8 Construction Traffic

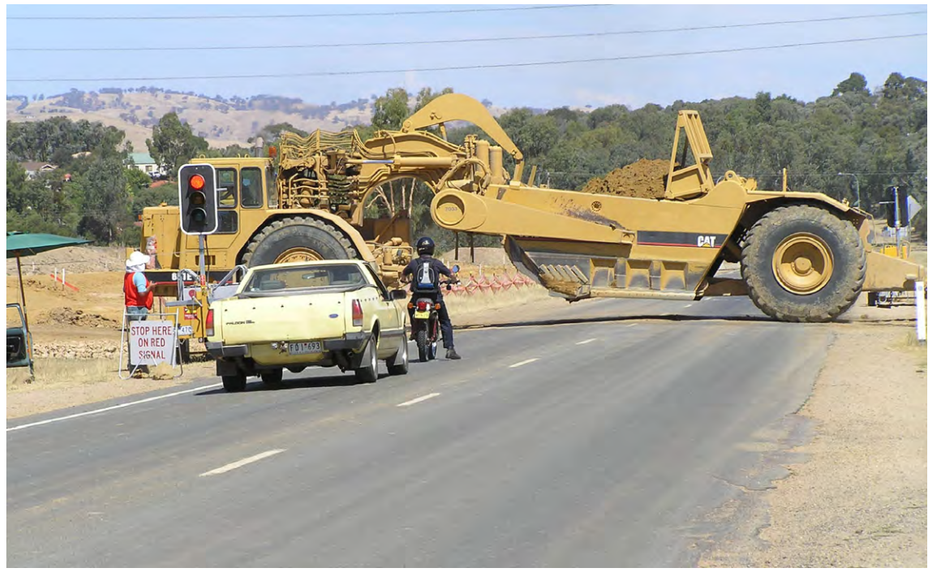

Photo courtesy of Roads and Maritime Services.

8.1 Construction Traffic Management Objectives

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

8.2 Construction Traffic Management Implementation

a. NWRL Principal Contractors will develop and implement a hierarchy of traffic management documentation including:
   i. 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
   ii. 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
b. TfNSW and its Contractors will undertake liaison with agencies and the community regarding traffic management. This will involve:
   i. 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.
   ii. 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

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

9.2 Construction Noise and Vibration Management Implementation

a. 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:
   i. The noise and vibration mitigation measures as detailed in the environmental approval documentation and the NWRL Construction Noise and Vibration Strategy (CNVS).
   ii. The requirements of any applicable EPL conditions.
   iii. Site plans or maps indicating locations of sensitive receivers, and key noise and vibration controls.
   iv. Pre-construction compliance requirements and hold points.
   v. The responsibilities of key project personnel with respect to the implementation of the plan.
   vi. Noise monitoring requirements.
   vii. Compliance record generation and management.
   viii. Community consultation requirements.
   ix. An Out of Hours Works Protocol applicable to all construction methods and sites (refer to the CNVS).

b. 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:
   i. The construction activities to be undertaken at each of the major worksites.
   ii. Tunnelling works.
   iii. Works proposed to be undertaken outside of standard construction hours.

a. Noise and vibration monitoring would be undertaken for construction as specified in the CNVS and the EPL.

b. The following compliance records would be kept by the NWRL Contractor:
   i. Records of noise and vibration monitoring results against appropriate NMLs and vibration criteria.
   ii. 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

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

10.2 Heritage Management Implementation

a. NWRL Principal Contractors will develop and implement a Heritage Management Plan which will include as a minimum:
   i. The heritage mitigation measures as detailed in the environmental approval documentation.
   ii. The responsibilities of key project personnel with respect to the implementation of the plan.
   iii. Procedures for undertaking any recordings of heritage items prior to works commencing.
   iv. Procedures for unexpected heritage finds.
   v. Heritage monitoring requirements.
   vi. Compliance record generation and management.

b. The Contractor's regular inspection will include checking of heritage mitigation measures.
c. Compliance records will be retained by the Contractor. These will include:
   i. Inspections undertaken in relation to heritage management measures.
   ii. Archival recordings undertaken of any heritage item.
   iii. Unexpected finds and stop work orders.
   iv. 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

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

11.2 Flora and Fauna Management Implementation

a. NWRL Principal Contractors will develop and implement a Flora and Fauna Management Plan which will include as a minimum:
   i. The ecological mitigation measures as detailed in the environmental approval documentation.
   ii. The responsibilities of key project personnel with respect to the implementation of the plan.
   iii. Procedures for the clearing of vegetation.
   iv. Ecological monitoring requirements.
   v. Compliance record generation and management.

