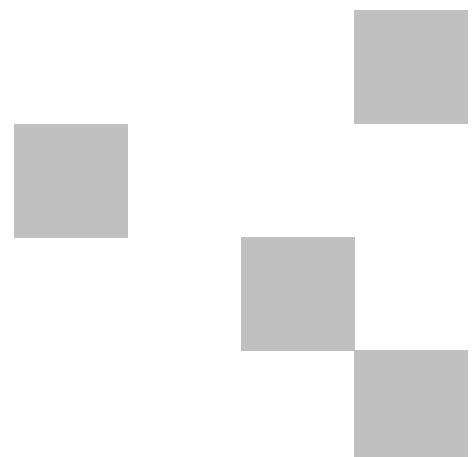




APPENDIX B7

Construction Waste and Energy Management Plan



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Glossary / Abbreviations

Ancillary facility	Temporary facility for construction, including for example an office and amenities compound, construction compound, batch plant (concrete or bitumen), materials storage compound, maintenance workshop, testing laboratory or material stockpile area.
ASS	Acid sulfate soils
BH	borehole
CEMP	Construction environmental management plan
CoA	Conditions of approval
Compliance audit	Verification of how implementation is proceeding with respect to the CEMP (which incorporates the relevant CoA).
CO ₂	Carbon Dioxide
CT	Contaminant Thresholds
D&C Deed	Design and Construct Deed
DECCW	Department of Environment, Climate Change and Water (now known as NSW Office of Environment and Heritage)
DP	Deposited Plan
DP&E	Department of Planning and Environment
Ecological sustainable development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992).
EIS	Environmental Impact Statement
EMS	Environmental management system
ENM	Excavated natural materials
Environmental aspect	Defined by AS/NZS ISO 14001:2004 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2004 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
Environmental objective	Defined by AS/NZS ISO 14001:2004 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.
Environmental target	Defined by AS/NZS ISO 14001:2004 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Environmental team	Members of the Contractor's staff including sub-contractors

	authorised by the Environmental Manger to work on environmental issues related to the M4W Major Civil Works
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
EWMS	Environmental work method statements
M4W Major Civil Works	That portion of the M4 Widening which is the subject of this CEMP.
Minister, the	NSW Minister for Planning
Non-compliance	Failure to comply with the requirements of the Instrument of Approval or any applicable license, permit or legal requirements.
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation.
NOW	NSW Office of Water
OEH	NSW Office of Environment and Heritage
PASS	Potential Acid Sulfate Soils
PoEO Act	Protection of the Environment Operations Act 1997
Project, the	WestConnex – M4W Major Civil Works
Project Team	Members of the M4W Major Civil Works RCPBJV staff including sub-contractors authorised by the Project Manager to work on the M4W Major Civil Works.
PVC	Polyvinyl chloride
RCPBJV	Rizzani de Eccher Australia Pty Ltd/CPB Contractors Pty Ltd Joint Venture Formerly Rizzani de Eccher Australia Pty Ltd/Leighton Contractors Pty Ltd Joint Venture (RLJV).
RMS	(NSW) Roads and Maritime Services
RWMP	Resource and Waste Management Plan (note that the Construction Waste and Energy Management Plan forms the Resource and Waste Management Plan for the M4 Widening Project).
SMC	Sydney Motorway Corporation (formerly WestConnex Delivery Authority)
SCC	Specific Contaminant Concentrations
SWMP	Construction Soil and Water Management Plan
TCLP	Toxicity Characteristics Leaching Procedure
tCO ₂ e-	tonnes of CO ₂ equivalent
VENM	Virgin excavated natural materials
WCX	WestConnex M4 Co subsidiary of SMC delivering M4 Widening
WEMP	Construction Waste and Energy Management Plan
WRAPP	(NSW) Waste Reduction and Purchasing Policy

I Introduction

I.1 Context

The Construction Waste and Energy Management Plan (WEMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the WestConnex M4W Major Civil Works (the Project).

The WEMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the mitigation measures listed in the *WestConnex M4 Widening Environmental Impact Statement* (EIS) and Submissions Report and all applicable legislation. For the purposes of mitigation measure WE2 (refer to Table 6.1), this plan forms the Resource and Waste Management Plan (RWMP).

I.2 Background

WestConnex M4 Widening EIS (August 2014) assessed the impacts of construction in terms of waste generation/management and energy use, within Section 8.4 (Soil, water and waste) and Section 9.1 (Greenhouse gas assessment).

The EIS identified the various waste streams that would be generated during the construction of the Project, including the following:

- Surplus spoil (excavated soil, sediment, rock) from bulk earthworks which is unable to be reused within backfilling or restoration.
- Contaminated soils that may be exposed during construction, and if exposed, may require offsite disposal or beneficially reused on site in a suitable manner.
- Concrete, pavement, steel and other materials from demolition of kerbs, fencing, pavements, concrete noise walls, barriers, signage, lighting, parapets, existing toll plaza and gantries.
- Surplus material from construction and general site reinstatement, such as fencing, sediment, concrete, steel, formwork, and sand bags.
- Packaging materials from items delivered to site, such as pallets, crates, cartons, plastics and wrapping materials.
- Vegetative waste from clearing and grubbing.
- Plant and vehicle maintenance waste, such as oil containers.
- General office wastes generated by onsite personnel, such as paper, cardboard, beverage containers and food wastes.
- Sewage waste generated through the use of personnel facilities.

The EIS identified opportunities to avoid, reduce and recycle waste, refer to Section 6 for mitigation and management measures.

The EIS identified the main sources of energy consumption for the project and estimated the consumption of electricity and fuel to indicatively quantify greenhouse gas emissions.

The emission sources during construction would include:

- Operation of construction equipment – which creates direct greenhouse gas emissions as fuel is combusted onsite.
- Use of construction materials – which contain varying levels of upstream indirect embodied emissions.

- Construction transport – where construction-related transportation creates greenhouse gas emissions from the consumption and burning of fossil fuels.
- Electricity use – which is generally consumed by site offices, for lighting, and for security.
- Vegetation clearing – where the breakdown of organic matter as waste material directly releases stored carbon dioxide to the atmosphere.

Table I-1 provides a summary of the construction greenhouse gas emissions estimated in the EIS.

Table I-1 Estimated project construction greenhouse gas emissions

Activity		Scope 1 (tCO ₂ e-) ¹	Scope 3 (tCO ₂ e-) ¹	Total Emissions (tCO ₂ e-) ¹
Site offices /general areas	Liquid fuel combustion – electricity generation (eg diesel generator)	260	20	280
Demolition and earthworks	Liquid fuel combustion – site plant and equipment Vegetation clearing	4,400	110	4,510
Pavements	Liquid fuel combustion – site plant and equipment Upstream embodied emissions – material use	930	444,000	444,930
Structures	Liquid fuel combustion – site plant and equipment Upstream embodied emissions – material use	3,800	30,250	34,050
Drainage	Liquid fuel combustion – site plant and equipment Upstream embodied emissions – material use	460	580	1,040
Road furniture	Upstream emissions from the transport of materials	345	2,380	2,725
Total		10,195	477,340	487,535

¹tCO₂e-: tonnes of CO₂ equivalent

Measures to reduce energy consumption during construction were identified in the EIS and will be implemented during construction are outlined in Section 6.

1.3 Environmental management systems overview

The overall Environmental Management System for the Project is described in the CEMP.

The WEMP is part of the Rizzani de Eccher Australia Pty Ltd/CPB Contractors Pty Ltd (RCPBJV) environmental management framework for the Project, as described in Section 4.1 of the CEMP. Management measures identified in this Plan will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

EWMS will be developed and signed off by environment and management representatives prior to associated works and construction personnel will be required to undertake works in accordance with the identified mitigation and management measures.

Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by the RCPBJV personnel and sub-contractors.

The review and document control processes for this Plan are described in Sections 9 and 10 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the RCPBJV proposes to minimise the amount of waste for disposal, manage waste and reduce energy consumption during construction of the Project.

2.2 Objectives

The key objective of the WEMP is to ensure that waste for disposal and energy use are minimised. To achieve this objective, RCPBJV will undertake the following:

- Ensure measures are identified and implemented to minimise waste, manage waste and conserve energy throughout the construction of the project.
- Ensure the preferred waste management hierarchy of avoidance, minimisation, reuse, recycling and finally disposal is followed.
- Provide staff with an increased level of understanding and awareness of waste and resource use management issues.
- Ensure appropriate measures are implemented to address the relevant CoA outlined in Table 3-1, and the mitigation measures detailed in the EIS.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan.

2.3 Targets

The following targets have been established for the management of waste and energy consumption during the project:

- Avoid the unnecessary production of waste where practical to do so.
- Dispose of waste materials in accordance with legislative requirements.
- Minimise / reduce the quantities of resources to be used.
- Achieve the waste re-use / recycling targets nominated in Table 2-1..
- Targets specific to energy targets are included in the Sustainability Management Plan.

