

# APPENDIX B7

Construction Waste, Resources and  
Energy Management Plan

*Woolgoolga to Ballina Pacific Highway  
Upgrade (Sections 3 to 11)*

OCTOBER 2015

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## Glossary / Abbreviations

CEMP	Construction Environmental Management Plan
CT	Contaminant Threshold
CWREMP	Construction Waste, Resource and Energy Management Plan
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence
ERG	Environmental Review Group
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental Work Method Statements
FM Act	<i>Fisheries Management Act 1994</i>
MCoA	NSW Minister for Planning Condition of Approval
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
PC	Pacific Complete
Project, the	The Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11)
RMS	Roads and Maritime
Secretary	Secretary of the Department of Planning and Environment
SCC	Specific Contaminant Concentrations (SCC)
SPIR	Submissions Preferred Infrastructure Report
TCLP	Toxicity Characteristic Leachate Procedure
VENM	Virgin Excavated Natural Material
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WRAPP	Waste Reduction and Purchasing Policy

# 1 Introduction

## 1.1 Context

This Construction Waste, Resource and Energy Management Plan (CWREMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for Construction of the Woolgoolga to Ballina Pacific Highway Upgrade sections 3 to 11 (the Project). Sections 1 and 2 of the upgrade and soft soil early works (Wave 1, Wave 2, Wave 3 and Wave 4) have been included/will be included in separate CEMPs and their sub plans.

This CWREMP has been prepared to address the requirements of the Minister's Conditions of Approval (MCoA), the mitigation measures listed in the *Pacific Highway Upgrade: Woolgoolga to Ballina Environmental Impact Statement December 2012* (the EIS), the *Submissions / Preferred Infrastructure Report November 2013* (SPIR) and all applicable legislation.

There are three tie in projects within the project limits, namely the Glenugie Upgrade, Devils Pulpit and Ballina Bypass projects. These tie in projects have been approved separately by the Minister for Planning.

## 1.2 Background

The Pacific Highway Upgrade Woolgoolga to Ballina EIS (RMS, 2012) assessed the impacts of construction in terms of waste generation/management and resource use, within chapter 18.3. Greenhouse gas emissions and energy issues were assessed in the EIS in chapter 18.1.

The EIS identified the various waste streams that will be generated during the construction of the project, including construction and demolition waste, vegetation waste, packaging materials and liquid wastes. It also identified opportunities to avoid, reduce and recycle waste.

The EIS identified potential impacts in regards to greenhouse gas emissions. Measures to help address greenhouse gas emissions in construction were identified.

Additional management measures were provided within the SPIR, with applicable management measures from that report included as part of this CWREMP.

### **1.3 Environmental management systems overview**

The CEMP describes the overall system for the project's environmental management. That system forms part of the environmental management framework being delivered by Pacific Complete (PC) in partnership with Roads and Maritime.

The CWREMP has been developed in consultation with the Project Environmental Review Group (ERG).

Relevant management measures identified in this plan will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

Contractor EWMS will be developed and signed off by the Pacific Complete Environment Manager (or delegate) prior to commencement of 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 contractor personnel.

The review and document control processes for this plan are described in *Section 9 and 10 of the CEMP*.

## 2 Purpose and objectives

### 2.1 Purpose

The purpose of this plan is to describe how Pacific Complete proposes to minimise the generation of waste, reduce the amount waste for disposal, appropriately manage waste streams in accordance with legislation, conditions of approval and best practice, and reduce energy consumption during construction of the project.

### 2.2 Objectives

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

- 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
- Measure and monitor the project's carbon emissions and energy consumption generated from:
  - Scope 1 emissions – direct greenhouse gas emissions produced onsite from plant equipment and vehicles
  - Scope 2 emissions – indirect emission resulting from the use of electricity onsite including the associated transmission and distribution losses.
- Engage with the supply chain to develop carbon emissions and energy consumption reduction measures for the project
- Ensure appropriate measures are implemented to address the relevant MCoA outlined in Table 3-1 and Table 3-2, and the mitigation measures detailed in the EIS and SPIR.
- 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
- Establish a robust reporting framework for carbon emissions and energy consumption
- Benchmark carbon emissions and energy consumption and establish meaningful project specific reduction targets
- Incorporate energy efficient systems and equipment for project site facilities
- Ensure all personnel receive training and awareness related to carbon emissions and energy efficiency.



