17. Waste Management

Northern Link

Phase 2 – Detailed Feasibility Study

CHAPTER 17

WASTE MANAGEMENT

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17. Waste Management

This chapter addresses Part B, Section 5.11 of the Terms of Reference (ToR). It describes the potential waste production and management during construction and operation of all aspects of the project. Waste products are identified and proposed waste management strategies are outlined having regard to the Environmental Protection (Waste) Policy. Proposed onsite storage requirements and treatment processes for waste, including waste receptors as per the Australia and New Zealand Environment Conservation Council (*ANZECC) guidelines are outlined. Where offsite disposal of solid or liquid wastes are proposed, locations of likely disposal facilities are identified together with identification of likely transport arrangements particularly for regulated wastes. Target rates for recycling are also identified.*

17.1 Waste Streams

The Northern Link project is expected to generate a variety of liquid and solid waste materials. The construction phase is likely to generate larger amount of waste than the operational phase of the project. Waste streams during construction include:

- demolition wastes (building materials, vegetation, kerbs and pavements);
- building waste (packaging materials, scrap metal, timber formwork, pallets, plastic and cardboard);
- excavated material;
- contaminated soil, including Acid Sulphate Soil if any, excavated during construction;
- liquid wastes from cleaning, repairing, and maintenance of tunnelling and construction vehicles, spillage of stored chemicals or oils, dust control measures, tunnel wash down requirements, groundwater inflow and rainwater runoff from construction sites and pavements; and
- general waste from construction sites (including office wastes, scrap materials and biodegradable wastes).

The generation of wastes during the operational phase would generally be sediment, hydrocarbons (oils and greases) and gross pollutants. These are generally to be found in groundwater inflow, pavement run-off and wash down water generated during maintenance of the tunnels other than the heavier solid waste which is likely to remain in situ. Liquid wastes and the finer gross pollutants would be managed through the incorporation of control measures into the design of the stormwater and groundwater management systems within the tunnels. Provision would be made to be able to collect groundwater reporting to the tunnels separately from runoff from the road surfaces and separately from any spills or any fire retardants necessarily used for incidents within the tunnels. These different collection sumps would be pumped out as necessary and the contaminated waste would be treated to achieve appropriate quality before disposal to stormwater system. Incidents may occur which result in the production of waste such as fuel spillage, debris from vehicle accidents and loss of loads from utility vehicles, trailers or trucks. Waste from these incidents is to be managed through the incident management procedures which are outlined in the Environmental Management Plans (Chapter 19, Environmental Management Plan).

17.2 Waste Management Plan

In Queensland, waste management is governed by the requirements of the *Environmental Protection Act 1994.* The *Environmental Protection (Waste Management) Regulation 2000* and the *Environmental Protection (Waste Management) Policy 2000* (EPP Waste), seek to achieve the objectives of the Act and set the legislative framework governing the waste management strategy and plan. The framework includes:

- adoption of a waste management hierarchy;
- assigning responsibility for waste management; and
- outlining specific mechanisms for waste management planning.

A Waste Management Plan (WMP) for the project would be prepared, providing comprehensive management processes for key waste streams. The WMP would be based upon the provisions of the EPP (Waste) and would seek to avoid waste generation in the first instance, followed by recycling or reprocessing waste (in particular water) secondly and, lastly, waste disposal only if avoidance and reuse are not possible. The plan would also specify waste management procedures to be followed during the construction period. These procedures would include:

- the re-use of clean excavated materials wherever practicable;
- collection and appropriate reuse of lubricants and machine parts wherever practical;
- collection and reuse of water wherever practicable, in particular stormwater from workshed roofs and groundwater reporting to the tunnel;
- arrangements for transporting inert and solid wastes to appropriate management centres or placement sites; and
- the installation of segregated bins for recyclable materials.

The governing principles of the waste management strategy would need to be effectively incorporated into the construction program.

17.3 Waste Management Strategies

Measures that involve waste minimisation and management, as specified in EPP (Waste), fall within the categories of avoidance, reduction, re-use, recycling and disposal.

Avoid and Reduce

Strategies for reducing waste would be detailed in the Waste Management Plan and may include:

- consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative;
- arrangements with suppliers to return any unused construction materials;
- where possible, goods to be ordered in bulk to minimise packaging waste and packaging material returned to the supplier wherever practicable; and
- encouraging everyone working on the project to avoid and reduce waste, wherever possible.

Re-use

Strategies for the re-use of waste products during construction may include:

- chipping and mulching of vegetation cleared during construction and reuse of mulched material for landscaping purposes;
- reuse of excavated material as fill at approved fill sites;
- topsoil free of weeds to be stockpiled and stored for re-use, if possible;
- re-use of concrete formwork throughout the project;

- re-use of reinforced steel structures in the project;
- re-use of structures including culverts, cabling, poles and similar infrastructure;
- broken bricks, tiles and other masonry to be used in fill or transferred to a building supply company; and
- asphalt to be re-used by transferring to batching plants or use as a select/earthworks coarse layer.

Recycle

Strategies for recycling during construction may include:

- kerb and pavement materials (concrete, asphalt) to be transferred to crushing and recycling plants;
- provision of recycling bins for general rubbish, (ie: glass, plastic, paper, metals, using colour-coded bins);
- collection of demolition materials and re-use on site where possible or transport to a recycling depot;
- collection and return of packaging materials (eg: pallets) to suppliers wherever practicable;
- investigation of the availability of treated wastewater, stormwater runoff or groundwater in-flow for spraying roadworks to reduce dust generation, for wheel washes and other washdown uses or for watering progressive landscape works;
- incorporation of a closed water recycling system if a concrete and/or asphalt batching plant is to be established on or close to the construction site (although the provision of such plants is not anticipated);
- use of recycled materials to the limits of design in concrete, roadbase, asphalt and other construction materials;
- collection and recycling of used oils by a licensed contractor;
- collection by a licensed contractor of empty oil and fuel drums and other containers for return to recycling facilities; and
- training of all employees in the waste management plan and recycling opportunities.