b. Vegetation Management Plan(s) will be prepared for sites where vegetation is proposed to be retained and for reaches of roparian zones that intersect with the construction footprint.

c. NWRL Contractors would undertake the following ecological monitoring as a minimum:
   i. 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.
   ii. The Principal Contractor's regular inspections will include a check on the ecological mitigation measures and project boundary fencing.

d. The following compliance records would be kept by the NWRL Principal Contractor:
   i. Records of pre-clearing inspections undertaken.
   ii. Records of the release of the pre-clearing hold point.
   iii. 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

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

12.2 Visual Amenity Management Implementation

a. 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:
   i. The visual mitigation measures as detailed in the environmental approval documentation.
   ii. The responsibilities of key project personnel with respect visual management.
   iii. Monitoring requirements.
   iv. Compliance record generation and management.

b. 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.

c. 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

13.1 Carbon and Energy Management Objectives

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

13.2 Carbon and Energy Management Implementation

a. NWRL Principal Contractors will develop and implement a Carbon and Energy Management Plan that will include, as a minimum:
   i. The carbon and energy mitigation measures as detailed in the environmental approval documentation.
   ii. The relevant requirements of the NWRL Environment and Sustainability Policy and the NWRL Sustainability Strategy.
   iii. The responsibilities of key project personnel with respect to the implementation of the plan.
   iv. Compliance record generation and management.
b. 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*.
c. 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

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

14.2 Materials Management Implementation

a. NWRL Principal Contractors will be required to develop and implement a Sustainable Procurement Policy that will include as a minimum:
   i. The materials mitigation measures as detailed in the environmental approval documentation.
   ii. The relevant requirements of the NWRL Environment and Sustainability Policy and the NWRL Sustainability Strategy.
   iii. The responsibilities of key project personnel with respect to the implementation of the policy.
   iv. Compliance record generation and management.
b. 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

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

15.2 Soil and Water Implementation

a. 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:
   i. The surface water and flooding mitigation measures as detailed in the environmental approval documentation.
   ii. The requirements of any applicable EPL conditions.
   iii. The responsibilities of key project personnel with respect to the implementation of the plan.
   iv. Procedures for the development and implementation of progressive erosion and sediment control plans.
   v. Identification of locations where site specific Stormwater and Flooding Management Plans are required.
   vi. Procedures for the treatment, testing and discharge of water from the site.
   vii. Procedures for spill response.
   viii. Soil and water monitoring requirements.
   ix. Compliance record generation and management.
b. 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)

c. 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.

d. NWRL Principal Contractors will undertake the following soil and water monitoring as a minimum:

   i. Weekly inspections of the erosion and sediment control measures. Issues identified would be rectified as soon as practicable.

   ii. Additional inspections will be undertaken following significant rainfall events (greater than 20 mm in 24 hours).

   iii. 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.

e. The following compliance records will be kept by the NWRL Principal Contractors:

   i. Copies of current ESCPs for all active construction sites.

   ii. Records of soil and water inspections undertaken.

   iii. Records of testing of any water prior to discharge.

   iv. 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

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

16.2 Air Quality Management Implementation

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

a. The following waste objectives will apply to the construction of the project:
   i. Minimise waste throughout the project life-cycle.
   ii. 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.
   iii. 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

a. NWRL Principal Contractors will develop and implement a Waste Management and Recycling Plan which will include as a minimum:
   i. The waste management and recycling mitigation measures as detailed in the environmental approval documentation.
   ii. The responsibilities of key project personnel with respect to the implementation of the plan.
   iii. Waste management and recycling monitoring requirements.
   iv. Compliance record generation and management.

b. Principal Contractors will undertake the following waste monitoring as a minimum:
   i. Weekly inspections will include checking on the waste storage facilities on site.
   ii. All waste removed from the site will be appropriately tracked from 'cradle to grave' using waste tracking dockets.

c. Principal Contractors will report all necessary waste and purchasing information to TfNSW as required for TfNSW to fulfil their WRAPP reporting requirements.

d. Compliance records will be retained by the Principal Contractors in relation to waste management including records of inspections and waste dockets 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

CEMP	Construction Environmental Management Plan
CNVS	Construction Noise and Vibration Strategy
DP&I	Department of Planning and Infrastructure (Formerly DoP)
EIS	Environmental Impact Statement
Construction	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