- Ensure 100% of supply chain partners on the project develop and implement energy efficiency and carbon emission reduction measures
- Achieve the waste re-use / recycling targets specified in Appendix B for each waste stream.

### 3 Environmental requirements

This chapter describes legislative, regulatory and guidance framework that applies to the project.

#### 3.1 Relevant legislation and guidelines

Attachment A of the CEMP contains details of the legislative, regulatory, guideline and standard provisions and their relevance to this management plan.

##### 3.1.1 Legislation

Table 3-1 lists the principal legislation and regulations relevant to waste and energy management.

**Table 3-1 Principal legislation and regulation relevant to waste and energy management**

Legislation and regulation	Relevance
<b>Commonwealth</b>	
<i>National Greenhouse and Energy Reporting Act 2007</i>	Provides the statutory basis for the National Greenhouse and Energy Reporting Scheme in relation to greenhouse gas emissions and energy consumption and production.
<b>State</b>	
<i>Protection of the Environment Operations Act 1997</i>	Aims to reduce pollution and manage the storage, treatment and disposal of waste.
Protection of the Environment Operations (General) Regulation 2009	Contains penalty notice provisions for infringements of the Protection of the Environment Operations (Waste) Regulation 2005 (as amended) and the NSW <i>Protection of the Environment Operations Act 1997</i> .
Protection of the Environment Operations (Waste) Regulation 2005	Provides regulations for the storage, management and transport of waste.
<i>Waste Avoidance and Resource Recovery Act 2001 (WARR Act)</i>	Supplementary legislation aimed at reducing waste and resource consumption, defining the waste hierarchy and promoting its adoption across NSW.
<i>Contaminated Land Management Act 1997</i>	Requires Roads and Maritime to immediately notify the EPA if it suspects that the work has resulted in ground contamination or encountered/remobilised existing ground contamination.
<i>Noxious Weeds Act 1993</i>	Provides for the declaration of noxious weeds on a national, state, regional or local scale.
<i>Environmentally Hazardous Chemicals Act 1985</i>	Controls the movement, storage, and disposal of chemical waste. Administered by EPA and the Hazardous Chemicals Advisory Committee.

### 3.1.2 Policy/strategy

Table 3-2 lists policies and strategies relevant to waste management.

**Table 3-2 Policies and strategies relevant to waste and energy management**

Strategy	Relevance
<i>Waste Avoidance and Resource Recovery Strategy (EPA, 2014)</i>	Seeks to pave the way towards the targets waste reduction and materials reuse.
<i>Government Resource Efficiency Policy (GREP) (NSW OEH, 2014)</i>	Requires all State Government agencies to develop and implement a WRAPP plan to reduce waste and increase the purchase of recycled materials
<i>National Environmental Protection (National Pollution Inventory) Measure 1998 (as amended)</i>	Requires the annual reporting of toxic substance emissions.

### 3.1.3 Guidelines and standards

The main non-statutory guidelines, specifications and policy documents relevant to this plan include:

- RMS QA Specification G36 – Environmental Protection (Management System)
- *Waste Classification Guidelines Part 1: Classifying waste (NSW EPA, 2014)*
- *Waste Classification Guidelines Part 2: Immobilisation of waste (NSW EPA, 2014)*
- *Waste Classification Guidelines Part 4: Acid sulfate soils (NSW EPA, 2014)*
- *Best Practice Waste Reduction Guidelines for the Construction and Demolition Industry (tools for Practice), Natural Heritage Trust, 2000*
- *Waste Reduction and Purchasing Policy 2011-2014 (WRAPP), NSW Government*
- RMS Waste Fact Sheets: Virgin Excavated Natural Material (VENM), Excavated Natural Material (ENM), Excavated Public Road Materials, Recovered Aggregates, Asbestos Waste, and Waste Sampling
- *Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000)*
- *Guidelines on Resource Recovery Exemptions - Land Application of Waste Materials as Fill (2011, DECCW)*
- *Guidelines on Resource Recovery Exemptions (Land Application of Waste Materials as Fertiliser or Soil Amendment) (2011, DECCW)*
- *Stockpile Site Management Guideline, RMS 2011*
- *Storing and Handling Liquids, Environmental Protection: Participants Manual (NSW DECC, 2007)*
- *Excavated Natural Material Exemption 2014 (EPA, 2014)*
- *Excavated Natural Material Order 2014 (EPA, 2014)*
- *Excavated Public Road Material Exemption 2014 (EPA, 2014)*
- *Excavated Public Road Material Order 2014 (EPA, 2014)*
- *Raw Mulch Exemption 2014 (EPA, 2014)*

