

Construction Environmental Management Framework

July 2014



North West Rail Link Construction Environmental Management Framework

Version Register

Version	Description	Date
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1. Introduction

1.1 Purpose and Scope

This Environmental Management Framework (Construction Environmental Management Framework) is a North West Rail Link (NWRL) project wide framework which sets out the environmental, stakeholder and community management requirements for the construction of the project.

The North West Rail Link is subject to environmental assessment under the Environmental Planning and Assessment Act 1979 (EP&A Act). It is classified as Critical State Significant Infrastructure. Under amendments to the EP&A Act, the Concept Plan for the project, which was approved in 2008, is taken to be a Staged Infrastructure Approval under Part 5.1 of the Act.

Before work can commence on the project, detailed environmental assessments have been carried out in order to gain the necessary planning approval. These Planning Approvals for the project are described below:

Major Civil Construction Works Planning Approval

The first Environmental Impact Statement (EIS1) assessed impacts for Major Civil Construction Works. This covered activities including tunnelling and viaduct construction. It was approved by the Minister for Planning and Infrastructure on 25 September 2012. This Approval was modified in April 2013 to incorporate changes to the Showground Station and adjacent precinct.

Stations, Rail Infrastructure and Systems Planning Approval

The second Environmental Impact Statement (EIS2) assessed Stations, Rail Infrastructure and Systems. This covered construction and operation of the railway itself, including stations and stations precincts, rail systems and infrastructure. It was approved by the Minister for Planning and Infrastructure 8 May 2013. This Approval was modified in April 2014 to alter the approved viaduct structure with a cable stayed bridge over Windsor Road, Rouse Hill.

Rapid Transit Rail Facility Planning Approval

With the announcement of Sydney Rail Futures and the future Rapid Transit Network, a Rapid Transit Rail Facility (RTRF) is required. The RTRF provides for a train stabling and maintenance facility, a section of track for testing, administration staff and training facilities including an Operations Control Centre. An EIS has been prepared for the construction and operation of the RTRF and approval was granted by the Minister for Planning and Infrastructure on 15 January 2014.

Other projects that enable or that relate to the NWRL also require planning approval either under Part 5 or Part 4 of the EP&A Act. A number of such projects are required to convert the existing Epping to Chatswood Rail Link (ECRL). This includes the development of substations at Chatswood and Lindfield as well as systems works within the tunnels and stations along the ECRL corridor. This CEMF applies to those projects.

Commonwealth Statutory Requirements

Due to its impact on nationally significant vegetation communities, the project was declared a controlled action under the Environment Protection and Biodiversity Conservation Act 1999 (Cth). Approval was granted by the Australian Government Environment Minister on 11 April 2013.

The project will be delivered under multiple, separate construction contracts. This Construction Environmental Management Framework provides a linking document between the planning approval documentation and the

construction environmental management documentation to be developed by the Principal Contractors relevant to their scope of works. It will be applied to any future planning approvals on the project.

NWRL Principal Contractors will be required to implement and adhere to the requirements of this Construction Environmental Management Framework in designing and constructing the NWRL works. The requirements of this Construction Environmental Management Framework will be included as a contract document in all design and construction contracts related to the NWRL.

1.2 Status

This is a controlled document. It will be updated as required through the life of the NWRL project.

1.3 Environment and Sustainability Policy

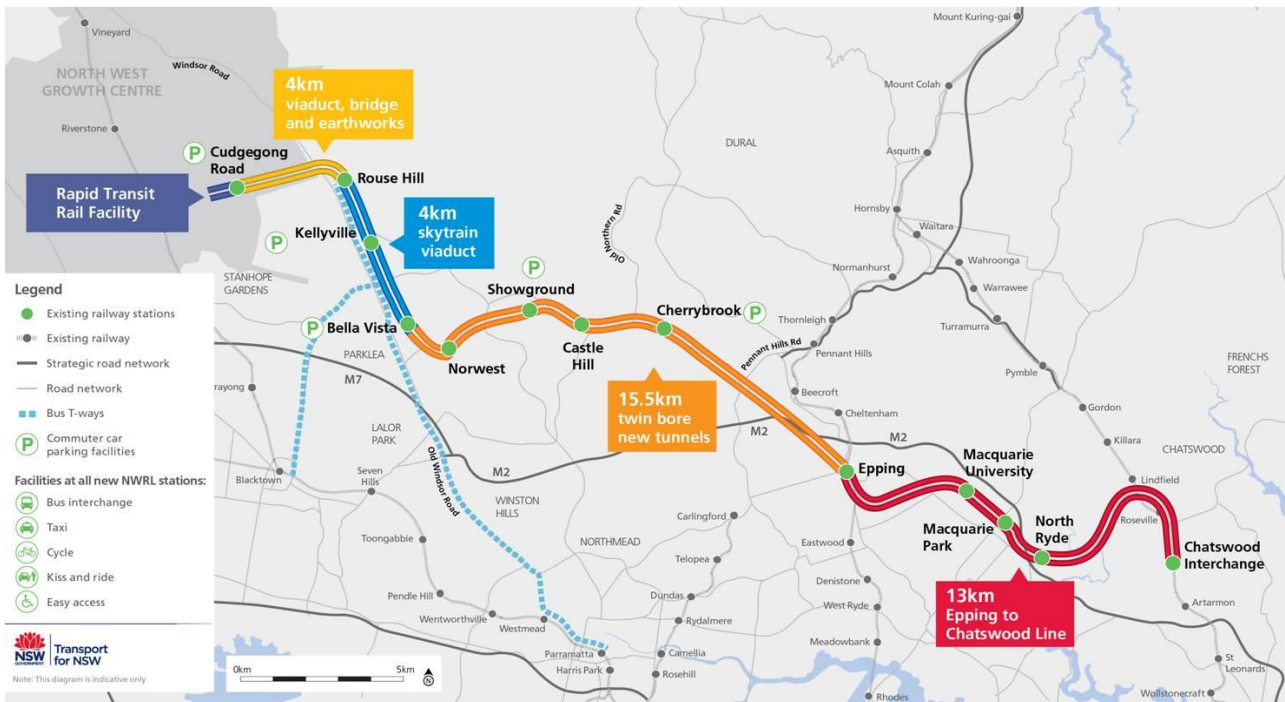
Transport for NSW (TfNSW) has developed an Environment and Sustainability Policy (Appendix A) for the NWRL Project. NWRL Principal Contractors will be required to undertake their works in accordance with this policy. Specifically the policy reflects a commitment in the delivery of the NWRL to:

- ❖ Optimise environmental and sustainability outcomes, transport service quality, and cost effectiveness.
- ❖ Develop effective and appropriate responses to the challenges of climate change, carbon management, resource and waste management, land use integration, customer and community expectation, and heritage and biodiversity conservation.
- ❖ Be environmentally responsible, by enhancing the natural environment and reducing the project ecological footprint, while complying with all applicable environmental laws, regulations and statutory obligations

1.4 Project Description

The NWRL will provide eight new stations and services over a 23 kilometre addition to the rail network from Epping to beyond Rouse Hill in north west Sydney as shown on **Figure 1**. The base scope of the project includes the construction of stations at Cherrybrook, Castle Hill, Showground, Norwest, Bella Vista, Kellyville, Rouse Hill and Cudgegong Road. Bus, pedestrian, taxi and cycle access facilities would be provided at all stations with park and ride spaces proposed at Cherrybrook, Showground, Bella Vista, Kellyville and Cudgegong Road Stations. The project scope also includes conversion of the Epping – Chatswood rail link to rapid transit services and construction of a train stabling facility at Tallawong Road beyond Rouse Hill.

Figure 1 Overview of alignment



2. Legislative and Other Requirements

The key NWRL environmental obligations to be addressed at different stages of the project are contained within:

- ❖ Legislative requirements.
- ❖ Project approval documentation.
- ❖ Conditions of Approval.
- ❖ Environment Protection Licences.
- ❖ Other permits, approval and licences.
- ❖ Standards and guidelines.

2.1 Key Legislative Requirements

Table 1.1 below identifies key NSW environmental legislative requirements and their application to the construction of the NWRL current as at the date of this document. TfNSW and its Contractors should regularly review their legislative requirements.