Table 2-1 Construction waste streams and targets

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
Demolition/ Site clearing	Vegetation (logs, mulched timber, weeds)	General solid waste (non-putrescible)	Approx. 9ha to be cleared.	Reuse/recycle	>90%
	Concrete, asphalt and gravel	General solid waste (non-putrescible)	~ 1000 t	Recycle	>90%
	Scrap metal	General solid waste (non-putrescible)	N/a	Recycle	>85%
Earthworks	ENM (Excavated Natural Material) VENM (Virgin Excavated Natural Material)	General solid waste (non-putrescible)	~5,600m ³	On site reuse	95%
	ENM VENM	General solid waste (non-putrescible) – Resource Recovery Order/Exemption	~40 000 m ³ =	Reuse off-site	>95%
	Contaminated soils (e.g. soils that meet land use criteria) Asbestos	If material is taken off site classification will be carried out, based on soil tests carried out pre-construction and in accordance with the EPA Waste Classification Guidelines: Part 1 and 2 (DECCW 2009)	To be determined post contamination testing.	Reuse onsite in accordance with Contamination Strategy Dispose	>50%
Road Construction	Steel Reinforcing	General solid waste (non-putrescible)	~1000t	Recycle	>90%
	Conduits and pipes	General solid waste (non-putrescible)	Unknown - to be determine during construction	Recycle	>90%
	Concrete (solids and washouts) and asphalt	General solid waste (non-putrescible)	~10 000 t	Recycle/reuse	>90%
	Timber formwork	General solid waste (non-putrescible)	Unknown - to be determine during construction	Recycle/reuse	>90%
	Packaging materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	As per compound and office below.	Recycle	>90%
	Empty oil and other drums	General solid waste (non-putrescible)	As per workshop below.	Recycle (where possible)	>90%
	Pesticides, herbicides, spill clean ups, paints and other chemicals	Hazardous waste	Unknown - to be determine during construction	Dispose	0%

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
	Metals and electrical cabling	General solid waste (non-putrescible)	Unknown - to be determine during construction	Recycle	>90%
Compounds and Workshop Operations	Tyres	Special Waste	~ 200 t	Dispose	0%
	Waste Generated by the maintenance of equipment including air and oil filters and rags	General solid waste (non-putrescible)	~ 700 kg	Dispose	0%
	Oils, grease, fuel, chemicals and other fluids	Liquid	~10 000 L	Recycle where possible	>90%
	Batteries	Hazardous waste	~100 batteries	Dispose	0%
	Radiator fluid	Hazardous waste	~2 000L	Dispose	0%
	Hydraulic fluid	Hazardous waste	Unknown - to be determine during construction	Dispose	0%
	Domestic waste generated by workers	General solid waste (putrescible)	~10 000kg	Recycle where possible	>60%
	Sewage	General solid waste (putrescible)	~100 000L	Dispose	0%
Office Operation	Paper, cardboard, plastic	General solid waste (non-putrescible)	~10 tonnes	Recycle	>90%
	Glass bottles and aluminium cans	General solid waste (non-putrescible)	500 kg	Recycle	>90%
	Ink cartridges	General solid waste (non- putrescible)	Unknown - to be determine during construction	Recycle	>90%
	Domestic waste generated by workers	General solid waste (putrescible)	~15 000kg	Recycle where possible	>60%
	Effluent	Liquid	200 000L	Dispose	0%

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

Legislation and regulations relevant to waste and energy management includes:

- *Protection of the Environment Operations Act 1997.*
- *Protection of the Environment Administration Act 1991*
- *Protection of the Environment Operations (General) Regulation 2009.*
- *Protection of the Environment Operations (Waste) Regulation 2014.*
- *Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008*
- *Waste Avoidance and Resource Recovery Act 2001 (WARR Act).*
- *Contaminated Land Management Act 1997.*
- *National Greenhouse and Energy Reporting Act 2007.*
- *Noxious Weeds Act 1993.*
- *Environmentally Hazardous Chemicals Act 1985.*
- *Dangerous Goods (Road and Rail Transport) 2008*
- *Pesticides Act 1999*
- *Pesticides Regulation 2009*

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in Appendix A1 of the CEMP.

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this Plan include:

- *NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (Waste Strategy 2014)*
- *Waste Classification Guidelines: Parts 1 and 2 (DECCW 2009) (EPA Publication).*
- *Best Practice Waste Reduction Guidelines for the Construction and Demolition Industry (tools for Practice), Natural Heritage Trust, 2000.*

Roads and Maritime Publications

- *Guideline for the Management of Contamination (Roads and Maritime, September 2013)*
- *Management of Wastes on Roads and Maritime Services Land (August 2014)*
- *Roads and Maritime Waste Fact Sheets: “Virgin Excavated Natural Material (VENM)”, “Excavated Natural Material (ENM)”, “Excavated Public Roads Materials”, “Recovered Aggregates”, “Asbestos Waste” and “Waste Sampling”*

3.2 Minister’s Conditions of Approval

The CoA relevant to this Plan are listed Table 3-1. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the WEMP

CoA No.	Condition Requirements	Document Reference
B20	Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	Section 5.5
B21	The reuse and/or recycling of waste materials generated on site shall be maximised as far as practicable, to minimise the need for treatment or disposal of those materials off site.	Section 5.2 & 5.4 Table 5-2
B22	All liquid and/or non-liquid waste generated on the site shall be assessed and classified in accordance with Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2009).	Section 5.1
B23	All waste materials removed from the SSI site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	Section 5.6
D31 (e)(ii)	The CEMP shall include, but not necessarily be limited to: measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; use of secondary waste material in construction wherever feasible and reasonable; procedures or dealing with green waste including timber and mulch from clearing activities; and measures for reducing demand on water resources (including potential for reuse of treated water from sediment control basins);	This document and Construction Soil and Water Management Plan (SWMP)

3.3 Management measures from EIS and Submissions Report

Relevant management measures are listed in Table 3-2. This includes reference to required outcomes, the timing of when the commitment applies, and relevant documents or sections of the EIS influencing the outcome and implementation.

Table 3-2 Management measures from EIS and Submissions Report

Outcome	Ref #	Commitment	Timing	Reference Document	WEMP Reference
Inappropriate handling and/or disposal of waste	SWW-14	A project-specific Resource and Waste Management Plan (RWMP) ¹ will be prepared in accordance with the Roads and Maritime Waste Minimisation & Management Guidelines and applicable Roads and Maritime QA Specifications.	Construction	Section 8.4 of the EIS/ Submissions Report	This document.
	SWW-15	All wastes, including contaminated wastes, will be identified and classified in accordance with <i>Waste Classification Guidelines Parts 1 and 2 (EPA, 2014)</i> Disposal of any non-recyclable waste will be in accordance with the POEO Act and <i>Waste Classification Guidelines: Part 1 Classifying Waste (DECCW NSW, 2009)</i>	Construction	Section 8.4 of the EIS	Section 5.1
Energy consumption: construction	GHG-1	Assess energy (fuel/electricity) efficiency when selecting equipment	Pre-construction	Section 9.1 of the EIS	Section 6
Re-use of excavated road materials	GHG-2	A waste management plan will be prepared to maximise re-use and recycling of construction and demolition waste. Reuse of excavated road materials would be maximised as far as possible where they are cost, quality and performance competitive to reduce use of materials (with embedded energy).	Pre-construction	Section 9.1 of the EIS	This document
Embodied carbon in steel	GHG-3	Steel with recycled content would be specified where feasible where they are cost, quality and performance competitive. Sub-contractors would be required to propose recycled content construction materials where they are cost, quality and performance competitive	Construction	Section 9.1 of the EIS	Section 6
Energy consumption: construction	GHG-4	Assess opportunities to use local materials to reduce transport emissions	Pre-construction	Section 9.1 of the EIS	Section 6
Carbon stored in vegetation	GHG-5	Undertake vegetation planting and management that maximises opportunities to sequester carbon over the life of the project	Pre-construction/ Construction	Section 9.1 of the EIS	Section 6/ Urban Design and Landscape Management Plan
Energy	GHG-6	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or	Pre-construction	Section 9.1 of the EIS	Section 6

¹ This Waste and Energy Management Plan forms the Resource and Waste Management Plan (RWMP).

Outcome	Ref #	Commitment	Timing	Reference Document	WEMP Reference
consumption: construction		B80) would be investigated by the contractor, taking into consideration the capacity of plant and equipment to use these fuels, ongoing maintenance issues and local sources. Works would be planned to minimise fuel use.			
Energy consumption: operation	GHG-7	Assess opportunities to use renewable energy sources to power control systems, lighting and signage	Pre-construction	Section 9.1 of the EIS	Section 6 Detailed Design/ relevant to operational phase.