- *Raw Mulch Order 2014* (EPA, 2014)
- *Reclaimed Asphalt Pavement Exemption 2014* (EPA, 2014)
- *Reclaimed Asphalt Pavement Order 2014* (EPA, 2014)
- *Stormwater Exemption 2014* (EPA, 2014)
- *Stormwater Order 2014* (EPA, 2014)
- *Treated Drilling Mud Exemption 2014* (EPA, 2014)
- *Treated Drilling Mud Order 2014* (EPA, 2014)
- *Effluent Exemption 2014* (EPA, 2014)
- *Effluent Order 2014* (EPA, 2014)
- *Recovered Aggregate Exemption 2014* (EPA, 2014)
- *Recovered Aggregate Order 2014* (EPA, 2014)
- *Environmental Direction 25 –Management of Tannins from Vegetation Mulch* (Roads and Maritime, 2012)
- *Towards a More Sustainable RMS* (Roads and Maritime, 2011)
- *Waste Reduction and Purchasing Plan* (Roads and Maritime, 2010)
- *Management of Wastes on Roads and Maritime Land* (Roads and Maritime, 2014)
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (National Environment Protection Council, April 2013).

### 3.2 Minister’s Conditions of Approval

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

**Table 3-3 Conditions of Approval relevant to the CWREMP**

MCoA No.	Condition requirements	Document reference
B68.	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 <i>Protection of the Environment Operations Act 1997</i> , if such a licence is required in relation to that waste.	Chapter 6
B69.	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.	Chapter 6
B70.	All liquid and/or non-liquid waste generated on the site shall be assessed and classified in accordance with <i>Waste Classification Guidelines</i> (Department of Environment, Climate Change and Water, 2009)	Chapter 6

MCoA No.	Condition requirements	Document reference
B71.	All waste materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	Chapter 6
D25 (d)(viii)	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);	Chapter 6 Appendix B

## 4 Environmental aspects and impacts

### 4.1 Construction waste streams

Table 4-1 outlines the major construction related waste streams expected to be generated from the project.

**Table 4-1 Construction activities and major waste types**

Construction activity	Waste type
Clearing and grubbing	<ul style="list-style-type: none"> <li>Green waste – timber, vegetation and weeds</li> </ul>
Demolition	<ul style="list-style-type: none"> <li>Highway pavement – concrete, asphalt, gravel and road base</li> <li>Existing structures – bricks, tiles, scrap metal and plastics</li> <li>Redundant utilities</li> <li>Asbestos.</li> </ul>
Excavation and earthworks	<ul style="list-style-type: none"> <li>Top soil –uncontaminated and contaminated with weeds</li> <li>VENWENM</li> <li>Unsuitable spoil</li> <li>Potentially contaminated soils</li> <li>Acid sulphate soils.</li> </ul>
Mobile plant/ vehicles	<ul style="list-style-type: none"> <li>Gaseous emissions to the atmosphere.</li> <li>Waste oil, grease</li> <li>Filter cartridges</li> </ul>
Road construction	<ul style="list-style-type: none"> <li>General waste and recyclables</li> <li>Excess construction materials – concrete, asphalt, scrap metal, fencing etc</li> <li>Sediment/sludge from sediment basins</li> <li>Waste water and runoff</li> <li>Packaging materials</li> <li>Excess chemicals and empty chemical containers.</li> </ul>
Compounds and site operations	<ul style="list-style-type: none"> <li>Waste fuels, oils and chemicals</li> <li>Batteries</li> <li>Concrete washout water (from batching plant)</li> <li>Sewage</li> <li>Office waste – recyclables, general domestic waste, toner cartridges, sanitary waste and medical waste.</li> </ul>

## 4.2 Energy use

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 and facility operation, 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.