Including transport of spoil to the Mount Coot-tha quarry to be recycled into asphalt or other industrial application more than 50% of waste generated by the Project would be recycled.

Disposal

Waste unable to be reused or recycled would be disposed of in a certified land fill site under the control and management of the Brisbane City Council. Materials would include putrescible wastes from kitchens and lunchrooms, non-putrescible materials unable to be recycled. The transport of regulated wastes and contaminated soils or other materials (Section 17.6) would be conducted by licensed contractors for disposal at licensed facilities, in accordance with legislative requirements.

17.4 Timing of Waste Transport

The likely construction sites for the project were described in detail in Chapter 4, Project Description in the EIS. Provision would be made on these sites for the storage of Dangerous Goods (including fuel), according to the Dangerous Goods Codes.

Delivery and removal of materials from the site would be governed by the potential impacts of truck movements on nearby residences. On that basis, all surface truck movements (for transport of waste materials) would be considered as part of the Traffic Management Plan.

17.5 Management of Hazardous materials or Dangerous Goods

Products likely to be stored at construction compound sites or within tunnels include:

- petroleum or other hydrocarbon products; and
- hazardous materials/dangerous goods residues and containers.

It is not intended to store explosives at the work sites during construction. Explosive materials would be transported to the worksites as required by the construction program. Storage and transport of materials would be undertaken according to:

- AS 1216 Classification, Hazard Identification and Information Systems for Dangerous Goods;
- AS 1678 Emergency Procedures Guides – Transport;
- AS 1940 Storage and Handling of Flammable and Combustible Liquids;
- AS 3780 The Storage and Handling of Corrosive Substances;
- AS 2809 Road tank Vehicles for Dangerous Goods;
- AS 2931 Selection and Use of Emergency Procedures Guides for Transport of Dangerous Goods; and
- AS 2187 Explosives – Storage, Transport and use.

Refuelling and maintenance activities would be undertaken in designated bunded areas to minimise the potential for soil and water contamination to result from these activities. Appropriate spill response plans would also be prepared (Chapter 18, Environmental Management Plan).

17.6 Management of Contaminated Soil

The management of contaminated soil was discussed in Chapter 6, Geology, Geomorphology and Soils in the EIS. Any contaminated land to be excavated would be subject to a Site Management Plan (SMP), and if required, include the transport of contaminated soil offsite. Where contaminated soil needs to be removed, a Contaminated Land Disposal Permit would be required to remove the contaminated soil to a licensed landfill. Authorisation from Brisbane City Council would also be required prior to disposal. If spills occur during the transport of contaminated soil, the area affected would be remediated.

The preparation or alteration of a SMP, and any removal or disposal or remediation of contaminated material would be carried out in accordance with:

- Australian and New Zealand Environment and Conservation Council/National Health and Medical Research Council *Guidelines for Assessment and Management of Contaminated sites*; and
- the *Environmental Protection Act 1994* as amended and other related Acts, Policies and Statutory Regulations of Federal, State and Local Governments.

Alternatively, the best option may be to remediate or cover a contaminated site with packed clay or concrete to minimise potential to contaminate the local environment. Consultation would be undertaken with the EPA to establish the standards required for the onsite remediation of any contaminated soil. Validation sampling would need to be carried out following remediation or covering, and sign-off given by the EPA via an appropriately certified auditor.

17.7 Acid Sulphate Soils

The likelihood and management of Acid Sulphate Soils (ASS) was discussed in Chapter 6, Geology, Geomorphology and Soils in the EIS. Subject to further investigations, an ASS management plan would be developed, incorporating best management and monitoring practices through the design, pre-construction and construction phases to eliminate or minimise environmental impacts associated with ASS. ASS mitigation measures would accord with State Planning Policy 2/02 –*Planning and Managing Development involving Acid Sulphate Soils* and the hierarchy of ASS management principles in line with the *Queensland Acid Sulphate Soil Technical Manual Soil Management Guidelines (version 3.8)* (2002), which include: avoidance, minimisation of disturbance, neutralisation, hydraulic separation and strategic re-burial.

In particular, the ASS management measures would specifically ensure:

- where ASS must be disturbed, soil treatment with lime or other neutralising agents, in accordance with the treatment rates prescribed in the ASS management plan, must be used onsite to prevent the downstream or offsite impacts from acidic water drainage;
- all leachate and runoff from areas excavated below 5m Australian Height Datum in known ASS areas, ASS treatment pads and stockpile areas should be adequately captured, contained, analysed, and treated (if necessary) prior to offsite discharge; and
- all fill to be used on site (eg: for elevated roadways etc.) must be ASS-free or first evaluated for ASS and if found, must first be treated with lime or other acid neutralising agents, in accordance with the treatment rates prescribed in the ASS management plan.

Careful planning would be required during the design phase and implementation of suitable management/mitigation measures to minimise and adequately manage potential impacts from ASS disturbance during construction. It would also be essential to maintain and monitor the condition and performance of permanent mitigation measures that are installed during construction and for the duration of the operational phase to prevent/minimise potential impacts that may occur as a delayed impact in the future.