4 Environmental aspects and impacts

4.1 Construction waste streams and energy use

The following construction related waste streams have been identified:

- Surplus spoil (excavated soil, sediment, rock) from bulk earthworks which is unable to be reused within backfilling or restoration.
- Contaminated soils that may be exposed during construction, and if exposed, may require offsite disposal or beneficially reused on site in a suitable manner.
- Concrete, pavement, steel and other materials from demolition of kerbs, fencing, pavements, concrete noise walls, barriers, signage, lighting, parapets, existing toll plaza and gantries.
- Surplus material from construction and general site reinstatement, such as fencing, sediment, concrete, steel, formwork, and sand bags.
- Packaging materials from items delivered to site, such as pallets, crates, cartons, plastics and wrapping materials.
- Vegetative waste from clearance and grubbing.
- Plant and vehicle maintenance waste, such as oil containers.
- General office wastes generated by onsite personnel, such as paper, cardboard, beverage containers and food wastes.
- Sewage waste generated through the use of personnel facilities.

The following sources of construction related energy consumption (fuel and power) have been identified:

- Procurement and delivery of materials to site.
- Vegetation removal.
- Site establishment, including compound set up.
- Relocation and protection of services.
- Earthworks including earth and rock cuttings and retaining walls.
- Removal, relocation and compaction of excavated material in fill embankments.
- Construction of pavements, bridges and culverts.
- Demolition of structures and pavements.
- Operation of batching plants, site compounds and lighting.
- Construction plant including cranes, rollers, excavators, bulldozers, graders and water trucks.
- Removal of waste from the site.
- Electricity use – which is generally consumed by site offices, for lighting, and for security

4.2 Impacts

The potential environmental impacts associated with construction waste generation and energy use include:

- Generation of construction waste, such as excavated soil and rock.

- Generation of vegetation waste from corridor clearing.
- Generation of domestic waste from construction personnel.
- Inappropriate disposal of waste (ENM, hazardous, etc.)
- Disturbance of contaminated groundwater
- Disturbance of hazardous materials
- Inappropriate handling and/or disposal of waste
- Generation or spread of contaminated waste/soils, e.g. groundwater, used or expired chemicals, or construction materials.
- Water pollution due to sediment runoff from soil excavation and excess spoil storage.
- Weed infestation from dispersion of seeds and so forth during clearing and access upgrading activities.
- Consumption of non-renewable resources such as energy, diesel and other chemicals.
- Greenhouse gas emissions due to consumption of energy from non-renewable resources.
- Embodied carbon in steel
- Carbon stored in vegetation

5 Waste and energy management

5.1 Classification of waste streams

Where waste cannot be avoided, reused or recycled it will be classified and appropriate disposal will then occur. The classification of waste is undertaken in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (EPA 2014). This document identifies six classes of waste: Special, Liquid, Hazardous, Restricted Solid, General Solid (putrescible) and General Solid (non-putrescible), and describes a six step process to classifying waste. That process is described below:

Step 1: Is it 'special waste'?

Establish if the waste should be classified as special waste. Special wastes are: clinical and related, asbestos, waste tyres. Definitions are provided in the guidelines.

Note: Asbestos and clinical wastes must be managed in accordance with the requirements of Clauses 42 and 43 of the Protection of the Environment Operations (Waste) Regulation 2005.

Step 2: If not special, is it 'liquid waste'?

If it is established that the waste is not special waste it must be decided whether it is 'liquid waste'. Liquid waste means any waste that: has an angle of repose of less than 5° above horizontal becomes free-flowing at or below 60° Celsius or when it is transported is generally not capable of being picked up by a spade or shovel.

Liquid wastes are sub-classified into:

- Sewer and stormwater effluent.
- Trackable liquid waste according to Protection of the Environment Operations (Waste) Regulation 2005 Schedule 1 Waste to which waste tracking requirements apply
- Non-trackable liquid waste

Step 3: If not liquid, has the waste already been pre-classified by the NSW EPA?

The EPA has pre-classified several commonly generated wastes in the categories of hazardous, general solid waste (putrescibles) and general solid waste (non-putrescibles). If a waste is listed as 'pre-classified', no further assessment is required.

Step 4: If not pre-classified, is the waste hazardous?

If the waste is not special waste (other than asbestos waste), liquid waste or pre-classified, establish if it has certain hazardous characteristics and can therefore be classified as hazardous waste.

Hazardous waste includes items such as explosives, flammable solids, substances liable to spontaneous combustion, oxidizing agents, toxic substances and corrosive substances.

Step 5: If the waste does not have hazardous characteristics, undertake chemical assessment to determine classification.

If the waste does not possess hazardous characteristics, it needs to be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste (putrescible and non-putrescible). If the waste is not chemically assessed, it must be treated as hazardous.

Waste is assessed by comparing Specific Contaminant Concentrations (SCC) of each chemical contaminant, and where required the leachable concentration using the Toxicity Characteristics Leaching Procedure (TCLP), against Contaminant Thresholds (CT).

Step 6: Is the general solid waste putrescible or non-putrescible?

If the waste is chemically assessed as general solid waste, a further assessment is available to determine whether the waste is putrescible or non-putrescible. The assessment determines whether the waste is capable of significant biological transformation. If this assessment is not undertaken, the waste must be managed as general solid waste (putrescible).

5.2 Waste exemptions

Clause 51 Protection of the Environment Operations (Waste) Regulation 2014 enables the EPA to grant exemptions to the licensing and payment of levies for the land application or use of waste. The EPA has recently reviewed the Waste Regulation (November 2014) and under the new provisions will now issue two separate documents, a resource recovery order and resource recovery exemption to replace the general or specific exemption.

- Resource recovery orders include conditions that **generators** and **processors** of waste must meet to supply the waste for land application, use as fuel or in connection with a process of thermal treatment. They may include specifications, record keeping, reporting and other requirements.
- Resource recovery exemptions contain the conditions which **consumers** must meet to apply waste to land, or use waste as fuel or in connection with a process of thermal treatment outside of certain requirements of the waste regulatory framework. They may include specifications, requirements on how to re-use or apply the waste, record keeping, reporting and other requirements.

The general orders/exemptions are applicable for a range of commonly recovered, high volume and well characterised waste materials that allow their use as fill or fertiliser at unlicensed, off-site facilities.

The general 'Resource Recovery Orders and Exemptions' may be applicable to this project are defined in Table 5-1 below. These are general gazette exemptions that do not require approval. A specific exemption may be granted where an application is made to the EPA.

Table 5-1 Resource recovery orders and exemptions

Order/Exemption	General Conditions
Excavated Natural Material Order 2014	The chemical concentration or other attributes of the excavated natural material listed in the Excavated Natural Material Order must not be exceeded.
Excavated Natural Material Exemption 2014	The excavated natural material can only be applied to land as engineering fill or used in earthworks. ENM handling, processing and testing requirements are outlined in detail in the order.
Excavated Public Road Material Order 2014	The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land.
Excavated Public Road Material Exemption 2014	The excavated public road material can only be applied to land within the road corridor for public road related activities including road construction, maintenance and installation of road infrastructure facilities. This order does not apply to the land application of excavated public road material on any land outside the road corridor. The excavated public road material cannot be applied on private land. The consumer must land apply the relevant waste within a reasonable period of time.

Order/Exemption	General Conditions
Raw Mulch Order 2014 Raw Mulch Exemption 2014	The raw mulch can only be applied to land for the purposes of filtration or as a soil amendment material or used either singularly or in any combination as input material(s) to a composting process. The consumer must land apply the raw mulch within a reasonable period of time.
Recovered Aggregate Order 2014 Recovered Aggregate Exemption 2014	The chemical concentration or other attribute of the recovered aggregate listed in Recovered aggregate Order must be met. The recovered aggregate can only be applied to land for road making activities, building, landscaping and construction works. This approval does not apply to any of the following applications: <ul style="list-style-type: none"> - Construction of dams or related water storage infrastructure, - Mine site rehabilitation, - Quarry rehabilitation, - Sand dredge pond rehabilitation, - Back-filling of quarry voids, - Raising or reshaping of land used for agricultural purposes, and - Construction of roads on private land unless: <ol style="list-style-type: none"> a. the relevant waste is applied to land to the minimum extent necessary for the construction of a road, and b. a development consent for the development has been granted under the relevant Environmental Planning Instrument (EPI), or c. it is to provide access (temporary or permanent) to a development approved by a Council, or d. the works undertaken are either exempt or complying e. development.

5.3 Classification of potential waste streams

The construction aspects and types of wastes, which may be generated during construction, are outlined with classifications in Table 5.2.