## 4.3 Impacts

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

- Generation of large volumes of excavated materials
- Incorrect treatment of contaminated soils
- Weed infestation from dispersion of seeds and so forth during clearing and access upgrading activities
- Generation or spread of contaminated waste/soils, e.g. groundwater, used or expired chemicals, or construction materials
- Inappropriate disposal of hazardous waste
- Litter from work related activities and inappropriate disposal of domestic waste from construction personnel
- Water pollution due to sediment runoff from soil excavation and excess spoil storage
- Increased waste from improper practices such as poor fill management.
- Consumption of non-renewable resources such as energy, diesel and other chemicals
- Greenhouse gas emissions due to consumption of energy from non-renewable resources.

The mismanagement of waste streams has the potential to result in the following impacts;

- Excessive waste being directed to landfill
- Various type of wast being generated and stored onsite, with the potential for misclassification
- Incorrectly classified waste/contaminated material delivered to a landfill not licensed to receive the material.
- Pollution of surface and groundwater assets
- Land contamination
- Release of soil vapour emissions from in-situ treatment of contaminated soils into the atmosphere/ work site.

Earthworks would potentially generate the greatest amount of waste. To ensure the amount of waste is minimised, Pacific Complete will manage earthworks across the entire length of the project and balance the cut and fill requirements to minimise excess excavated materials. Construction staging will aim to optimise resource efficiency and look for opportunities for the reuse of materials to limit waste generation.

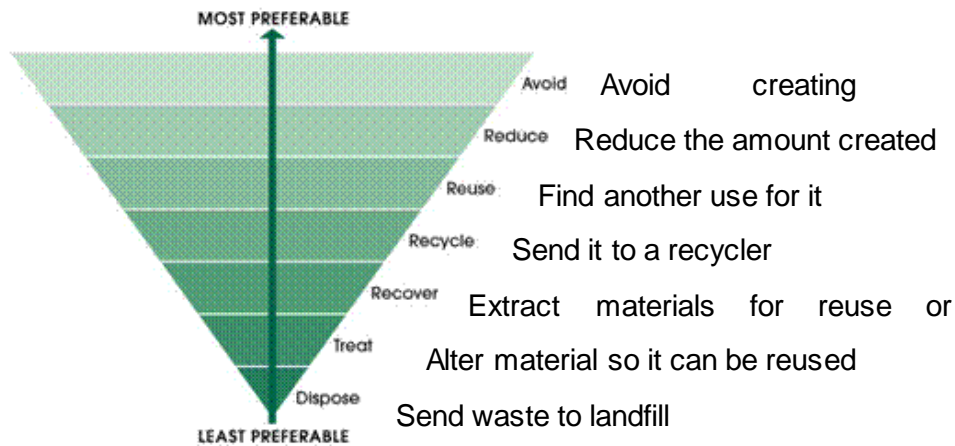
A full list of management measures are included in Section 6 of this Plan.



# 5 Waste and energy management

## 5.1 Classification of waste streams

Figure 5-1 illustrates the waste hierarchy that should be followed to reduce the generation of waste and limit the amount of waste to disposal. Where waste cannot be avoided, reused or recycled it will be classified and appropriate disposal will then occur.



**Figure 5-1 Waste hierarchy**

The classification of waste is undertaken in accordance with the OEH *Waste Classification Guidelines Part 1: Classifying Waste* (2008). 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.

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 and 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 orders and exemptions**

The 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 where it can be demonstrated that no harm to the environment or human health will occur. Under the 2014 Waste Regulation, the EPA now issues two separate documents: a resource recovery order and a resource recovery exemption. These documents have replaced the previous resource recovery exemption system.

Resource recovery orders – provide conditions 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. These orders are provided under clause 93 of the 2014 Waste Regulation.

