282-2019: <i>Control of the Obtrusive Effects of Outdoor Lighting</i> (Standards Australia, 2019a).</li> </ul>
<b>8. Communication management plan</b>	<p>The communication management plan would provide guidance for the management of communication and consultation during the construction period, including objectives of consultation, stakeholders, contact mechanisms, and protocols.</p> <p>It would be consistent with the consultation plan developed by ARTC, as described in Chapter 4: Engagement.</p> <p>The plan would also include implementation and maintenance of a complaints register and complaints handling and escalation procedures, consistent with ARTC requirements.</p>	Communication and complaints	<ul style="list-style-type: none"> <li>▶ Contact details for a 24-hour project response line and email address would be provided for ongoing stakeholder contact throughout the construction period.</li> <li>▶ Provision of accurate public information signs while work is in progress.</li> <li>▶ Staging of works would be undertaken to minimise disruption, in consultation with relevant stakeholder groups, to minimise impacts to community activities and functions.</li> <li>▶ Relevant stakeholders would be notified regarding service disruptions in accordance with the communication management sub-plan.</li> <li>▶ Complaints would be managed according to the following procedure: <ul style="list-style-type: none"> <li>▶ details of all complaints received will be recorded</li> <li>▶ a detailed written response will be provided to the complainant within 14 calendar days.</li> </ul> </li> </ul>
<b>9. Social impact</b>	The social impact management plan (SIMP) would establish a plan for monitoring and managing the proposal's social performance.	Social impacts	<ul style="list-style-type: none"> <li>▶ The management of social impacts during construction would be consistent with the SIMP measures that address, but are not be limited to workforce management, industry participation, housing and accommodation, community health and wellbeing, and appropriate community and stakeholder engagement.</li> </ul>
<b>10. Biodiversity management</b>	<p>The biodiversity management plan would detail how construction impacts on aquatic and terrestrial flora and fauna would be mitigated, managed and monitored.</p> <p>The plan will be supported by the rehabilitation strategy and fauna connectivity strategy.</p>	Vegetation management	<ul style="list-style-type: none"> <li>▶ Employee education and training including inductions for staff, contractors and visitors to the site would include the biodiversity issues present at the site and so they know their role and responsibilities in relation to the protection and/or minimisation of impacts to native biodiversity.</li> <li>▶ The CEMP and construction plans would clearly document the location and full extent of clearing required.</li> </ul>
		Management of trees to be retained	<ul style="list-style-type: none"> <li>▶ The management of trees in the vicinity of the construction zone would be consistent with the AS 4970-2009 <i>Protection of trees on development sites (incorporating Amendment No. 1 (March 2010))</i> (Standards Australia, 2009b).</li> </ul>
		Pre-clearance surveys—woody native vegetation	<ul style="list-style-type: none"> <li>▶ Pre-clearance surveys would be implemented within areas of woody native vegetation that are to be cleared. Pre-clearance surveys will be undertaken by suitably qualified and experienced ecologists and involve: <ul style="list-style-type: none"> <li>▶ the demarcation of areas approved for clearing to reduce risk of accidental clearing/disturbance of surrounding native vegetation</li> <li>▶ the likely habitat resources and habitat trees would be identified and marked. Habitat trees are those containing hollows, cracks or fissures and spouts,</li> </ul> </li> </ul>



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			<p>active nests, dreys or other signs of recent fauna usage. Other habitat features to be identified include fallen timber/hollow logs and burrows</p> <ul style="list-style-type: none"> <li>▶ the potential presence of threatened flora and fauna species, endangered populations and threatened ecological communities would be identified</li> <li>▶ the identification of species or habitat features that are suitable for translocation or salvage</li> <li>▶ in areas of koala habitat, visual inspection of trees for koalas prior to clearing.</li> </ul>
	Pre-clearance surveys—bridges and culverts (micro-bats)		<ul style="list-style-type: none"> <li>▶ Pre-clearance surveys would be implemented on the day prior to the disturbance of culverts with the potential to provide roosting habitat for micro-bats, and would involve: <ul style="list-style-type: none"> <li>▶ Recording: <ul style="list-style-type: none"> <li>▶ roosting species (if identifiable)</li> <li>▶ count/estimate of the number of roosting individuals</li> <li>▶ location and time of relocation (if applicable) or other actions taken to discourage the roosting of micro-bats.</li> </ul> </li> </ul> </li> <li>▶ If roosting bats are identified, the bats would be left undisturbed until dusk. At dusk, roosting bats can be captured and released at a location to be agreed during preclearance surveys.</li> <li>▶ Following removal or departure of all roosting bats, crevices would be removed or blocked off (for example, by covering the entrance with shade cloth).</li> </ul>