Table 1.1 NSW Legislative Requirements

Legislation and Administering Authority	Requirements	Application to NWRL
Contaminated Land Management Act 1997 NSW Environment Protection Authority (EPA)	The Act provides a process for the investigation and remediation of land where contamination presents a significant risk of harm to human health or some other aspect of the environment.	The NWRL must follow the process where contaminated land is identified.
Dangerous Goods Act 1985 EPA / Workcover	A licence is required for the storage (Workcover) and /or transport (EPA) of prescribed quantities of dangerous goods.	The NWRL Principal Contractors must obtain a licence where storage of dangerous goods would exceed licensable quantities.
Environmental Planning and Assessment Act 1979 Department of Planning and Environment (DP&E)	Planning approval required for the proposal as State Significant Infrastructure.	The NWRL must adhere to mitigation measures within the planning approval documentation.

Legislation and Administering Authority	Requirements	Application to NWRL
Fisheries Management Act 1994 Department of Primary Industries (Fisheries)	The relevant objectives of the Act are to conserve threatened species, populations and ecological communities and promote ecologically sustainable development, including the conservation of biological diversity	The NWRL is exempt from permits required under sections 201, 205 or 219.
Heritage Act 1977 NSW Office of Environment and Heritage (OEH)	The Act aims to encourage the conservation of the State's heritage and provides for the identification and registration of items of State heritage significance.	The NWRL is exempt from approvals required under Part 4 and permits required under section 139. The provisions of this Act would continue to apply to works not approved under Part 5.1 of the EP&A Act.
National Parks and Wildlife Act 1974 OEH	The objectives of the Act are for the conservation of nature and the conservation of objects, places or features (including biological diversity) of cultural value within the landscape.	The NWRL is exempt from obtaining an Aboriginal Heritage Impact Permit required under section 90. The provisions of this Act would continue to apply to works not approved under Part 5.1 of the EP&A Act
Native Vegetation Act 2003 OEH	The objective of the Act is to protect and improve the value of native vegetation.	The NWRL is exempt from section 12 authorisation to clear native vegetation. The provisions of this Act would continue to apply to works not approved under Part 5.1 of the EP&A Act
Noxious Weeds Act 1993 Department of Primary Industries	The Act aims to prevent the introduction of new weeds and restrict the spread of existing weeds.	The NWRL Principal Contractors must control weeds as required on land under the management of the Contractor.
Protection of the Environment Operations Act 1997 EPA	The relevant objective of the Act is to prevent environmental pollution.	The NWRL is a scheduled activity under Schedule 1 of the Act. Therefore the NWRL must obtain an Environment Protection Licence (EPL). Further details on the requirements to obtain an EPL are provided in Section 2.2.

Legislation and Administering Authority	Requirements	Application to NWRL
Roads Act 1993 Roads and Maritime Service	The relevant objective of the Act is to regulate the carrying out of various activities on public roads.	The NWRL Principal Contractor must obtain consent under section 138 for carrying out work in, on or over a public road, or digging up or disturbance of the surface of the road.
Waste Avoidance and Resource Recovery Act 2001 EPA	The objectives of the Act are to reduce environmental harm and provide for the reduction in waste generation.	NWRL Principal Contractors must implement strategies to reduce waste volumes and report on waste generated.
Water Management Act 2000 NSW Office of Water	The relevant objective of the Act is to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality.	The NWRL is exempt from obtaining water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91.

Table 1.2 below identifies key Commonwealth environmental legislative requirements and their application to the construction of the NWRL current as at the date of this document. TfNSW and its Contractors should regularly review their legislative requirements.

Table 1.2 Commonwealth Legislative Requirements

Legislation and Administering Authority	Requirements	Application to NWRL
Environment Protection and Biodiversity Conservation Act 1999 Department of the Environment,	The relevant objective of the Act is to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance.	The NWRL submitted a referral as its works may have an impact on the matters of national environmental significance outlined in Section 2.3. No referral to the Department of the Environment was required for the ECRL Conversion to Rapid Transit works.

Legislation and Administering Authority	Requirements	Application to NWRL
National Greenhouse and Energy Reporting Act 2007 Department of Climate Change and Energy Efficiency	The Act established a framework for reporting of greenhouse gas emissions, abatement actions, energy consumption and production data.	NWRL Principal Contractors must report on greenhouse gas and energy usage data as required by the Act.

2.2 Environment Protection Licence Requirements

The NWRL meets the definition of a number of scheduled activities under Schedule 1 of the *Protection of the Environmental Operation Act 1997* (POEO Act) and as such must obtain an Environment Protection Licence (EPL).

Where required NWRL Principal Contractors will be required to:

- ❖ Hold an EPL which covers their scope of works as necessary under the POEO Act.
- ❖ Undertake their scope of works in accordance with the conditions of the applicable EPL/s as issued by the EPA.

2.3 Environment Protection and Biodiversity Conservation Act 1999 Referral

The NWRL was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities due to potential impacts on the following Matters of National Environmental Significance:

Four listed ecological communities as follows:

- ❖ Blue Gum High Forest of the Sydney Basin Bioregion (critically endangered ecological community).
- ❖ Cumberland Plain Shale Woodland and Shale-Gravel Transition Forest (critically endangered ecological community).
- ❖ Shale / Sandstone Transition Forest (endangered ecological community).
- ❖ Turpentine-Ironbark Forest in the Sydney Basin Bioregion (critically endangered ecological community).

Potential habitat for six listed fauna species as follows:

- ❖ Green and Golden Bell Frog (vulnerable).
- ❖ Grey-headed Flying Fox (vulnerable).
- ❖ Large-eared Pied bat (vulnerable).
- ❖ Regent Honeyeater (endangered; migratory).
- ❖ Spotted-tailed Quoll (endangered).
- ❖ Swift Parrot (endangered).

Potential habitat for nine listed migratory fauna species as follows:

- ❖ Black-faced Monarch.
- ❖ Cattle Egret.
- ❖ Fork-tailed Swift.
- ❖ Great Egret.
- ❖ Latham’s Snipe.
- ❖ Regent Honeyeater.
- ❖ Rufous Fantail.
- ❖ Satin Flycatcher.
- ❖ White-throated Needletail.

Approval under the EPBC Act was granted on 11 April 2013 subject to six conditions to mitigate and offset the potential impacts of the NWRL. TfNSW and the Principal Contractors are required to comply with the conditions of the approval issued under this act.

2.4 Standards and Guidelines

Numerous environmental publications, standards, codes of practice and guidelines are relevant to the NWRL construction and are referenced throughout this Construction Environmental Management Framework. A summary of these applicable standards and guidelines is provided in **Table 1.3**.

Table 1.3 Environmental Standards and Guidelines

Standard / Guideline	Relevant Authority	CEMF Reference
Transport for NSW Sustainable Design Guidelines	TfNSW	-
ISO14001 Environmental Management System – Requirements with Guidelines for Use	DP&E	Section 3.1
Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2004)	DP&E	Section 3.1
Interim Construction Noise Guidelines (Department of Environment and Climate Change, 2009)	EPA	Section 5.1 and 9.2
Traffic Control at Worksites Manual Version 4 (NSW RTA, 2010)	RMS	Section 8.2
AS1742.3:2009 Manual of Uniform Traffic Control Devices – Traffic Control Devices for Works on Roads	RMS	Section 8.2
Guide to Traffic Management – Part 2: Traffic Theory (Austroads, 2008)	RMS	Section 8.2
Managing Contaminated Land Planning: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning & Environment Protection Authority, 1998)	DP&E	Section 6.2
Acid Sulphate Soil Manual (NSW Acid Sulphate Soils Management Advisory Committee, 1998)	EPA	Section 6.2