Table 5-2 Classification of potential waste streams

Aspect	Waste Types	Classification	Proposed reuse / Recycling / Disposal	Storage receptacle prior to reuse etc	Final location and transport operator
Demolition / Site Clearing	Vegetation (logs, mulched timber, weeds)	General solid waste (non-putrescible)	Reuse on site where possible, recycle offsite, Off-site reused in accordance with raw mulch exemption.	Stockpile	To be determined and recorded within Waste Register
	Concrete, asphalt and gravel	General solid waste (non-putrescible)	Reuse/recycle Off-site in accordance with Excavated Public Road Material or recovered aggregate exemption.	Stockpile	To be determined and recorded within Waste Register
	Scrap metal	General solid waste (non-putrescible)	Recycle	Scrap metal bin	To be determined and recorded within Waste Register
	Top soil (including applicable waste exemption/order – e.g. VENM)	General solid waste (non-putrescible)	95% beneficially reused on site or at a nearby location Off-site in accordance with ENM exemption.	Stockpile	To be determined and recorded within Waste Register
Bulk Earthworks	ENM (Excavated Natural Material) VENM	If material is taken off site classification will be carried out, based on soil tests carried out pre-construction and in accordance with the EPA <i>Waste Classification Guidelines: Parts 1 and 2</i> (DECC 2009)	Beneficial reuse onsite (such as integrated earthworks mounds). Balance cut and fill earthworks, where possible, to optimise reuse. Off-site re-use in accordance with ENM Exemption. Off-site disposal at an approved facility	Separate stockpile depending on waste classification	To be determined and recorded within Waste Register
	Potentially Contaminated Soils	If material is taken off site classification will be carried out, based on soil tests carried out pre-construction (refer to Section 5.3.1) and in accordance with the EPA <i>Waste Classification Guidelines: Parts 1 and 2</i> (DECC 2009)	Reuse/ encapsulation in accordance with contamination management strategy – refer to SWMP. Disposal to licensed facility.	Separate stockpile depending on waste classification	To be determined and recorded within Waste Register

Aspect	Waste Types	Classification	Proposed reuse / Recycling / Disposal	Storage receptacle prior to reuse etc	Final location and transport operator
Road Construction	Steel Reinforcing	General solid waste (non-putrescible)	Recycle	Scrap metal bin	To be determined and recorded within Waste Register
	Conduits and pipes	General solid waste (non-putrescible)	Recycle	Separate bin – Concrete, Polyvinyl chloride (PVC) /Plastic	To be determined and recorded within Waste Register
	Concrete (solids and washouts) and asphalt	General solid waste (non-putrescible)	Recycle	Concrete bin/skip	To be determined and recorded within Waste Register
	Timber formwork	General solid waste (non-putrescible)	Recycle/reuse	Timber skip	To be determined and recorded within Waste Register
	Packaging Materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	Recycle	Separate skip for plastic, wood, metals	To be determined and recorded within Waste Register
	Empty oil and other drums	General solid waste (non-putrescible)	Recycle	Empty oil drum skip; Plastics skip	To be determined and recorded within Waste Register
	Pesticides, herbicides, spill clean ups, paints and other chemicals	Hazardous waste	Dispose	Bunded container	To be determined and recorded within Waste Register
	Metals and electrical cabling	General solid waste (non-putrescible)	Recycle	Scrap metal bin	To be determined and recorded within Waste Register
Compounds and Workshop Operation	Tyres	Special Waste	Dispose	Stockpile	To be determined and recorded within Waste Register
	Waste generated by the maintenance of equipment including air and oil filters and rags	General solid waste (non-putrescible)	Dispose	Skip	To be determined and recorded within Waste Register
	Oils, grease, fuel, chemicals	Liquid	Recycle	Bunded container	To be determined and

Aspect	Waste Types	Classification	Proposed reuse / Recycling / Disposal	Storage receptacle prior to reuse etc	Final location and transport operator
	and other fluids				recorded within Waste Register
	Batteries	Hazardous waste	Dispose	Bunded container	To be determined and recorded within Waste Register
	Radiator Fluid	Liquid	Dispose	Bunded container	To be determined and recorded within Waste Register
	Hydraulic Fluid	Liquid	Dispose	Bunded container	To be determined and recorded within Waste Register
	Domestic waste generated by workers	General solid waste (putrescible)	Recycle	Co-mingled and general waste bins	To be determined and recorded within Waste Register
	Sewage	Liquid	Dispose	Tank	To be determined and recorded within Waste Register
Office Operation	Paper, cardboard and plastic	General solid waste (non-putrescible)	Recycle	Paper/Cardboard Onlybin	To be determined and recorded within Waste Register
	Glass bottles and aluminium cans	General solid waste (non-putrescible)	Recycle	Co-mingled bin	To be determined and recorded within Waste Register
	Ink cartridges	General solid waste (non-putrescible)	Recycle	Ink Cartridge collection bin	To be determined and recorded within Waste Register
	Food Waste	General solid waste (putrescible)	Recycle/dispose	General waste bin	To be determined and recorded within Waste Register
	Effluent	Liquid	Dispose	tank	To be determined and recorded within Waste Register

5.3.1 Contaminated Soils

The *Phase II Contamination and Acid Sulphate Soil Investigation and Assessment* (May 2014) prepared by GHD provides the following characterisation of the soils expected on the Project:

- The fill soils along the alignment have been classified as general solid waste with or without asbestos or hazardous waste with asbestos.
- The underlying natural soils have recorded concentrations that would meet the criteria for general solid waste, but if uncontaminated are likely to satisfy the criteria for VENM.
- Soils defined as Potential Acid Sulfate Soils (PASS) may require off-site disposal. Any off-site disposal shall be undertaken in accordance with the *Waste Classification Guidelines Part 4: Acid sulfate soil* (EPA, 2014). Refer to Appendix B4 Construction Soil and Water Management Plan, Appendix B – Acid Sulphate Soil Management Strategy for management strategies for PASS/ ASS.
- Where fill soils have reported the presence of PASS, and there is the potential for asbestos (e.g. stockpile at James Ruse Drive), the spoil will require appropriate treatment of Acid Sulfate Soils (ASS) to allow disposal at a facility licenced to accept asbestos.

A summary of the preliminary in-situ waste classification is as follows, waste classification results are split into the relevant route sections:

- Section 1 (Pitt Street to Church Street): General solid waste
- Section 2 (Church Street to Deniehy Street): General solid waste and hazardous waste with asbestos (at/near borehole BH215). Delineation of the impacted soils at/near BH215 is recommended to provide further details on the classification and extent of hazardous waste with asbestos
- Section 3 (Deniehy Street to Junction Street): General solid waste with asbestos
- Section 4 (Junction Street to Silverwater Road): General solid waste with asbestos
- Section 5 (Silverwater Road to Homebush Bay Drive): General solid waste

Prior to disposing of the material off-site, further sampling and analysis will be undertaken to determine the appropriate soil management and disposal requirements. Refer to Appendix B4 Construction Soil and Water Management Plan, Appendix B – Acid Sulphate Soil Management Strategy for further management and disposal strategies for PASS/ ASS.

5.4 Reuse and recycling

Waste separation and segregation will be promoted on-site to facilitate reuse and recycling as a priority of the waste management program as follows:

Waste segregation onsite – Waste materials, including spoil and demolition waste, will be separated onsite into dedicated bins/areas for either reuse onsite or collection by a waste sub-contractor and transport to offsite facilities. Any proposed reuse (e.g. encapsulation/ capping) of contaminated soils on site would be tested in accordance with NEPM guidelines (2013) and carried out in accordance with Appendix B4 Soil and Water Management Plan.

Waste separation offsite – Wastes to be deposited into one bin where space is not available for placement of multiple bins, and the waste is to be sorted offsite by a waste sub-contractor.

5.5 Waste Handling and Storage

Where waste is required to be handled and stored onsite prior to onsite reuse or offsite recycling/disposal, the following measures apply:

- Spoil, topsoil and mulch are to be stockpiled onsite in allocated areas, where appropriate, and mitigation measures for dust control and surface water management will be implemented as per

the Construction Air Quality Management Plan and the Construction Soil and Water Management Plan.

- Liquid wastes are to be stored in appropriate containers in bunded areas until transported offsite. Bunded areas will have the capacity to hold 110 per cent of the liquid waste volume for bulk storage or 120 per cent of the volume of the largest container for smaller packaged storage
- Hazardous waste will be managed by appropriately qualified and licensed contractors, in accordance with the requirements of the Environmentally Hazardous Chemicals Act 1985 and the EPA waste disposal guidelines.
- All other recyclable or non-recyclable wastes are to be stored in appropriate covered receptacles (e.g. bins or skips) in appropriate locations onsite and sub-contractors commissioned to regularly remove/empty the bins to approved disposal or recycling facilities.
- Where waste is received by the RCPBJV for beneficial reuse on the Project, the applicable EPA waste exemption criteria must be met, and a Section 143 (POEO Act) must be received from the waste supplier.

5.6 Waste Disposal

Waste (and spoil) disposal is to be in accordance with the *Protection of the Environment Operations Act 1997* and the *Waste Avoidance and Resource Recovery Act 2001*. Wastes that are unable to be reused or recycled will be disposed of offsite to an EPA approved waste management facility following classification (refer to Section 5.1). The location of waste management / disposal facilities are included in Appendix A and B. Details of waste types, volumes and destinations are to be recorded in the Waste Management Register (Appendix C).