		Tree felling	<ul style="list-style-type: none"> <li>▶ Tree clearing would be completed as close to the completion of pre-clearance surveys as practicable and would include:</li> <li>▶ All habitat trees would be vigorously shaken with heavy machinery the day prior to clearing.</li> <li>▶ On the day of habitat tree felling, the following would be undertaken: <ul style="list-style-type: none"> <li>▶ all habitat trees would be subject to a visual inspection for threatened species</li> <li>▶ all reasonable attempts would be made to reduce the impact of felling on all fauna species</li> <li>▶ the lowering of hollow-bearing trees would be done as gently as possible with heavy machinery</li> <li>▶ if a native fauna species is identified in a habitat tree on the day of felling, the supervising ecologist or appropriately qualified fauna handler would advise the most appropriate method to minimise potential harm</li> <li>▶ uninjured animals would be released on the day of capture into nearby suitable secure habitat and would not be held for extended periods of time</li> <li>▶ injured animals would be taken to the nearest veterinary clinic or wildlife carer as soon as possible for assessment and treatment.</li> </ul> </li> </ul>

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			<ul style="list-style-type: none"> <li>▶ Following felling, habitat trees would be inspected for remaining or injured fauna species and to ensure that no hollows are blocked against the ground. This may require the tree to be rolled to ensure adequate access.</li> <li>▶ All felled habitat trees would remain in place for a least one night to allow any fauna still present to move on.</li> </ul>
		Aquatic ecology	<ul style="list-style-type: none"> <li>▶ Works within the riparian zone would maximise, where practicable, the preservation of any existing vegetation and minimise disturbance.</li> <li>▶ Designs for works within or near watercourses would provide for the retention of natural functions and maintenance of fish passage in accordance with <i>Why do fish need to cross the road? Fish passage requirements for waterway crossings</i> (Fairfull and Witheridge, 2003).</li> <li>▶ Management of sediment that has accumulated upstream to avoid sediment mobilisation.</li> <li>▶ Any large woody debris in the development footprint would be relocated upstream or downstream in consultation with an appropriately qualified specialist.</li> </ul>
		Dewatering of dams	<ul style="list-style-type: none"> <li>▶ A dewatering procedure would be included, detailing methods for collection and relocation of protected fish and euthanasia of pest species.</li> <li>▶ Any pools in watercourses that would be impacted by construction would be dewatered according to the dewatering procedure.</li> </ul>
<b>11. Biosecurity management</b>	The biosecurity management plan would provide the procedures and protocols to minimise spread of weeds throughout the proposal.	Weed management	<ul style="list-style-type: none"> <li>▶ Weeds would be managed and disposed of in accordance with the requirements of the <i>Noxious Weeds Act 1993</i> and/or the <i>Weeds of National Significance Weed Management Guide</i> (DEE, 2019b).</li> <li>▶ Weed control mitigation and management strategies would be documented and implemented: <ul style="list-style-type: none"> <li>▶ vehicles or equipment being brought onto the proposal site and/or travelling around the site must be inspected and cleaned prior to commencing work to limit the spread of seeds and plant material</li> <li>▶ regular inspections to monitor the spread of weed species</li> <li>▶ training of environmental personnel on the identification of target weed species.</li> </ul> </li> <li>▶ Any outbreak of noxious weeds will be controlled and eradicated as required under the <i>Noxious Weeds Act 1993</i>, and as required by the Local Land Services and other relevant authorities. Weed control and eradication techniques may include: <ul style="list-style-type: none"> <li>▶ spraying with herbicides</li> <li>▶ physical removal for example chipping</li> <li>▶ minimisation of area available for weed infestation, through prompt revegetation of bare areas.</li> </ul> </li> </ul>
<b>12. Air quality and dust</b>	The air quality management plan would detail how potential impacts on air quality	Dust suppression—construction works	<ul style="list-style-type: none"> <li>▶ Shade cloth would be fastened to the perimeter fence on the proposal site where construction is being undertaken within 100 m of sensitive receptors to minimise dust transported from the site during construction.</li> </ul>

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	would be mitigated and managed during construction.		<ul style="list-style-type: none"> <li>▶ Dust generation would be monitored visually, and where required, dust control measures such as water spraying would be implemented to control the generation of dust.</li> <li>▶ Dust suppressants would be applied to stockpiled dirt if the pile is inactive for extended periods.</li> <li>▶ Access points would be inspected to determine whether sediment is being transferred to the surrounding road network. If required, sediment would be promptly removed from roads to minimise dust generation.</li> <li>▶ Works (including the spraying of paint and other materials) would be suspended during strong winds or in weather conditions where high levels of dust or airborne particulates are likely.</li> <li>▶ Any exposed surfaces would be stabilised as soon as practicable.</li> <li>▶ In locations where nearby sensitive receivers may be affected, adopt a site 'shut down and cover up' policy during periods of extreme weather conditions, for example high winds.</li> </ul>