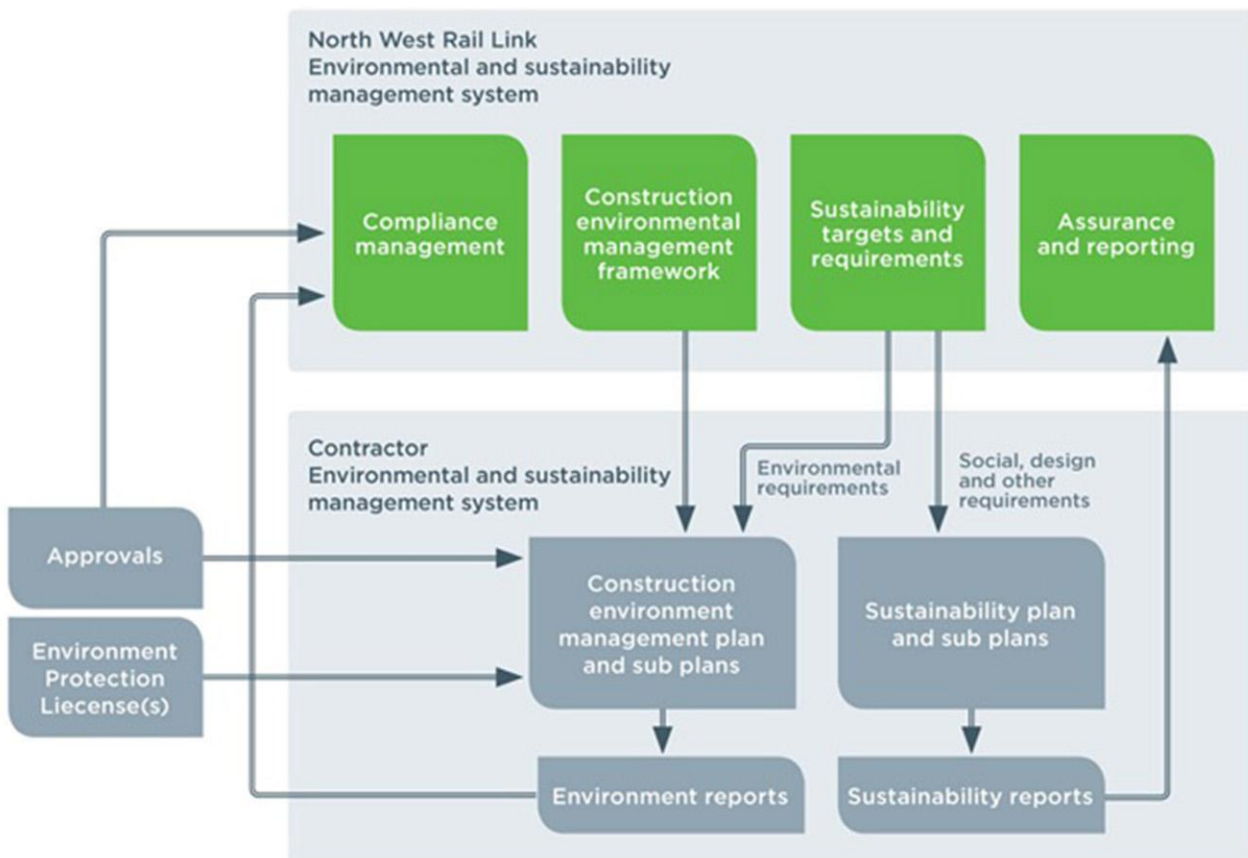
Standard / Guideline	Relevant Authority	CEMF Reference
Managing Urban Stormwater: Soil and Construction (Landcom, 2008)	EPA	Section 15.2
AS2436:1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites	EPA	Section 9.2
Rail Infrastructure Noise Guidelines (EPA, 2013)	EPA	Section 9.2
Industrial Noise Policy (NSW Government, 2000)	EPA	Section 9.2
Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006)	EPA	Section 9.2
AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting	OEH	Section 12.2
Code of Practice for the Safe Removal of Asbestos 2nd edition (National Occupational Health and Safety Commission, 2005)	National Occupational Health and Safety Commission (NOHSC)	Section 15.0
Code of Practice for the Management and Control of Asbestos in Workplaces (National Occupational Health and Safety Commission, 2005)	NOHSC	Section 15.0
AS2601:1991 Demolition of Structures	DP&E	Section 15.0
Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2008)	EPA	Section 17.1 and 17.2
Waste Reduction and Purchasing Policy (Environment Protection Authority, 1997)	EPA	Section 17.1

3. Environmental Management

3.1 Environmental and Sustainability Management System

- a. All NWRL Principal Contractors will be required to have a corporate environmental management system certified under ISO 14001.
- b. All NWRL Principal Contractors will be required to develop an environmental and sustainability management system for the project. The E&SMS must:
 - be consistent with the principles of ISO 14001 Environmental Management Systems – Requirements with Guidelines for Use;
 - be consistent with the NWRL Sustainability Strategy and NWRL Environment and Sustainability Policy;
 - include specific procedures to address the following:
 - Identification of and compliance with legal and regulatory obligations, environmental provisions of the contract documentation, relevant approval documentation, their own corporate requirements and this Construction Environmental Management Framework.
 - Identification and assessment of environmental aspects.
 - Identification of environmental risks and development of appropriate control measures to be implemented to provide environmental protection.
 - Tracking and monitoring of design and construction sustainability targets.
 - Assurance frameworks to audit the sustainability program.
 - Include provision to produce monthly reports.
- c. All sub-contractors engaged by the Contractor will be required to work under the Principal Contractor's E&SMS.
- d. The relationship between key documents within the NWRL Environment and Sustainability Management System and the Principal Contractor's Environment and Sustainability Management System is shown in **Figure 2**. Notably:
 - the Construction Environment Management Plan and its sub plans will capture the construction environmental requirements emerging from the EISs, subsequent planning approvals and the NWRL Sustainability Strategy.
- e. The Sustainability Plan and its sub plans will capture governance and design requirements as well as social sustainability initiatives as required by the NWRL Sustainability Strategy.
- f. These plans vary in scope across different delivery packages.

Figure 2 Environmental Management and Sustainability Structure



3.2 Construction Environmental Management Plans

- a. All NWRL Principal Contractors will be required to prepare and implement a Construction Environmental Management Plan (CEMP) relevant to the scale and nature of their scope of works.
- b. The CEMP will cover the requirements of the relevant planning approval documentation, the project approval conditions, the conditions of all other permits and licences, the Contractor's corporate EMS, the environmental provisions of the contract documentation and this Construction Environmental Management Framework.
- c. The purpose of the CEMP will be to detail how the project will deliver the environmental requirements and how issues that arise are handled. As a minimum the CEMP will include:
 - Project specific environmental policy, key performance indicators, objectives and targets.
 - Identification of legislative and other requirements.
 - A procedure to undertake consistency assessments in the event of scope and design changes.
 - Procedures to identify project specific environmental risks.
 - Resource requirements, roles and responsibilities, including those of sub-contractors.
 - Communication requirements, including liaison with stakeholders and the community.
 - Induction and training requirements.
 - Identification of project specific environmental risks.
 - Identification of appropriate control measures.

- Procedures for monitoring and evaluating environmental performance.
 - Reporting requirements.
 - Procedures for emergency and incident management.
 - Procedures for non-conformance control, corrective and preventative actions.
 - Procedures for audit and review.
 - Procedures for the control of environmental records.
 - Development and maintenance of Environmental Management Sub-Plans and site / activity specific environmental procedures.
- d. The CEMP and associated sub-plans will be reviewed by TfNSW and the independent environmental representative prior to any construction works commencing. Depending on the conditions of approval the CEMP and certain sub-plans may also require the approval of Department of Planning and Environment (DP&E), and other government agencies.
- e. Depending on the scope and scale of the works, TfNSW will work with the Principal Contractors to streamline the CEMP and sub-plan requirements.
- f. Where a corresponding systems document exists within the NWRL Integrated Management System, the Principal Contractors' procedures will be required to be consistent.

3.3 Construction Environmental Management Sub-Plans

Where required, the Principal Contractor will prepare issue-specific environmental sub-plans to address each of the relevant environmental impacts at a particular site or stage of the project. Issue specific sub-plans will include:

- Spoil management
- Groundwater management
- Soil and water management
- Traffic and transport management.
- Noise and vibration management.
- Heritage management.
- Flora and fauna management.
- Visual amenity management.
- Carbon and energy management.
- Air quality management.
- Waste management.

3.4 Environmental Procedures

- a. The Principal Contractor will prepare and implement site and / or activity specific environmental procedures. These procedures may include method statements, control maps or other documents as required by the Principal Contractor.
- b. The procedures will include:
- A breakdown of the work tasks relevant to the specific site and / or activity.
 - Potential impacts associated with each task.
 - A risk rating for each of the identified potential impacts.
 - Mitigation measures relevant to each of the work tasks.

- Responsibility to ensure the implementation of the mitigation measures.
 - Constraints maps and / or drawings as appropriate to each site and / or activity.
- c. Relevant workers will be trained in the requirements of and will sign off the procedures prior to commencing works on the specific site and / or activity.

3.5 Additional Environmental Assessments

- a. A number of works may require additional environmental assessment to be undertaken, eg the provision of high voltage power supply to a number of the construction sites.
- b. Where the requirement for an additional environmental assessment is identified, this will be undertaken prior to undertaking any physical works. The environmental assessment will include:
- A description of the existing surrounding environment.
 - Details of the ancillary works and construction activities required to be carried out including the hours of works.
 - An assessment of the environmental impacts of the works, including, but not necessarily limited to, traffic, noise and vibration, air quality, soil and water, ecology and heritage.
 - Details of mitigation measures and monitoring specific to the works that would be implemented to minimise environmental impacts.
 - Identification of the timing for completion of the construction works, and how the sites would be reinstated (including any necessary rehabilitation).