5.7 Energy Conservation

The Project Team is dedicated to implementing energy conservation best practice and the reduction of greenhouse gases by adopting energy efficient work practices including:

- Developing and implementing procedures to minimise energy use.
- Conducting awareness programs for all site personnel regarding energy conservation methods. Specifically,
 - Energy efficient design of site buildings;
 - Design of construction work sites to minimise unnecessary vehicle movement;
 - Assess energy (fuel/electricity) efficiency when selecting equipment
 - Regular servicing of site plant and equipment; and
 - Use of locally sourced material where available and of suitable quality.

6 Environmental mitigation and management measures

A range of environmental requirements are identified in the various environmental documents, including the EIS, Submissions Report, supplementary assessments, Conditions of Approval and Roads and Maritime documents, and from recent experience on similar road projects. Specific measures and requirements to address waste management and energy use issues are outlined in Table 6-1.

6.1 Pre and Post Construction Land Condition Assessments

In accordance with the Roads and Maritime Environmental Procedure *Management of Wastes on Roads and Maritime Services Land* (August 2014) pre and post construction land condition assessment reports shall be carried out for all Roads and Maritime owned or leased land that are proposed to be used for ancillary road construction purposes. This may include temporary or permanent storage of excess construction materials (spoil) for integrated earthwork designs such as engineered fill, noise or visual mounds.

All necessary approvals including planning approvals and Roads and Maritime Property Section approvals shall be sought prior to use of the sites. This may include additional ancillary facilities assessments in accordance with CoA D28 and/or seeking DP&E approvals.

Pre-Construction Land Condition Assessment Reports

RCPBJV shall arrange for a pre-construction land condition assessment of the site. The purpose of the pre-construction land assessment is to identify any pre-existing wastes on the site before the RCPBJV takes possession of the site. This assessment shall be undertaken by a qualified, independent environmental consultant approved by Roads and Maritime.

Pre-Construction Land Condition Assessment Reports shall include text, photographs and maps to describe the land condition, focussing on any pre-existing wastes on the site. RCPBJV shall provide a copy of the Report to WestConnex Delivery Authority (WCX) and Roads and Maritime shall be nominated as the primary recipient of the report.

The following records shall be maintained by RCPBJV during use and management of Roads and Maritime land;

- Copies of any written approvals from Roads and Maritime Property Section to use the site for the construction activities undertaken at the site (where RCPBJV has sought permission to use sites addition to those nominated by Roads and Maritime in the project deed).
- Copies of planning consents to use the site for the construction activities (where RCPBJV has sought permission to use sites addition to those nominated by Roads and Maritime in the project deed).
- Evidence of compliance with any planning consent conditions or EPA licence requirements related to the activities on the site.
- Site maps showing location of temporary construction activities including location of temporary stockpiles.
- Site maps showing location and type of waste that permanently remaining on site.
- Evidence of Roads and Maritime approval to leave materials permanently on the site.

- Register of materials transported to the site in accordance with the requirements of Roads and Maritime G36 Specification clause 4.11.2 - Waste Management Register.
- Copies of any test results to show compliance with any relevant resource recovery exemptions.
- Evidence of compliance with any additional conditions specified by Roads and Maritime Property Section and/or the WCX Project Manager (e.g. soil engineering compaction rates, retain clean topsoil on the site).

Post Construction Land Condition Assessment Reports

Post Construction Land Condition Assessment Reports shall be prepared following completion of all construction activities and remediation or rehabilitation works. As a minimum these reports shall include;

- Name of Roads and Maritime project
- Name of construction company (RCPBJV) and Construction Manager
- Description of site being acquired by RCPBJV if applicable (Lot and Deposited Plan (DP))
- Whether the site was used for temporary materials storage.
- Whether materials have permanently been left on site.
- Record of any observations of significant staining of the ground.
- Evidence of compliance with any relevant resource recovery exemptions.
- Evidence of compliance with any EPA licence conditions and Department of Planning consent conditions.
- Evidence of internal and statutory approvals to use the site.
- Recommends whether the site is in a condition to be handed back to Roads and Maritime.
- Any recommended corrective actions that should be completed before the site is handed back to Roads and Maritime.

Table 6-1 Management and mitigation measures

ID	Measure / Requirement	When to implement	Responsibility	Reference
GENERAL				
WE1	The NSW Governments Waste Management Hierarchy of “avoid-reduce-reuse- recycle- dispose” will be followed as the framework of waste management throughout the project.	Pre-construction Construction	Construction Manager / Environmental Manager	G36
WE2	A project-specific Resource and Waste Management Plan ² (RWMP) will be prepared in accordance with the Roads and Maritime Waste Minimisation & Management Guidelines and applicable Roads and Maritime QA Specifications.	Pre-Construction	Environmental Manager	EIS Chapter 8.4.5 (SWW-14)
WE3	Waste management measures from this WEMP will be included in relevant Environmental Work Method Statements to be developed prior to the commencement of specific activities. This would include: <ul style="list-style-type: none"> - Reuse of excavated road materials would be maximised as far as possible where they are cost, quality and performance competitive to reduce use of materials (with embedded energy). - Assess opportunities to use local materials to reduce transport emissions 	Pre-construction / Construction	Site Engineer / Environmental Officer	Good practice EIS Chapter 9.1.3 GHG-2, GHG-4
WE4	An Asbestos Management Plan ³ will be developed for the construction of the project in accordance with the National Environment Protection (Assessment of site contamination) Measure 1999. The Plan will include an unexpected finds procedure to address any previously unidentified asbestos contamination encountered during construction. Further investigation of the area of public access beneath the M4 Motorway to the east of Alfred Street will be undertaken to assess the level and extent of asbestos in this area.	Construction	Environmental Manager Foreman WCX	EIS Chapter 8.4.5 SWW9
WE5	All staff and subcontractors will undergo a site induction and ongoing toolbox talks that will detail waste minimisation and reuse management measures, including the requirements of the waste management hierarchy. Waste minimisation training will include energy consumption awareness that promotes energy conservation methods including minimising energy use by switching off equipment when not in use.	Construction	Environmental Manager / Foreman	Good Practice

² This Waste and Energy Management Plan forms the Resource and Waste Management Plan (RWMP).

³ The Asbestos Management Procedure (refer to Appendix F of the Construction Soil and Water Management Plan) forms the Asbestos Management Plan.

ID	Measure / Requirement	When to implement	Responsibility	Reference
WE6	Procurement of materials will be planned and managed to avoid the over-ordering of products and minimise excess packaging is to be carried out.	Construction	Site Engineer / Foreman	Good Practice
WE7	All waste will be classified and disposed of in accordance with the <i>Waste Classification Guidelines Parts 1 and 2</i> (EPA, 2014) Excavated material that is not suitable for on-site reuse or recycling will be transported to a site that may legally accept that material for reuse or disposal. Soils leaving the site will be waste classified so that correct resource recovery and or off-site disposal occur.	Pre-construction / Construction	Environmental Manager / Environment Officer Foreman	G36 EIS Chapter 8.4.5 SWW-8, SWW-10
WE8	Recycled material will be considered for use in all aspects of the project where feasible and reasonable in accordance with the NSW Government's Waste Reduction and Purchasing Policy.	Construction	Site Engineer	G36
WE9	Cleared vegetation will be reused or recycled to the greatest extent practicable for example: - Mulching of vegetation for use in landscaping; - Spreading of vegetation for fauna habitat in suitable areas where agreements are made for this (e.g. mulch, small timber, hollow logs); - Donation of other timber to community or environmental groups.	Construction	Environmental Manager	Good practice
WE10	Weeds will be managed, handled and disposed of in accordance to the Weed Management Plan (refer to Flora and Fauna Management Plan). If disposal is appropriate, the weed material will be transferred to a licensed waste facility.	Construction	Foreman	Good practice
WE11	Concrete, asphalt, bricks/masonry and steel products are to be reused on site where possible. Alternatively they will be sent off-site for recycling.	Construction	Foreman	G36
WE12	Assessment of the two commercial properties and the four residential properties being acquired will be undertaken for the presence of hazardous building materials.	Pre-Construction	Environmental Manager Construction Manager	EIS Chapter 8.4.5
WE13	Sediment recovered from erosion and sediment control devices will be reused on site as general fill material or it will be incorporated within landscaping materials where possible.	Construction	Foreman	Good Practice
WASTEWATER				
WE14	The collection and reuse of captured water for dust suppression, wash down	Construction	Foreman	CoA B30(e)(ii)