		Dust suppression—vehicle movements	<ul style="list-style-type: none"> <li>▶ Vehicle movements would be limited to designated entries and exits, haulage routes, and parking areas.</li> <li>▶ Materials transported to and from the site would be covered to reduce dust generation in transit.</li> </ul>
		Vehicle emissions	<ul style="list-style-type: none"> <li>▶ All plant and machinery would be fitted with emission control devices complying with relevant Australian Standards, such as the National Environment Protection Council (NEPM) National Environment Protection (Diesel Vehicle Emissions) Measure 2001.</li> <li>▶ Surveillance would be undertaken to identify any vehicle, plant or equipment that is causing visible emissions. If any defective vehicles, plant or equipment are identified, operation of this machinery would cease and service/maintenance would be undertaken.</li> </ul>
		Communication	<ul style="list-style-type: none"> <li>▶ Advance warning would be provided to sensitive receivers in relation any significant dust generating activities undertaken in close proximity to sensitive receptors, including stock.</li> </ul>
<b>13. Spoil and waste</b>	<p>The waste management plan would detail how waste would be managed during construction to minimise the potential for significant impacts. It would include disposal requirements, measures to reduce, re-use or recycle wastes where possible. It would set targets for waste diversion, demonstrate how targets can be achieved, and outline how waste diversion would be tracked and reported.</p>	Waste management	<ul style="list-style-type: none"> <li>▶ Resource management hierarchy principles would be followed: <ul style="list-style-type: none"> <li>▶ avoid unnecessary resource consumption as a priority</li> <li>▶ avoidance is followed by resource recovery (including reuse of materials, reprocessing, recycling and energy recovery)</li> <li>▶ disposal is undertaken as a last resort.</li> </ul> </li> <li>▶ Waste material, including soil and spoil to be taken off site, would be classified and managed in accordance with the Waste Classification Guidelines (EPA, 2014a) and would be disposed of in accordance with the POEO Act.</li> <li>▶ All waste documentation would be collated and maintained on file in accordance with these guidelines.</li> </ul>

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	The plan would be prepared in accordance with the Waste Classification Guidelines (EPA, 2014a).		<ul style="list-style-type: none"> <li>▶ Waste material would not be left on site once the works have been completed.</li> <li>▶ Working areas would be maintained, kept free of rubbish, and cleaned up at the end of each working day.</li> <li>▶ Any waste material identified as being contaminated would be managed in accordance with the <i>Contaminated Land Management Act 1997</i> and other relevant legislation and guidelines. <ul style="list-style-type: none"> <li>▶ The removal, handling and disposal of any asbestos containing materials would be undertaken by an appropriately licensed contractor, and in accordance with:</li> <li>▶ Code of Practice for the Safe Removal of Asbestos 2005</li> <li>▶ Code of Practice for the Management and Control of Asbestos in Workplaces 2005.</li> </ul> </li> </ul>
<b>14. Hazards, risk and contingency management</b>	A systematic pro-active approach of ongoing risk identification and contingency planning would be provided. It would identify hazards and risks, and measures to minimise risks and respond to incidents during construction.	N/A	<ul style="list-style-type: none"> <li>▶ Hazards and risks associated with construction activities would be identified prior to construction.</li> <li>▶ A process for regularly reviewing work practices/procedures would be implemented throughout construction to identify, report, and respond to any new environmental hazards/risks.</li> <li>▶ Site-specific work health and safety management plans and safe work method statements would be developed and implemented in accordance with work health and safety requirements.</li> <li>▶ The plan would support the contamination and hazardous materials sub-plan developed as per item 3.</li> </ul>
<b>15. Emergency response</b>	Protocols and procedures to be followed during emergency situations (including bushfires, fires, explosions, flooding and inundation) would be prepared.	Emergency response	<ul style="list-style-type: none"> <li>▶ Emergency protocols and procedures will include: <ul style="list-style-type: none"> <li>▶ details of traffic management measures to be implemented during emergencies</li> <li>▶ design and management measures to address the potential environmental impacts of an emergency situation</li> <li>▶ training programs to ensure that all staff are familiar with the plan.</li> </ul> </li> </ul>