3.6 Existing Condition Surveys

Principal Contractors will offer condition surveys, in writing, to all relevant land and infrastructure owners (those where the works have potential to cause cosmetic or structural damage). If accepted, the Principal Contractor must produce a comprehensive written and photographic condition report prior to relevant works commencing.

3.7 Register of Hold Points

- a. TfNSW and NWRL Principal Contractors will identify hold points, beyond which approval is required to proceed with a certain activity. Examples activities include vegetation removal and water discharge. Hold points will be documented in relevant CEMPs.
- b. Table 1.4 provides the structure for the register of hold points as well as a preliminary list of hold points which will be implemented.

Table 1.4 Preliminary Register of Hold Points

Hold Point	Release of Hold Point	By Who
Prior to Vegetation Clearing / Ground Disturbance	Pre-clearing inspection	Qualified Ecologist
	Erosion and sediment control plan	Contractor's Environmental Manager or delegate
Discharge of water	Water tested to verify compliance and approval to discharge	Contractor's Environmental Manager or delegate

3.8 Training, Awareness and Competence

- a. NWRL Principal Contractors will be responsible for determining the training needs of their personnel. As a minimum this will include site induction, regular toolbox talks and topic specific environmental training as follows:
 - The site induction will be provided to all site personnel and will include, as a minimum:
 - Training purpose, objectives and key issues.
 - Contractor's environmental policy and key performance indicators.
 - Due diligence, duty of care and responsibilities.
 - Relevant conditions of any environmental licence and the relevant conditions of approval.
 - Site specific issues and controls including those described in the environmental procedures.
 - Reporting procedure for environmental hazards and incidents.
 - Communication protocols.
- b. Toolbox talks will be held on a regular basis in order to provide a project or site wide update, including any key or recurring environmental issues.
- c. Topic specific environmental training, eg erosion and sediment control training will be undertaken for relevant site personnel as determined by the Principal Contractor.

3.9 Emergency and Incident Response

- a. NWRL Principal Contractors will develop and implement a Pollution Incident Response Management Plan, in accordance with the requirements of the POEO Act. Contractors' emergency and incident response procedures will be in accordance with any relevant TfNSW procedures and will include:
 - Categories for environmental emergencies and incidents.
 - Notification protocols for each category of environmental emergency or incident, including notification of TfNSW and notification to owners / occupiers in the vicinity of the incident. This is to include relevant contact details.
 - Procedures for the immediate notification of each relevant authority when the incident results in material harm to the environment.
 - Identification of personnel who have the authority to take immediate action to shut down any activity, or to affect any environmental control measure (including as directed by an authorised officer of the EPA).
 - On-site rectification actions.
- b. The Contractor will make all personnel aware of the plan and their responsibilities.

3.10 Roles and Responsibilities

- a. TfNSW will be the proponent of the works and will retain responsibility for:
 - The provision of contracts and procurement of Principal Contractors. The procurement of Contractors will consider past environmental performance and proposed environmental management system.
 - Undertaking regular audits, of the Contractors against their environmental obligations.
- b. Additionally TfNSW will engage independent Environmental Representatives (ERs) to undertake the following, along with any additional roles as required by the project approval conditions:
 - Review, provide comment on and endorse (where required) any relevant environmental documentation to verify it is prepared in accordance with relevant environmental legislation, planning approval conditions and relevant standards.

- Monitor and report on the implementation and performance of the above mentioned documentation and other relevant documentation.
 - Provide independent guidance and advice to TfNSW and the Contractors in relation to environmental compliance issues and the interpretation of planning approval conditions.
 - Be the principal point of advice for the DP&E in relation to all questions and complaints concerning the environmental performance of the project.
 - Ensure that environmental auditing is undertaken in accordance with all relevant project requirements.
 - Recommend reasonable steps, including 'stop works', to be taken to avoid or minimise adverse environmental impacts.
- c. NWRL Principal Contractors will be responsible for all aspects of environmental management relevant to their scope of works. This will include:
- Development and implementation of the Environmental Management and Sustainability System, Construction Environmental Management Plan, sub-plans and procedures.
 - Compliance with the environmental considerations of the contract and this Construction Environmental Management Framework.
 - Obtaining all necessary approvals, permits and licences required for its works (in addition the planning approval).
 - Compliance with relevant approval, permit, licence and legislative conditions.
- d. Principal Contractors must employ an Environmental Manager with relevant experience.
- e. All sub-contractors engaged by the Principal Contractor will be required to operate within the EMS documentation of that Principal Contractor.

3.11 Environmental Monitoring, Inspections and Auditing

- a. NWRL Principal Contractors will develop and implement procedures to ensure the works are compliant with the environmental considerations of the contract documentation, the project approval, and all other permits and licences.
- b. Issue specific environmental monitoring will be undertaken as required by the subsequent sections of this Construction Environmental Management Framework or as additionally required by approval, permit or licence conditions.
- c. The results of any monitoring undertaken as a requirement of the EPL will be published on the Principal Contractor's, or a project specific, website within 14 days of obtaining the results.
- d. Environmental inspections will include:
- Surveillance of environmental mitigation measures by the Site Foreman. This will be documented in the Foreman's Site Diary.
 - Periodic inspections by the Principal Contractor's Environmental Manager (or delegate) to verify the adequacy of all environmental mitigation measures. This will be documented in a formal inspection record.
 - Regular site inspections by the ERs at a frequency to be agreed with the Principal Contractor.
 - Site inspections by TfNSW environmental managers.
- e. NWRL Principal Contractors will be required to undertake internal environmental audits of their EMS. Internal audits will include:
- Compliance with approval, permit and licence conditions.
 - Compliance with the Contractor's EMS, CEMP, sub-plans and procedures.
 - Community consultation and complaint response.

- Environmental training records.
 - Environmental monitoring and inspection results.
- f. TfNSW (or its representative) will also undertake periodic audits of the Principal Contractors' EMS and compliance with the environmental aspects of contract documentation, including this Construction Environmental Management Framework. As a minimum this will occur annually.
- g. Mandatory audits may also be required by the EPA if the EPA reasonably suspects that an activity has been or is being carried out by the EPL holder in an environmentally unsatisfactory manner.

3.12 Environmental Non-conformances

- a. NWRL Principal Contractors will document and detail any non-conformances arising out of the above monitoring, inspections and audits. TfNSW will be made aware of all non-conformances in a timely manner.
- b. Principal Contractors will develop and implement corrective actions to rectify the non-conformance and preventative actions in order to prevent the re-occurrence of the non-conformance. Contractors will also maintain a register non conformances, corrective actions and preventative actions.

3.13 Environmental Records and Compliance Reporting

- a. NWRL Principal Contractors will maintain appropriate records of the following:
- Site inspections, audits, monitoring, reviews or remedial actions.
 - Documentation as required by performance conditions, approvals, licences and legislation.
 - Modifications to site environmental documentation (eg CEMP, sub-plans and procedures).
 - Other records as required by this Construction Environmental Management Framework.
- b. Records will be retained onsite for the duration of works.
- c. Additionally records will be retained by the Principal Contractor for a period of no less than 7 years in total. Records will be made available in a timely manner to TfNSW (or their representative) upon request.
- d. Compliance reports regarding each internal and external audit (refer to Section 3.113.11) will be undertaken. Compliance reports will be produced by the Principal Contractor's Environmental Manager or delegate and submitted to TfNSW.

3.14 Review and Improvement of the CEMP

- a. NWRL Contractors will ensure the continual review and improvement of the CEMP, sub-plans and procedures. This will generally occur in response to:
- Issues raised during environmental monitoring, inspections and audits.
 - Significant environmental incidents.
 - Environmental non-conformances.
- b. A formal review of the CEMP and sub-plans by the Principal Contractor's management team will also occur on a six monthly basis, as a minimum.



4. Stakeholder and Community Involvement

4.1 Overview

- ❖ Throughout construction, TfNSW and the Principal Contractors will work closely with stakeholders and the community to ensure they are well informed regarding the construction works.
- ❖ Stakeholders and the community will be informed of significant events or changes that affect or may affect individual properties, residences and businesses. These will include:
 - Significant milestones.
 - Design changes.
 - Changes to traffic conditions and access arrangements for road users and the affected public.
 - Construction operations which will have a direct impact on stakeholders and the community including noisy works, interruptions to utility services or construction work outside of normal work hours.
- ❖ A Community Information Centre for the NWRL project is located at 299 Old Northern Road, Castle Hill (ph 1800 019 989, website: <http://nwrail.transport.nsw.gov.au>) and will be kept informed of key construction information of relevance to stakeholders and the community.