ID	Measure / Requirement	When to implement	Responsibility	Reference
	and use in amenities or revegetation will be carried out where possible.			
WE14	Where construction works include dewatering, the need for additional investigations will be identified to assess potential impacts, if required	Pre-Construction	Construction Manager Foreman	Submissions Report Table 7.1
WASTE / REUSE MATERIALS HANDLING				
WE16	Topsoil (weed free) will be stockpiled in accordance with RTA criteria in allocated areas and reused for landscaping.	Construction	Foreman / Environmental Officers	G36
WE17	Any contaminated waste will be handled, separated, contained, managed and disposed of to prevent migration and further contamination. This will be done in accordance with the POEO Act and <i>Waste Classification Guidelines</i> (EPA, 2014)	Construction	Foreman	CLM Act G36 EIS Chapter 8.4.5 SWW-14 & SWW-15
WE18	Further assessment of the extent and source of hydrocarbon contamination associated with BH101 (located at the junction of Church Street/Great Western Highway) will be undertaken to inform the requirements of any specific remediation or management measures during construction should any works for the project disturb this area	Pre-Construction	Environmental Manager Foreman WCX/Roads and Maritime	EIS Chapter 8.4.5 SWW-11 Submissions report Table 7.1
WASTE DISPOSAL				
WE19	A Waste Management Register of all waste collected for disposal and/or recycling will be maintained on a monthly basis until final completion.	Construction	Environmental Manager / Environmental Officer	G36
WE20	Waste will be managed and disposed of in accordance with the PoEO Act and the NSW Waste Classification Guidelines (EPA, 2014). Wastes that are unable to be reused or recycled will be disposed of offsite at a licensed waste management facility, following classification.	Construction	Environmental Manager / Environmental Officer	G36 EIS Chapter 8.4.5 (SWW-8)
WE21	Oils and other hazardous liquids will be labelled and stored in a sealed container within a bunded area. Material collected from within bunded areas will be disposed off-site at a waste facility approved by the EPA.	Construction	Foreman / Environment Officer	G36
WE22	A s143 notice under the PoEO Act will be completed should the off-site (on private property) disposal of road construction waste material or VENM be deemed necessary.	Construction	Foreman / Environment Officer	PoEO Act G36

ID	Measure / Requirement	When to implement	Responsibility	Reference
WE23	The relevant licences of waste facilities utilised for the disposal of project waste will be obtained (on a regular basis if necessary) to ensure they are legally able to accept that waste.	Construction	Foreman	G36
WE24	The disposal of chemical, fuel and lubricant containers, solid and liquid wastes must be in accordance with the requirements of the local Council or the EPA.	Construction	Foreman / Environment Officer	G36
WE25	All trucks transporting wastes off site will be appropriately licensed to carry the materials to appropriately licensed waste facilities.	Construction	Site Engineer / Foreman	G36
ENERGY CONSERVATION				
WE26	Energy efficient work practices will be implemented, including the consideration of: <ul style="list-style-type: none"> - Energy efficient design of site buildings; - Design of construction work sites to minimise unnecessary vehicle movement; - Assess energy (fuel/electricity) efficiency when selecting equipment - Regular servicing of site plant and equipment; - Training of personnel in energy efficient best practices; and - Use of locally sourced material where available and of suitable quality. 	Construction	Environmental Manager / Construction Manager/ Engineers	G36 EIS Chapter 9.1.3 GHG-1
WE27	Steel with recycled content would be specified where feasible where they are cost, quality and performance competitive. Contractors would be required to propose recycled content construction materials where they are cost, quality and performance competitive	Construction	Environmental Officer Foreman	EIS Chapter 9.1.3 GHG-3
WE28	Undertake vegetation planting and management that maximises opportunities to sequester carbon over the life of the project	Construction	Environmental Officer Foreman/Site Engineer	EIS Chapter 9.1.3 GHG-5
WE29	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or B80) would be investigated, taking into consideration the capacity of plant and equipment to use these fuels, ongoing maintenance issues and local sources. Works would be planned to minimise fuel use.	Construction	Environmental Manager Foreman/Site Engineer	EIS Chapter 9.1.3 GHG-6
WE30	Assess opportunities to use renewable energy sources to power control systems, lighting and signage	Construction	Environmental Manager Foreman/Site Engineer	EIS Chapter 9.1.3 GHG-7

7 Compliance management

7.1 Roles and responsibilities

The RCPBJV Project Team's organisational structure and overall roles and responsibilities are outlined in Section 4.2 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

All RCPBJV employees, sub-contractors and utility staff working on site will undergo site induction training relating to waste and energy management issues. The induction training will address elements including:

- Existence and requirements of this sub-plan;
- The need for pre and post land condition assessments for Roads and Maritime land to be used as ancillary facility sites;
- Relevant legislation;
- Incident response, management and reporting;
- Waste reporting requirements;
- Requirements of the waste hierarchy;
- Waste/ recycle storage requirements;
- Energy efficient best practices; and
- Other specific responsibilities for waste and reuse management.

Further details regarding staff induction and training are outlined in Section 5 of the CEMP.

7.3 Monitoring and inspection

Regular monitoring and inspections will be undertaken during construction. This shall include minimum weekly inspection by the Environmental Officer of spoil management controls, onsite waste facilities and waste storage/ separation facilities.

Additional requirements and responsibilities in relation to inspections are documented in Section 8.1 of the CEMP.

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental mitigation and management measures, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

7.5 Reporting

Regular waste management reporting will be undertaken during construction. This shall include;

- Monthly Environmental Reports will be prepared to detail waste generation, reuse and disposal volumes (onsite and offsite) as well as disposal locations.

- Waste removed from the worksite will be appropriately tracked from ‘cradle to grave’ using waste tracking docket where required.
- RCPBJV will supply information on request to WCX to allow reporting on total quantities of wastes being generated and recycled in accordance with the WRAPP requirements.
Note: Reporting will be undertaken with a one month lag, to ensure the accuracy of data.

Reporting requirements and responsibilities are further documented in the Table 8.4 of the CEMP.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance.
- Determine the cause or causes of non-conformances and deficiencies.
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

8.2 WEMP update and amendment

The processes described in Section 8 and Section 9 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the WEMP will be in accordance with the process outlined in Section 1.6 of the CEMP.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 10.2 of the CEMP

Appendix A

Waste contact list

Table A-1 Waste Contact List

Company Name	Address	Environmental Protection (EPL) Licence No.	Type of licenced activity	Further Details
Waste transporter				
Bingo Bins	81 Egerton St, Silverwater NSW 2128	90392	Transport of category 2 trackable waste Transport of category 1 trackable waste	
Remondis Australia Pty Ltd	Level 4, 163 O’Riordan Street, Mascot NSW, 2020	7356	Transport of category 2 trackable waste Transport of category 1 trackable waste	
Waste facility				
Auburn Recycling Centre	3-5 Duck St, AUBURN	10935	Waste storage – other types of waste Non-thermal treatment of general waste	13,000m ² waste recovery facility 85 – 90% of all waste that enters our site is recycled and turned into recycled products, such as: recycled soil, fill sand, aggregates and woodchip
SITA Australia Pty Ltd	RYDE RESOURCE RECOVERY CENTRE 145 WICKS ROAD, NORTH RYDE, NSW, 2113	4527	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste Composting Non-thermal treatment of general waste Waste storage - waste tyres Waste storage - other types of waste Recovery of general waste	
SITA Australia Pty Ltd	AUBURN RESOURCE RECOVERY CENTRE OLD HILL ROAD, HOMEBUSH BAY, NSW, 2127	4547	Recovery of general waste Waste storage - other types of waste Non-thermal treatment of general	