Resource recovery exemptions – provide conditions consumers must meet to apply waste to land, or use the waste as fuel or in connection with a process of thermal treatment outside certain requirements of the waste regulatory framework. These exemptions are provided under clause 91 and 92 of the 2014 Waste Regulation.

The EPA has issued general orders and exemptions 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 resource recovery exemptions that may be applicable to this work are defined in Table 5-1 below. These are general gazette orders and 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**

Exemption	General conditions
Effluent Order 2014	The order imposes conditions that the supplier of effluent must follow.
Effluent Exemption 2014	The effluent can only be applied to land as a soil amendment or for the purposes of irrigation. The consumer must ensure that any application of effluent to land must occur within a reasonable period of time after its receipt.
Excavated Natural Material Order 2014	The order imposes sampling requirements, chemical and other material requirements, test methods, notification, record keeping and reporting that suppliers of excavated natural materials must follow.
Excavated Natural Material Exemption 2014	At the time the excavated natural material is received at the premises, the material must meet all chemical and other material requirements for excavated natural material which are required on or before the supply of excavated natural material under 'the excavated natural material order 2014'. The excavated natural material can only be applied to land as engineering fill or for use in earthworks. The consumer must keep a written record of the following for a period of six years: - the quantity of any excavated natural material received; and - the name and address of the supplier of the excavated natural material received. The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request. The consumer must ensure that any application of excavated natural material to land must occur within a reasonable period of time after its receipt.
Excavated Public Road Material Order 2014	The order imposes notification, record keeping and reporting requirements that suppliers of excavated public road material must follow.
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. The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land. The excavated public road material cannot be applied to private land. The consumer must ensure that any application of excavated public road material to land must occur within a reasonable period of time after its receipt
Raw Mulch Order 2014	On or before supplying raw mulch, the processor must ensure that: - the raw mulch does not contain asbestos, engineered wood products, preservative treated or coated wood residues, or physical contaminants, including but not limited to glass, metal, rigid plastics, flexible plastics, or polystyrene. - the raw mulch is ready for land application prior to transport to a consumer.
Raw Mulch Exemption 2014	At the time the raw mulch is received at the premises, the material must meet all material requirements for raw mulch which are required on or before the supply of raw mulch under 'the raw mulch order 2014'. The raw mulch can only be applied to land as a soil amendment. The consumer must ensure that they do not cause or permit the migration of leachate from the land application site. The consumer must not undertake further processing of the raw mulch at the land application site. The consumer must ensure that any application of raw mulch to land occurs within a reasonable period of time after its receipt.
Recovered Aggregate Order 2014	The order imposes sampling requirements, test methods, notification, record keeping and reporting requirements that suppliers of recovered aggregate must follow.
Recovered Aggregate	At the time the recovered aggregate is received at the premises, the material must meet all chemical and other material requirements for recovered aggregate which are required