4.2 Communication and Consultation Strategy

- ❖ This communication and consultation strategy will form the basis of a Stakeholder and Community Involvement Plan which will be developed by the NWRL Contractors.
- ❖ Key elements of the communication and consultation strategy which will be implemented at appropriate times in the construction process will include:
 - Notification (including targeted letterbox drops, email and SMS) of any works that may disturb local residents and businesses (such as noisy activities and night works) at least seven days prior to those works commencing.
 - Notification (including targeted letterbox drops) of works that may affect transport (such as road closures, changes to pedestrian routes and changes to bus stops).
 - Traffic alerts (via email) to all key traffic and transport stakeholders advising of any changes to access and local traffic arrangements (at least seven days prior to significant events).
 - Print and radio advertisements regarding major traffic changes.
 - 24-hour toll-free community project information phone line.
 - Complaints management process.
 - Regular community information sessions.
 - Regular updates to the NWRL website (www.northwestrail.com.au), including uploading of all relevant documents, and contact details for the stakeholder and community involvement team.
 - Public displays, local events and open days.
 - Assistance to the NWRL Community Information Centre in provision of regular community newsletters, information brochures and fact sheets and ongoing use of interactive web-based activities.
 - Clear signage at the construction sites and construction updates on the hoardings at construction sites.
 - Media releases and regular newspaper advertisements in local and metropolitan papers.
 - Regular inter-agency group meetings.
 - Community, business and stakeholder satisfaction surveys and feedback forms.

- Translator and interpreter services.
- The Principal Contractor's Community Relations Team will liaise with the TfNSW Place Managers as the point of contact for the community.

4.3 Complaint Handling

- ❖ Community liaison and complaints handling will be undertaken in accordance with the Construction Stakeholder and Community Involvement Plan and will include:
 - NWRL Principal Contractors will deal with complaints in a responsive manner so that stakeholders' concerns are managed effectively and promptly.
 - A verbal response will be provided to the complainant as soon as possible and within a maximum of two hours from the time of the complaint (unless the complainant requests otherwise). A detailed written response will then be provided, if required, to the complainant within one week.

4.4 Urban Design of Temporary Works

- ❖ NWRL Principal Contractors will develop and implement a Landscape and Temporary Works Management Plan for their scope of works. The Landscape and Temporary Works Management Plan will ensure as a minimum:
 - Temporary construction works including site hoardings and acoustic sheds consider urban design and visual impacts, including:
 - Artwork, graphics and images to enhance the visual appearance of temporary works in high visibility locations.
 - Project information to raise awareness of the NWRL and its benefits, explain the proposed works at each site and provide updates on construction progress.
 - Community information, including contact numbers for enquiries / complaints.
 - Signage and information to mitigate impacts on local businesses which may be obscured by the construction site.
 - NWRL advertising / public awareness campaigns.
 - Logos / branding, including NWRL, NSW Government, and Contractor branding.
- ❖ The design of all temporary works will require TfNSW approval in relation to urban design and visual impacts.
- ❖ Construction hoardings, scaffolding and acoustic sheds will be regularly inspected and kept clean and free of dust build up. Graffiti on construction hoardings, scaffolding or acoustic sheds will be removed or painted over promptly.
- ❖ The principles of *Crime Prevention Through Environmental Design* will be applied to all works, including temporary works, that have a public interface.

4.5 Business and Property Impacts

- ❖ NWRL Principal Contractors will proactively work with potentially affected stakeholders to identify the likely impacts and put in place measures to minimise impacts.
- ❖ Construction works will be undertaken to meet the following objectives:
 - Minimise the potential impact of the project to the operation of businesses affected by NWRL works.
 - Ensure businesses are kept informed of the project and consulted in advance of major works or factors that are likely to have a direct impact.
 - Consult with all business directly affected by changes to access arrangements regarding specific requirements at least two weeks prior to those changes coming into effect.
 - Ensure that business stakeholder enquiries and complaints regarding the project are managed and resolved effectively.

- ❖ NWRL Principal Contractors will develop and implement a Business Management Plan (BMP). The Business Management Plan will document key issues by locality with a particular focus on proactive consultation with affected businesses. The Business Management Plan will include:
 - Identification of specific businesses which are sensitive to construction activity disturbances.
 - Summary of the commercial character of the locality, its general trading profile (daily and annually) and information gained from the business profiling such as:
 - Operating hours.
 - Main delivery times.
 - Reliance on foot traffic.
 - Any signage or advertising that may be impacted.
 - Customer origin.
 - Other information specific to the business that will need to be considered in construction planning.
 - Define the roles and responsibilities in relation to the control and monitoring of business disturbances.
 - Identification of locality specific standard business mitigation measures which would be implemented.
 - Maps and diagrams to illustrate the information for easy identification of measures which would be implemented.
 - Description of the monitoring, auditing and reporting procedures.
 - Procedure for reviewing performance and implementing corrective actions.
 - Description of the complaints handling process.
 - Procedure of community consultation and liaison.

5. General Site Operations

5.1 Working Hours

- ❖ The majority of the station and above ground construction activities will be undertaken between 7am – 6pm on weekdays and 8am – 1pm on Saturdays.
- ❖ Some activities will need to be undertaken outside these hours (as identified in Table 1.5).
- ❖ As the TBMs operate continuously, the tunnelling works and associated support activities will be undertaken up to 24 hours per day and seven days per week.

Table 1.5 Proposed construction hours

Underground construction works		
Tunnelling works by TBM, roadheader or excavator with rock hammer.	24 hours per day, seven days per week	<p>Some activities that support tunnelling works may need to occur 24 hours per day, up to seven days per week.</p> <p>Rock hammering in the tunnel between 10pm and 7am would be precluded where it may impact on sensitive noise receivers.</p>
Aboveground construction works		
Construction Sites	<p>7am–6pm on weekdays 8am–1pm on Saturdays No works on Sundays or Public Holidays</p>	<p>The following activities would be expected to be undertaken 24 hours per day, up to seven days per week where noise impact management measures have been established:</p> <ul style="list-style-type: none"> ❖ Surface works supporting underground construction (eg concrete pumping, truck loading). ❖ Excavation and spoil removal from station entry shafts over two shifts. ❖ Norwest Station excavation in order to minimise traffic impacts to Norwest Boulevard. <p>Non-disruptive preparatory work, repairs or maintenance may be carried out on Saturday afternoons between 1pm and 5pm or Sundays between 8am and 5pm.</p> <p>Activities requiring the temporary possession of roads may need to be undertaken outside the assumed hours during periods of low demand to minimise safety impacts and inconvenience to commuters.</p> <p>Activities requiring rail possessions may need to be undertaken outside the standard construction hours up to 24 hours per day, seven days per week.</p>

Construction Traffic	24 hours per day, seven days per week	Restrictions would be in place during peak hours and during special events. At locations where sensitive noise receivers are close to construction sites, significant construction vehicle movements are likely to be restricted during evening and night-time periods.
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- ❖ Works which can be undertaken outside of standard construction hours without any further approval include:
 - Works which are determined to comply with the relevant Noise Management Level at the nearest sensitive receiver.
 - Works required to be undertaken during rail possessions.
 - The delivery of materials outside of approved hours as required by the Police or other authorities (including RMS) for safety reasons.
 - Where it is required to avoid the loss of lives, property and / or to prevent environmental harm in an emergency.
 - Where written agreement is reached with all affected receivers.
- ❖ With the exception of emergency and tunnelling works, activities will not take place outside standard hours without prior discussion with and / or notification of local residents, businesses and the EPA.
- ❖ NWRL Principal Contractors may apply for EPA approval to undertake works outside of normal working hours under their respective Environmental Planning Licences.

5.2 Site Layout

- ❖ NWRL Principal Contractors will consider the following in the layout of construction sites:
 - The location of noise intensive works and 24 hour activities in relation to noise sensitive receivers.
 - The location of site access and egress points in relation to noise and light sensitive receivers, especially for sites proposed to be utilised 24 hours per day.
 - The use of site buildings to shield noisy activities from receivers.
 - The use of noise barriers and / or acoustic sheds where feasible and reasonable for sites proposed to be regularly used outside of daytime hours.
 - Aim to minimise the requirement for reversing, especially of heavy vehicles.