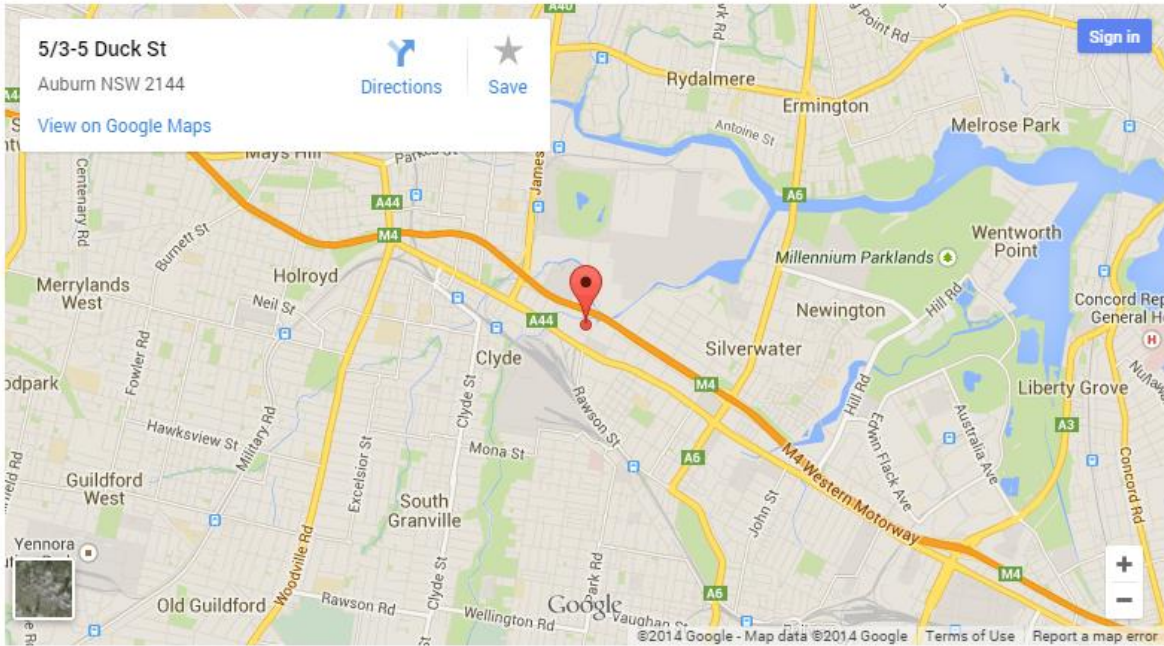
Company Name	Address	Environmental Protection Licence (EPL) Licence No.	Type of licenced activity	Further Details
			waste Waste storage - waste tyres Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	
SITA Australia Pty Ltd	WETHERILL PARK RESOURCE RECOVERY FACILITY 20 DAVIS ROAD, WETHERILL PARK, NSW, 2164	4548	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste Waste storage - other types of waste Non-thermal treatment of hazardous and other waste	
SITA Australia Pty Ltd	CHULLORA RESOURCE RECOVERY PARK MUIR ROAD, CHULLORA, NSW, 2190	5893	Waste storage - other types of waste Composting Waste storage - waste tyres Non-thermal treatment of general waste Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste Recovery of general waste	
CONCRETE RECYCLERS (GROUP) PTY LIMITED	14 THACKERAY STREET, CAMELLIA, NSW 2142	6664	Recovery of general waste Waste storage - other types of waste	
Transpacific	CORNER OF PONDAGE LINK & HILL RD, HOMEBUSH BAY, NSW 2127	4560	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste	

Company Name	Address	Environmental Protection Licence (EPL) Licence No.	Type of licenced activity	Further Details
			Non-thermal treatment of hazardous and other waste	
Transpacific	6-8 RAYBEN STREET, GLEN DENNING, NSW, 2761	6091	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste Non-thermal treatment of hazardous and other waste	

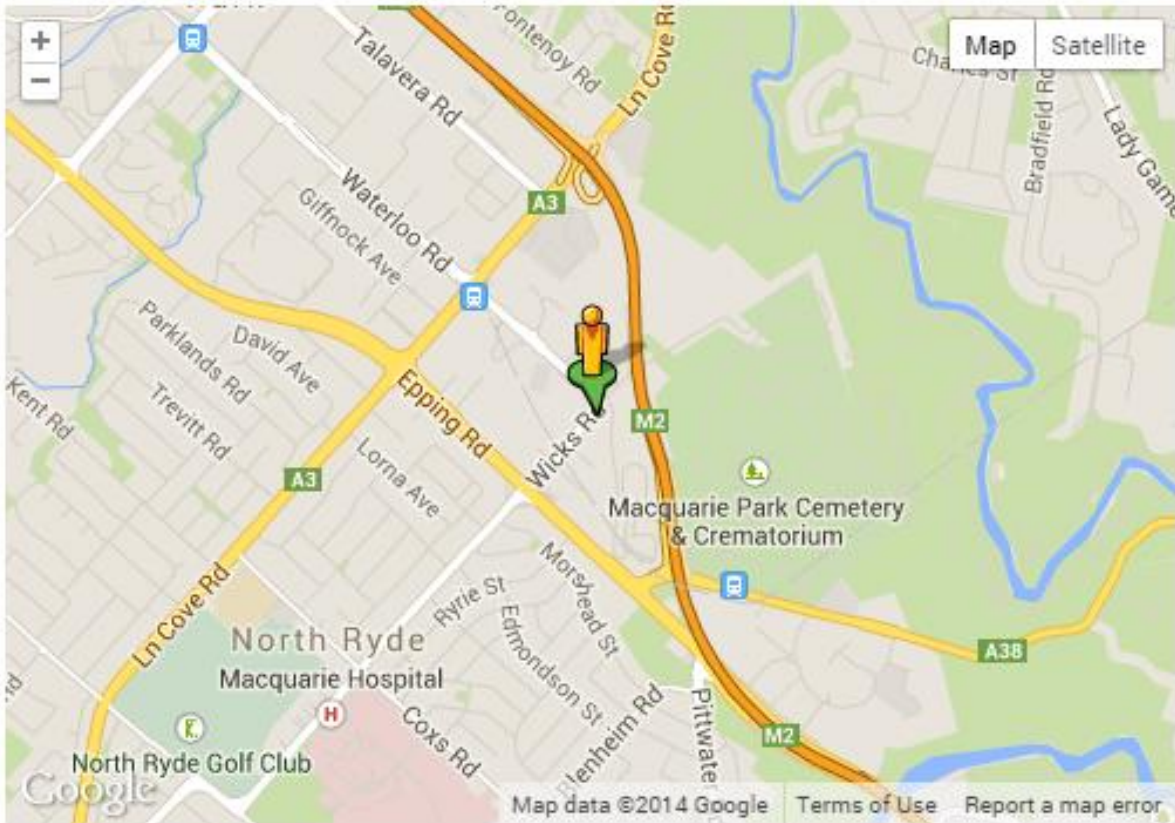
Appendix B

Location of waste facilities

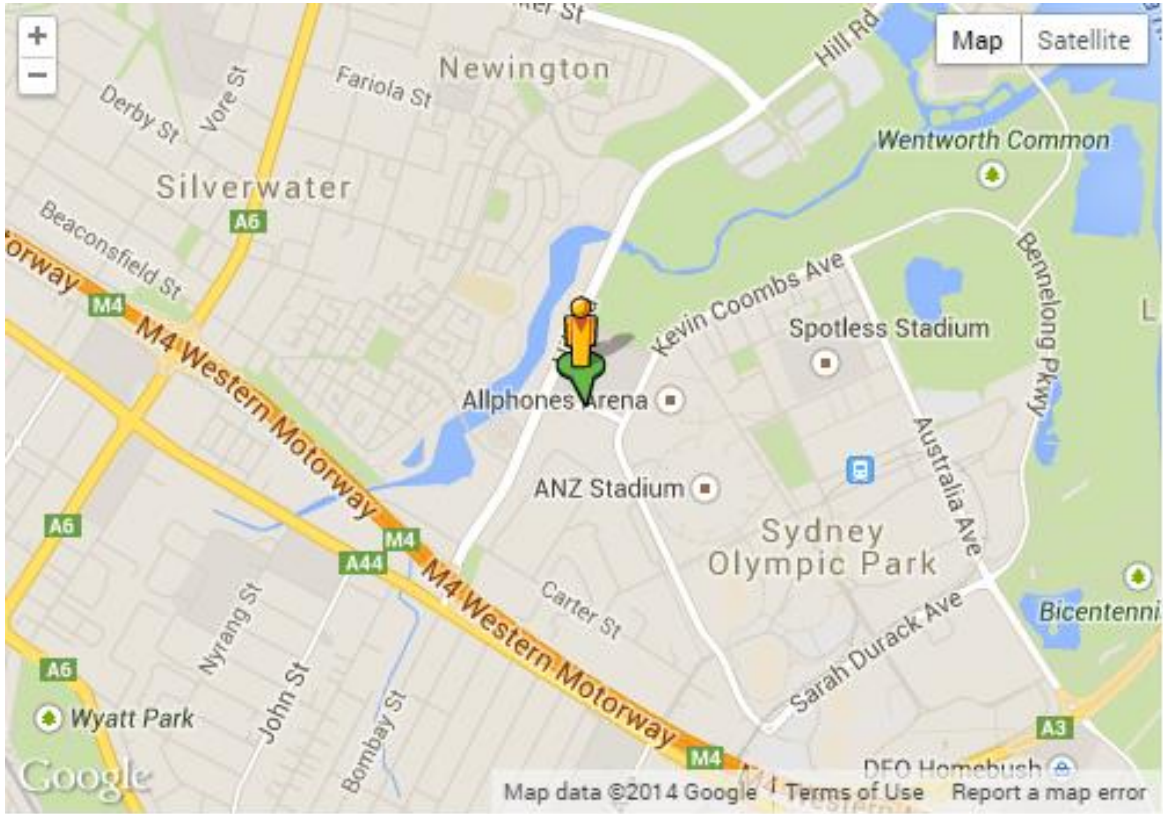
Auburn Recycling Centre 5/3-5 Duck Street, Auburn