5.3 Reinstatement

- ❖ Mitigation measures for reinstatement will be produced in consultation with TfNSW, the community and stakeholders.
- ❖ Mitigation measures required for reinstatement will be incorporated into the CEMP and will include as a minimum:
 - NWRL Contractors will clear and clean all working areas and accesses at project completion.
 - At the completion of construction all plant, temporary buildings or vehicles not required for the subsequent stage of construction will be removed from the site.
 - All land, including roadways, footpaths, loading facilities or other land having been occupied temporarily will be made good.
 - Reinstatement of community spaces, infrastructure and services will occur as soon as possible after completion of construction.

6. Spoil



Photo courtesy of Roads and Maritime Services.

6.1 Spoil Management Objectives

- ❖ The following spoil management objectives will apply to the construction of the project:
 - The beneficial reuse of spoil from the project will target 100 per cent reuse or recycling (on or off-site) of usable spoil.
 - Spoil will be managed with high consideration to minimising adverse traffic and transport related issues.
 - Potential contamination of land or water from contaminated spoil will be avoided.
 - Spoil will be managed with consideration of the impacts on residents and other sensitive receivers.
 - Site contamination will be effectively managed to limit the potential risk to human health and the environment.

6.2 Spoil Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Spoil Management Plan for their scope of works. The Spoil Management Plan will include as a minimum:
 - The spoil mitigation measures as detailed in the environmental approval documentation.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Spoil management monitoring requirements.
 - Compliance record generation and management.

- ❖ Spoil management measures will be included in regular inspections undertaken by the Contractor, and compliance records will be retained. These will include:
 - Records of inspections in relation to spoil management.
 - Records detailing the beneficial re-use of spoil either within the project or at off site locations.
 - Waste dockets for any spoil disposed of to landfill sites (refer to Section 17.2 for more detail).

6.3 Spoil Mitigation

Examples of spoil mitigation measures include:

- ❖ Implementing the spoil re-use hierarchy.
- ❖ Handling spoil to minimise potential for air or water pollution.
- ❖ Minimise traffic impacts associated with spoil removal.

7. Groundwater

7.1 Groundwater Management Objectives

- ❖ The following groundwater management objectives will apply to the construction of the project:
 - Reduce the potential for drawdown of surrounding groundwater resources.
 - Prevent the pollution of groundwater through appropriate controls.
 - Reduce the potential impacts of groundwater dependant ecosystems.

7.2 Groundwater Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Groundwater Management Plan for their scope of works. The Groundwater Management Plan will include as a minimum:
 - The groundwater mitigation measures as detailed in the environmental approval documentation.
 - The requirements of any applicable licence conditions. The NSW Office of Water will be consulted during the development of the Groundwater Management Plan in relation to dewatering and licensing arrangements.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Procedures for the treatment, testing and discharge of groundwater from the site.
 - A groundwater monitoring plan.
 - Compliance record generation and management.
- ❖ The Groundwater Monitoring Plan will:
 - Outline the parameters to be monitored (field parameters and laboratory parameters) and the sample frequency.
 - Include details of a groundwater monitoring network to monitor groundwater levels and groundwater quality throughout the construction phase. The groundwater monitoring network will contain monitoring wells along the whole NWRL route intersecting groundwater in both the Ashfield Shale and Hawkesbury Sandstone.
- ❖ NWRL Contractors will retain compliance records of all groundwater monitoring undertaken.

7.3 Groundwater Mitigation

Examples of groundwater mitigation measures include:

- ❖ Implementing all feasible and reasonable measures to limit groundwater inflows to stations and crossovers.
- ❖ Undertaking groundwater monitoring during construction (levels and quality) in areas identified as 'likely' and 'potential' groundwater dependent ecosystems.

8. Construction Traffic



Photo courtesy of Roads and Maritime Services.

8.1 Construction Traffic Management Objectives

- ❖ The following traffic management objectives will apply to the construction of the project:
 - Minimise disruptions to pedestrians, cyclists, buses and motorists.
 - Minimise heavy vehicle movements during peak traffic periods.
 - Minimise access disruptions to adjoining properties.
 - Encourage sustainable transport options by site workers.

8.2 Construction Traffic Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a hierarchy of traffic management documentation including:
 - A Construction Traffic Management Plan setting out the overall traffic management resources, processes and procedures for the management of traffic and transport during construction of the Project Works and Temporary Works; and
 - Construction Traffic Control Plans setting out the specific traffic and transport management arrangements to be implemented at specific locations during the construction of the Project Works and Temporary Works
- ❖ TfNSW and its Contractors will undertake liaison with agencies and the community regarding traffic management. This will involve:
 - Establishment of a Traffic and Transport Liaison Group likely to consist of representatives from NWRL Contractors, TfNSW, RMS, NSW Police and bus operators. The group would review Road Occupancy Licence Application to monitor potential cumulative impacts from multiple Road Occupancy Licences operating concurrently in one area.
 - Establishment of a Central Project Coordination Committee which will seek to coordinate NWRL works with other major developments. The committee will also take a strategic approach to longer

term traffic and transport management and review permanent arrangements including network integration with NWRL facilities.

8.3 Construction Traffic Mitigation

Examples of traffic mitigation measures include:

- ❖ Minimising heavy vehicle movements during peak traffic times.
- ❖ Avoidance of local road for heavy vehicle routes, where feasible.
- ❖ Providing safe pedestrian and cyclist movements around the worksites.

9. Construction Noise and Vibration

9.1 Construction Noise and Vibration Management Objectives

- ❖ The following noise and vibration management objectives will apply to the construction of the project:
 - Minimise unreasonable noise and vibration impacts on residents and businesses.
 - Avoid structural damage to buildings or heritage items as a result of construction vibration.
 - Undertake active community consultation.
 - Maintain positive, cooperative relationships with schools, childcare centres, local residents and building owners.

9.2 Construction Noise and Vibration Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Construction Noise and Vibration Management Plan for their scope of works. The Construction Noise and Vibration Management Plan will include as a minimum:
 - The noise and vibration mitigation measures as detailed in the environmental approval documentation and the NWRL Construction Noise and Vibration Strategy (CNVS).
 - The requirements of any applicable EPL conditions.
 - Site plans or maps indicating locations of sensitive receivers, and key noise and vibration controls.
 - Pre-construction compliance requirements and hold points.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Noise monitoring requirements.
 - Compliance record generation and management.
 - Community consultation requirements.
 - An Out of Hours Works Protocol applicable to all construction methods and sites.
- ❖ Detailed Construction Noise and Vibration Impact Statements will be prepared for major noise-intensive construction sites and or activities, to ensure the adequacy of the noise and vibration mitigation measures for the actual design and construction methods. Specifically Construction Noise and Vibration Impact Statements will be prepared for **EPL variation applications** and **works proposed to be undertaken outside of standard construction hours**.
- ❖ Noise and vibration monitoring would be undertaken for construction as specified in the CNVS and the EPL.
- ❖ The following compliance records would be kept by the NWRL Contractor:
 - Records of noise and vibration monitoring results against appropriate NMLs and vibration criteria.
 - Records of community enquiries and complaints, and the Contractor's response.

9.3 Construction Noise and Vibration Mitigation

All feasible and reasonable mitigation measures would be implemented in accordance with the CNVS. Examples of noise and vibration mitigation measures include:

- ❖ Construction hours will be in accordance with the working hours specified in section 5.1.
- ❖ Hoarding and enclosures will be implemented where required to minimise airborne noise impacts.
- ❖ The layout of construction sites will aim to minimise airborne noise impacts to surrounding receivers.

10. Heritage



Photo courtesy of Roads and Maritime Services.

10.1 Heritage Management Objectives

- ❖ The following heritage management objectives will apply to the construction of the project:
 - Minimise impacts on items or places of heritage value.
 - Avoid accidental impacts on heritage items.
 - Maximise worker's awareness of indigenous and non-indigenous heritage.

10.2 Heritage Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum:
 - The heritage mitigation measures as detailed in the environmental approval documentation.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Procedures for undertaking any recordings of heritage items prior to works commencing.
 - Procedures for unexpected heritage finds.
 - Heritage monitoring requirements.
 - Compliance record generation and management.
- ❖ The Contractor's regular inspection will include checking of heritage mitigation measures.

- ❖ Compliance records will be retained by the Contractor. These will include:
 - Inspections undertaken in relation to heritage management measures.
 - Archival recordings undertaken of any heritage item.
 - Unexpected finds and stop work orders.
 - Records of any impacts avoided or minimised through design or construction methods.

10.3 Heritage Mitigation

Examples of heritage mitigation measures include:

- ❖ Any heritage item not affected by the works will be retained and protected throughout construction.
- ❖ Prior to the commencement of construction undertake professional archaeological excavation, investigation and reporting of any historical Indigenous heritage sites of state significance which will be affected.
- ❖ Undertake archival recordings of all non-Indigenous heritage items affected by the works prior to commencement of works.
- ❖ Implement unexpected heritage find procedures for Indigenous and non-Indigenous heritage items.

11. Flora and Fauna



Photo courtesy of Roads and Maritime Services.

11.1 Flora and Fauna Management Objectives

- ❖ The following flora and fauna management objectives will apply to the construction of the project:
 - Minimise impacts on flora and fauna.
 - Design waterway modifications and crossings to incorporate best practice principles.
 - Retain and enhance existing flora and fauna habitat wherever possible.
 - Appropriately manage the spread of weeds and plant pathogens.

11.2 Flora and Fauna Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Flora and Fauna Management Plan which will include as a minimum:
 - The ecological mitigation measures as detailed in the environmental approval documentation.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Procedures for the clearing of vegetation.
 - Ecological monitoring requirements.
 - Compliance record generation and management.
- ❖ Vegetation Management Plan(s) will be prepared for sites where vegetation is proposed to be retained and for reaches of riparian zones that intersect with the construction footprint.
- ❖ NWRL Contractors would undertake the following ecological monitoring as a minimum:

- A pre-clearing inspection will be undertaken prior to any vegetation clearing by a suitable qualified ecologist and the Contractor's Environmental Manager (or delegate). The pre-clearing inspection will include, as a minimum:
 - Identification of hollow bearing trees or other habitat features.
 - Identification of any threatened flora and fauna.
 - A check on the physical demarcation of the limit of clearing.
 - An approved erosion and sediment control plan for the worksite.
 - The completion of any other pre-clearing requirements required by any project approvals, permits or licences.
 - The completion of the pre-clearing inspection will form a HOLD POINT requiring sign-off from the Contractor's Environmental Manager (or delegate) and a qualified ecologist.
- ❖ The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing.
- ❖ The following compliance records would be kept by the NWRL Principal Contractor:
 - Records of pre-clearing inspections undertaken.
 - Records of the release of the pre-clearing hold point.
 - Records of ecological inspections undertaken.

11.3 Flora and Fauna Mitigation

Examples of flora and fauna mitigation measures include:

- ❖ Areas to be retained and adjacent habitat areas will be fenced off prior to works to prevent damage or accidental over clearing.
- ❖ Clearing will follow a two-stage process as follows:
 - Non-habitat trees will be cleared first after sign-off of the pre-clearing inspection.
 - Habitat trees will be cleared no sooner than 48 hours after non-habitat trees have been cleared. A suitably qualified ecologist will be present on site during the clearing of habitat trees. Felled habitat trees will be left on the ground for 24 hours or inspected by the ecologist prior to further processing.
- ❖ Weed management is to be undertaken in areas affected by construction prior to any clearing works in accordance with the *Noxious Weeds Act 1993*.

12. Visual Amenity



12.1 Visual Amenity Management Objectives

- ❖ The following visual and landscape management objectives will apply to the construction of the project:
 - Minimise impacts on existing landscape features as far as feasible and reasonable.
 - Ensure the successful implementation of the Landscape Design.
 - Reduce visual impact of construction to surrounding community.

12.2 Visual Amenity Management Implementation

- ❖ NWRL Principal Contractors will implement visual and landscape management as part of the CEMP and sub-plans. As a minimum, the following would be covered:
 - The visual mitigation measures as detailed in the environmental approval documentation.
 - The responsibilities of key project personnel with respect visual management.
 - Monitoring requirements.
 - Compliance record generation and management.
- ❖ Visual and landscape measures will be incorporated into the Principal Contractor's regular inspections including checking the health of retained vegetation around site boundaries, checking the condition of any site hoarding and acoustic sheds, and checking the position and direction of any sight lighting.
- ❖ The Contractor will retain compliance records of any inspections undertaken in relation to visual and landscape measures.

12.3 Visual Amenity Mitigation

Examples of visual amenity mitigation measures include:

- ❖ Wherever feasible and reasonable, vegetation around the perimeter of the construction sites will be maintained.
- ❖ Temporary construction works will be designed with consideration of urban design and visual amenity as per Section 4.4.
- ❖ Temporary site lighting, for security purposes or night works will be installed and operated in accordance with AS4282:1997 Control of the Obtrusive Effect of Outdoor Lighting.

13. Carbon and Energy



1.1. Carbon and Energy Management Objectives

- ❖ The following carbon and energy management objectives will apply to the construction of the project:
 - Reduce construction and embodied carbon emissions.
 - Identify low carbon energy generation and procurement options.
 - Promote energy efficient design and construction, including reducing fuel usage.

1.2. Carbon and Energy Management Implementation

- ❖ NWRL Principal Contractors will develop and implement a Carbon and Energy Management Plan that will include, as a minimum:
 - The carbon and energy mitigation measures as detailed in the environmental approval documentation.
 - The relevant requirements of the NWRL Environment and Sustainability Policy and the NWRL Sustainability Strategy.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Compliance record generation and management.
- ❖ Reporting of carbon and energy will be undertaken throughout the construction works in accordance with the Energy Efficiency Opportunities Program and the *National Greenhouse and Energy Reporting Act 2007*.
- ❖ The Contractors would be required to retain appropriate records to allow for regular Greenhouse Gas Assessments (inclusive of Scope 1, 2 and 3 emissions) at various stages of construction.

13.1 Carbon and Energy Mitigation

Examples of carbon and energy mitigation measures include:

- ❖ Equipment and material selection will have consideration of energy efficiencies.
- ❖ Construction workers will be encouraged to use sustainable transport options and green travel plans will be developed.

- ❖ Site offices will be designed to minimise energy demand where feasible and reasonable.

14. Materials

14.1 Materials Management Objectives

- ❖ The following materials management objectives would apply to the construction of the project:
 - Reduce material use throughout the project life-cycle.
 - Identify materials with lower environmental footprint.

14.2 Materials Management Implementation

- ❖ NWRL Principal Contractors will be required to develop and implement a Sustainable Procurement Policy that will include as a minimum:
 - The materials mitigation measures as detailed in the environmental approval documentation.
 - The relevant requirements of the NWRL Environment and Sustainability Policy and the NWRL Sustainability Strategy.
 - The responsibilities of key project personnel with respect to the implementation of the policy.
 - Compliance record generation and management.
- ❖ The Contractors will be required to retain records detailing the consideration of sustainability in the procurement of all materials.

14.3 Materials Mitigation

Examples of materials mitigation measures include:

- ❖ Investigate strategies to optimise the use of recycled steel in concrete reinforcement.
- ❖ Consideration of whole-of-life costs during procurement.

15. Soil and Water

15.1 Soil and Water Management Objectives

- ❖ The following soil and water management objectives will apply to the construction of the project:
 - Prevent pollution of surface water through appropriate erosion and sediment control.
 - Maintain existing water quality of surrounding surface watercourses.
 - Source construction water from non-potable sources, where feasible and reasonable.

15.2 Soil and Water Implementation

- ❖ NWRL Principal Contractors will develop and implement a Soil and Water Management Plan for their scope of works. The Soil and Water Management Plan will include as a minimum:
 - The surface water and flooding mitigation measures as detailed in the environmental approval documentation.
 - The requirements of any applicable EPL conditions.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Procedures for the development and implementation of progressive erosion and sediment control plans.
 - Identification of locations where site specific Stormwater and Flooding Management Plans are required.
 - Procedures for the treatment, testing and discharge of water from the site.
 - Procedures for spill response.
 - Soil and water monitoring requirements.
 - Compliance record generation and management.
- ❖ NWRL Principal Contractors will develop and implement progressive erosion and sediment control plans (ESCPs) for all active worksites in accordance with *Managing Urban Stormwater: Soils & Construction Volume 1* (Landcom, 2004) (known as the “Blue Book”). The ESCPs will be approved by the Contractor’s Environmental Manager (or delegate) prior to any works commencing (including vegetation clearing) on a particular site. Copies of the approved ESCP will be held by the relevant Contractor personnel including the Engineer and the Site Foreman.

ESCPs will detail all required erosion and sediment control measures for the particular site at the particular point in time and be progressively updated to reflect the current site conditions. Any amendments to the ESCP will be approved by the Contractor’s Environmental Manager (or delegate)
- ❖ NWRL Principal Contractors will develop and implement Stormwater and Flooding Management Plans for the relevant construction sites. These plans will identify the appropriate design standard for flood mitigation based on the duration of construction, proposed activities and flood risks. The plan will develop procedures to ensure that threats to human safety and damage to infrastructure are not exacerbated during the construction period.
- ❖ NWRL Principal Contractors will undertake the following soil and water monitoring as a minimum:
 - Weekly inspections of the erosion and sediment control measures. Issues identified would be rectified as soon as practicable.
 - Additional inspections will be undertaken following significant rainfall events (greater than 20 mm in 24 hours).