Sita – 145 Wicks Road, North Ryde



Sita – Auburn Resource Recovery Centre Old Hill Link, Homebush Bay



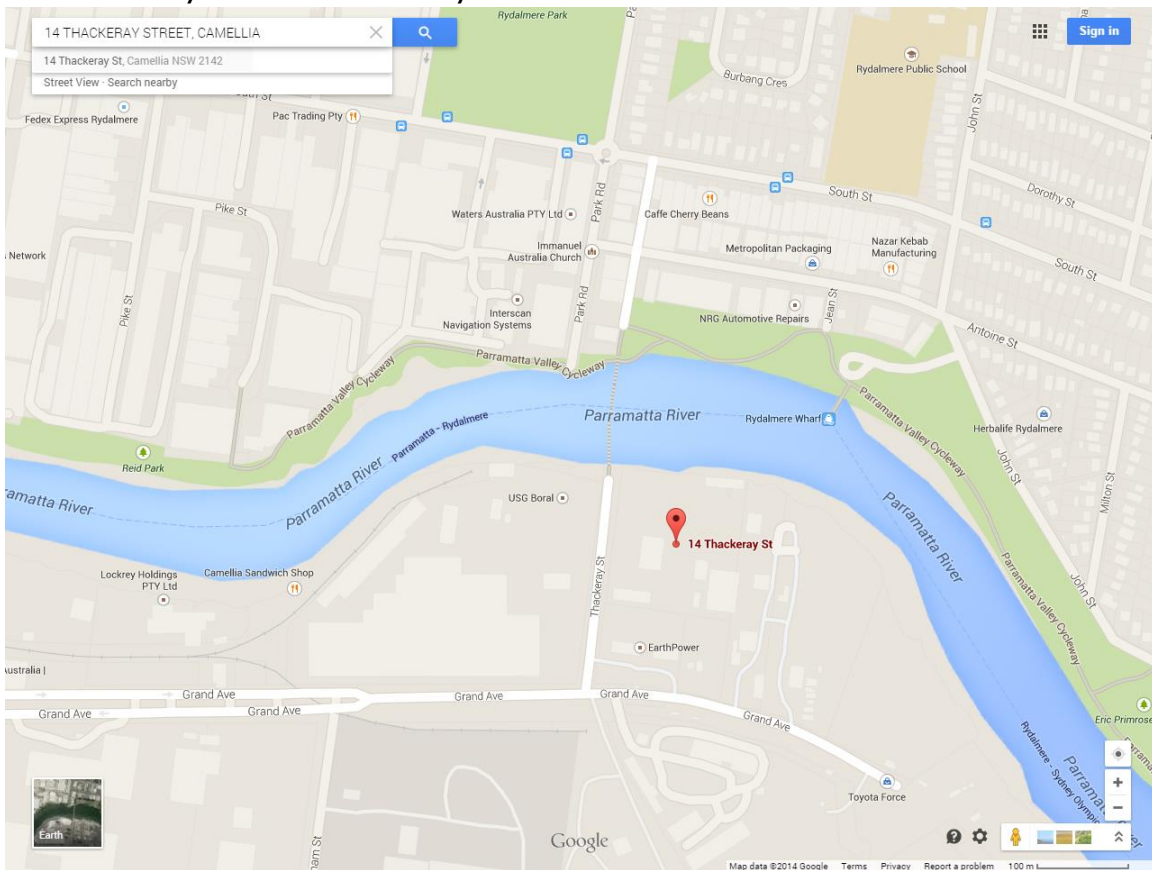
Sita – Wetherill Park Resource Recovery Centre 20 Davis Road Wetherill Park



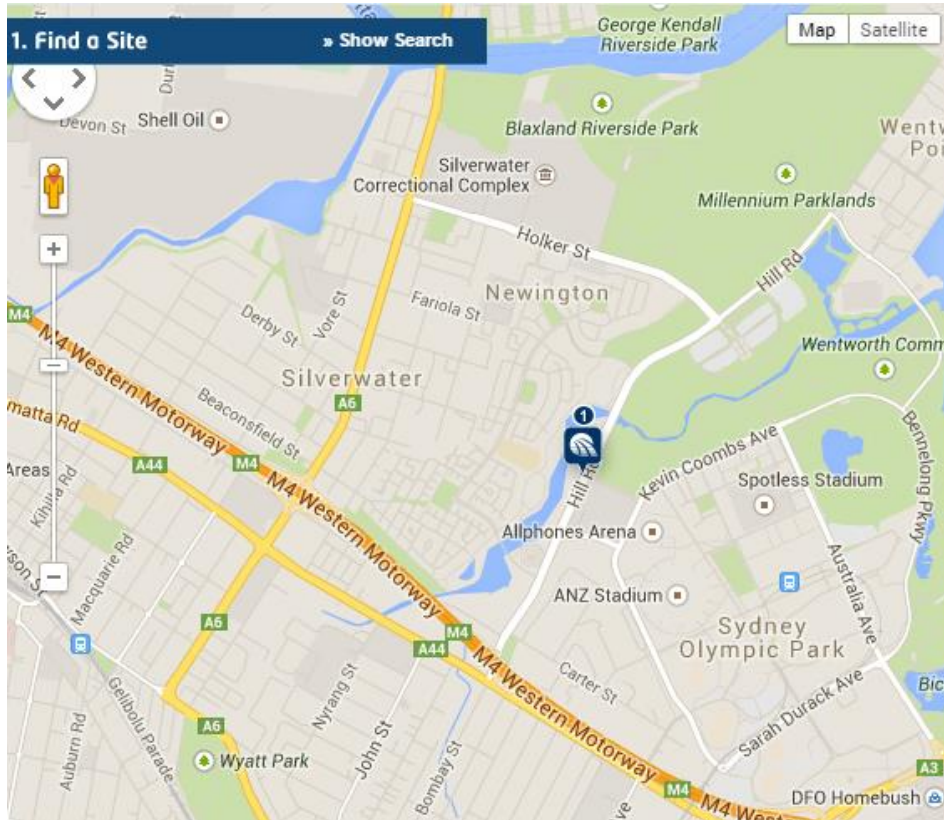
Sita - Chullora Resource Recovery Park – 15 Muir Road, Chullora



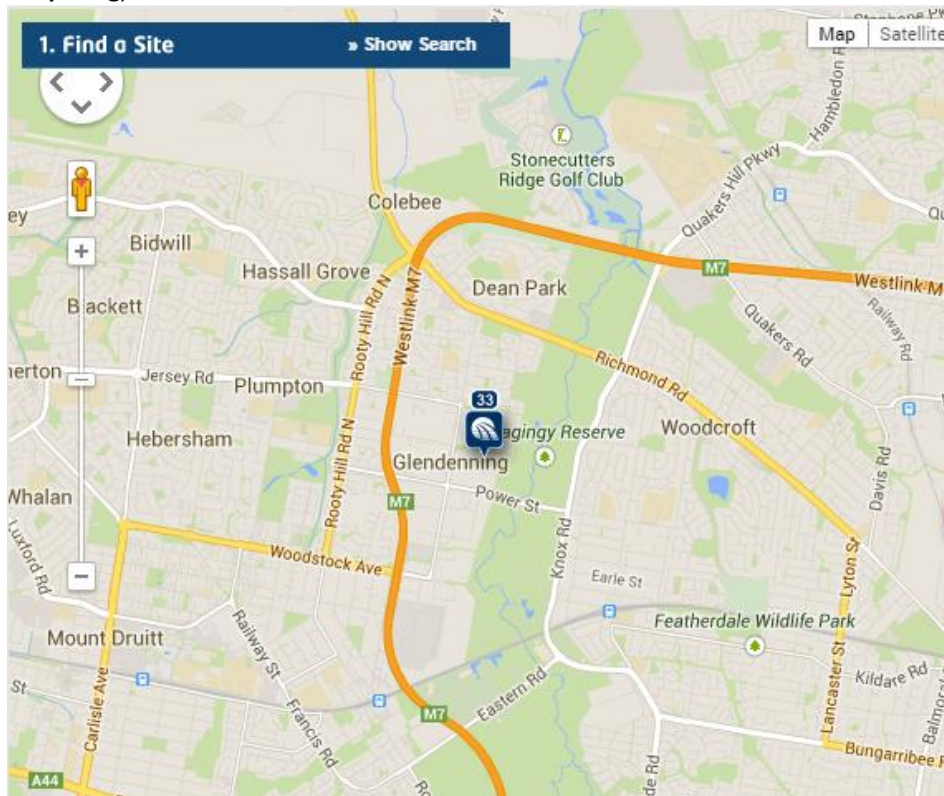
Concrete Recyclers – 14 Thackeray Street Camellia



Transpacific Cnr Hill Road & Pondage Link Homebush Bay NSW 2127



Transpacific 6-8 Rayben Street Glendenning NSW 2761 (Battery and Fluorescent tube recycling)



Appendix C

Example waste management register