- All water will be tested (and treated if required) prior to discharge from the site in order to determine compliance with the parameters of the EPL. No water will be discharged from the site without written approval of the Contractor's Environmental Manager (or delegate). This is to form a HOLD POINT.
- ❖ The following compliance records will be kept by the NWRL Principal Contractors:
 - Copies of current ESCPs for all active construction sites.
 - Records of soil and water inspections undertaken.
 - Records of testing of any water prior to discharge.
 - Records of the release of the hold point to discharge water from the construction site to the receiving environment.

15.3 Soil and Water Mitigation

Examples of surface water and flooding mitigation measures include:

- ❖ Clean water will be diverted around disturbed site areas, stockpiles and contaminated areas.
- ❖ Control measures will be installed downstream of works, stockpiles and other disturbed areas.
- ❖ Exposed surfaces will be minimised, and stabilised / revegetated as soon feasible and reasonable upon completion of construction.
- ❖ Dangerous good and hazardous materials storage will be within bunded areas with a capacity of 110 per cent of the maximum single stored volume.
- ❖ Spill kits will be provided at the batch plants, storage areas and main work sites.

15.4 Water Resources Management

The following water resources management objectives will apply to the construction of the project:

- ❖ Minimise demand for, and use of potable water.
- ❖ Maximise opportunities for water re-use from captured stormwater, wastewater and groundwater.

Examples of measures to minimise potable water consumption include:

- ❖ Water efficient controls, fixtures and fittings in temporary facilities.
- ❖ Collecting, treating and reusing water generated in tunnelling operations, concrete batching and casting facility processes.
- ❖ Using recycled water or treated water from onsite sources in the formulation of concrete
- ❖ Harvesting and reusing rainwater from roofs of temporary facilities.
- ❖ Using water from recycled water networks.
- ❖ Collecting, treating and reusing groundwater and stormwater.
- ❖ Using water efficient construction methods and equipment.
- ❖ Providing designated sealed areas for equipment wash down.

16. Air Quality



Photo courtesy of Roads and Maritime Services.

16.1 Air Quality Management Objectives

- ❖ The following air quality management objectives will apply to the construction of the project:
 - Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable.
 - Identify and control potential dust and air pollutant sources.

16.2 Air Quality Management Implementation

- ❖ NWRL Principal Contractors will develop and implement an Air Quality Management Plan which will include, as a minimum:
 - The air quality mitigation measures as detailed in the environmental approval documentation.
 - The requirements of any applicable EPL conditions.
 - Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Air quality and dust monitoring requirements.
 - Compliance record generation and management.
- ❖ Air quality and dust monitoring on the NWRL will involve the following as a minimum:
 - Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor.
 - Regular visual monitoring of dust generation from work zones.
 - Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly.
- ❖ The following compliance records will be kept by the Principal Contractor:
 - Records of any meteorological condition monitoring.
 - Records of any management measures implemented as a result of adverse, windy weather conditions.

- Records of air quality and dust inspections undertaken.

16.3 Air Quality Mitigation

Examples of air quality mitigation measures include:

- ❖ Plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes.
- ❖ Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind blown dust emissions.
- ❖ Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate.
- ❖ Dust extraction and filtration systems will be installed for tunnel excavation works and deep excavation with limited surface exposure.

17. Waste

17.1 Waste Objectives

- ❖ The following waste objectives will apply to the construction of the project:
 - Minimise waste throughout the project life-cycle.
 - Waste management strategies will be implemented in accordance with the *Waste Avoidance and Resource Recovery Act 2001* management hierarchy as follows:
 - Avoidance of unnecessary resource consumption.
 - Resource recovery (including reuse, reprocessing, recycling and energy recovery).
 - Disposal.
- ❖ Targets for the recovery, recycling or reuse of construction waste, and beneficial reuse of spoil will be provided by the Principal Contractor.

17.2 Waste Implementation

- ❖ NWRL Principal Contractors will develop and implement a Waste Management and Recycling Plan which will include as a minimum:
 - The waste management and recycling mitigation measures as detailed in the environmental approval documentation.
 - The responsibilities of key project personnel with respect to the implementation of the plan.
 - Waste management and recycling monitoring requirements.
 - Compliance record generation and management.
- ❖ Principal Contractors will undertake the following waste monitoring as a minimum:
 - Weekly inspections will include checking on the waste storage facilities on site.
 - All waste removed from the site will be appropriately tracked from ‘cradle to grave’ using waste tracking docketts.
- ❖ Principal Contractors will report all necessary waste and purchasing information to TfNSW as required for TfNSW to fulfil their WRAPP reporting requirements.
- ❖ Compliance records will be retained by the Principal Contractors in relation to waste management including records of inspections and waste docketts for all waste removed from the site.

17.3 Waste Mitigation

Examples of waste management and recycling mitigation measures include:

- ❖ All waste will be assessed, classified, managed and disposed of in accordance with the Waste Classification Guidelines (DECC, 2008).
- ❖ All waste materials removed from the sites will be directed to an appropriately licensed waste management facility.
- ❖ The use of raw materials (noise hoarding, site fencing, etc...) will be reused or shared, between sites and between construction contractors where feasible and reasonable
- ❖ Recyclable wastes, including paper at site offices, will be stored separately from other wastes.

18. Acronyms

Acronym	
CEMP	Construction Environmental Management Plan
CNVS	Construction Noise and Vibration Strategy
DP&E	Department of Planning and Environment (Formerly Department of Planning and Infrastructure)
EIS	Environmental Impact Statement
EMF	Environmental Management Framework
EMS	Environmental Management System
EPA	Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
EPL	Environment Protection Licence (issued by EPA under the POEO Act)
ER	Environmental Representative
ESCP	Erosion and Sediment Control Plan
NOHSC	National Occupational Health and Safety Commission
NWRL	North West Rail Link
OEH	Office of Environment and Heritage (Formerly DECCW)
POEO Act	Protection of the Environment Operation Act 1997
RMS	Roads and Maritime Service (Formerly RTA)
TBM	Tunnel Boring Machine
TfNSW	Transport for NSW

Appendix A - Environment and Sustainability Policy

North West Rail Link Environment and Sustainability Policy statement

Transport for New South Wales (Transport for NSW) is committed to the North West Rail Link (North West Rail Link) and contributing to the sustainable transformation of North West Sydney.

This Policy reflects a commitment in our delivery of the North West Rail Link to:

- Optimise environmental and sustainability outcomes, transport service quality, and cost effectiveness;
- Develop effective and appropriate responses to the challenges of climate change, carbon management, resource and waste management, land use integration, customer and community expectation, and heritage and biodiversity conservation; and
- Being environmentally responsible, by enhancing the natural environment and reducing the project ecological footprint, while complying with all applicable environmental laws, regulations and statutory obligations.

To deliver on these commitments, the North West Rail Link will:

Industry leadership

- Implement coordinated and transparent decision making, by engaging with stakeholders and suppliers, encouraging innovation and demonstrating sustainability leadership; and
- Explore new benchmarks for the transport infrastructure sector by requiring high standards from our designers, contractors and suppliers.

Community and customer

- Provide accessible, safe, pleasurable, and convenient access and transport service for all customers; and
- Establish positive relationships with community and stakeholders to maximise opportunities to add value to local communities in the North West Sydney.

Land use Integration and place making

- Create desirable places, promote livability, cultural heritage, optimise community and economic benefit; and
- Balance transit oriented development opportunities with stakeholder expectations.

Embedding sustainability

- Establish robust sustainability objectives and targets;
- Maintain an environmental management system that is integrated into all our project activities
- Ensure thorough and open environmental assessment processes are developed, deployed and maintained
- Develop and maintain an environmental management framework to embed best practice environmental and sustainable outcomes during construction;
- Apply effective assurance processes to monitor performance against the project environment and sustainability objectives and identify appropriate reward or corrective action, as required; and
- Apply environment and sustainability specific processes to the procurement of delivery activities.

Accountability

- Undertake public sustainability reporting;
- Hold employees and contractors of the North West Rail Link project accountable for proactively meeting their environmental and sustainability responsibilities; and
- Provide appropriate training and resources necessary to meet our responsibilities.



Rodd Staples
Project Director - North West Rail Link.

30th January 2012