Exemption	General conditions
Exemption 2014	<p>on or before the supply of recovered aggregate under 'the recovered aggregate order 2014'.</p> <p>The recovered aggregate can only be applied to land in road making activities, building, landscaping and construction works. This approval does not apply to any of the following applications:</p> <ul style="list-style-type: none"> <li>- Construction of dams or related water storage infrastructure,</li> <li>- Mine site rehabilitation,</li> <li>- Quarry rehabilitation,</li> <li>- Sand dredge pond rehabilitation,</li> <li>- Back-filling of quarry voids,</li> <li>- Raising or reshaping of land used for agricultural purposes, and</li> <li>- Construction of roads on private land unless: <ul style="list-style-type: none"> <li>(a) the relevant waste is applied to land to the minimum extent necessary for the construction of a road, and</li> <li>(b) a development consent for the development has been granted under the relevant Environmental Planning Instrument (EPI), or</li> <li>(c) it is to provide access (temporary or permanent) to a development approved by a Council, or</li> <li>(d) the works undertaken are either exempt or complying.</li> </ul> </li> </ul>
Reclaimed Asphalt Pavement Order 2014	<p>The order imposes notification, record keeping and reporting requirements that suppliers of reclaimed asphalt pavement must follow.</p>
Reclaimed Asphalt Pavement Exemption 2014	<p>The reclaimed asphalt pavement can only be:</p> <p>Applied to land for road related activities including road construction or road maintenance activities being:</p> <ul style="list-style-type: none"> <li>(e) Use as a road base and sub base,</li> <li>(f) Applied as a surface layer on road shoulders and unsealed roads, and</li> <li>(g) Use as an engineering fill material</li> </ul> <p>Used as an alternative input into thermal processes for non-energy recovery purposes in the manufacture of asphalt.</p> <p>The consumer must ensure that any application of reclaimed asphalt pavement to land or any use of reclaimed asphalt pavement in connection with a process of thermal treatment must occur within a reasonable period of time after its receipt.</p>
Stormwater Order 2014	<p>The order imposes conditions that suppliers of stormwater must follow.</p>
Stormwater Exemption 2014	<p>The stormwater can only be applied to land within the definitions of "application to land" meaning applying to land by:</p> <ul style="list-style-type: none"> <li>- spraying, spreading or depositing on the land; or</li> <li>- ploughing, injecting or mixing into the land; or</li> <li>- filling, raising, reclaiming or contouring the land.</li> </ul> <p>The consumer must ensure that any application of stormwater to land must occur within a reasonable period of time after its receipt.</p>
Treated Drilling Mud Order 2014	<p>The order imposes sampling requirements, test methods, notification, record keeping and reporting requirements that suppliers of treated drilling mud must follow.</p>
Treated Drilling Mud Exemption 2014	<p>At the time the treated drilling mud is received at the premises, the material must meet all chemical and other material requirements for treated drilling mud which are required on or before the supply of treated drilling mud under 'the treated drilling mud order 2014'.</p> <p>The treated drilling mud can only be applied to land as engineering fill or for use in earthworks.</p> <p>The consumer must keep a written record of the following for a period of six years:</p> <ul style="list-style-type: none"> <li>- the quantity of any treated drilling mud received; and</li> <li>- the name and address of the supplier of the treated drilling mud received.</li> </ul>

Exemption	General conditions
	<p>The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.</p> <p>The consumer must ensure that any application of treated drilling mud to land must occur within a reasonable period of time after its receipt.</p>
Compost Order 2014	The order imposes general condition, test methods and record keeping and reporting that processes who supply compost must follow.
Compost Exemption 2014	<p>At the time the compost is received at the premises, the material must meet all chemical and other material requirements for compost which are required on or before the supply of compost under 'the compost order 2014'.</p> <p>The compost can only be applied to land as a soil amendment.</p> <p>The consumer must ensure that they do not cause or permit the migration of leachate from the land application site.</p> <p>The consumer must ensure that any application of compost to land must occur within a reasonable period of time after its receipt.</p>

### 5.3 Classification of potential waste streams

The construction aspects and types of wastes that may be generated during construction, are outlined and classified in Appendix B.

Construction contractors will be required to produce a Waste Classification Report in alignment with the Protection of the Environment Act 1997 for material that does not meet the requirements of the waste orders and exemptions outlined in Section 5.2.

### 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 contractor and transport to offsite facilities.

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 contractor.

Where sections of the existing Pacific Highway or local roads are excavated, this material will be reused in accordance with the conditions attached to the general resource recovery exemption, Excavated Public Road Material Exemption 2012 (EPA, 2012a). Where this material has not been subjected to potentially contaminating sources, it can be reused within the road corridor without further testing or any specific licensing requirements. Where this material is suspected of being subject to contamination (e.g section of road is adjacent to a service station, or an old sheep dip), testing and classification of this material will be undertaken.

Where materials cannot be reused and recycled, all waste would be handled and disposed in accordance with the *Protection of the Environment Operations Act 1997*.

### 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 Air Quality Management Plan and the Soil and Water Management Plan, including the Stockpile Management Protocol

- 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, EPA waste disposal guidelines and G36 Section 4.11
- 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 contractors commissioned to regularly remove/empty the bins to approved disposal or recycling facilities.
- It is estimated that mulching of timber and green wastes for the project will generate significant quantities of mulch. Mulch has the potential of creating tannin affected water, which in turn has the potential of causing water pollution. Mulch stockpiles are to be managed in accordance with the Soil and Water Management Plan, including the Tannin Leachate Management Protocol.

## 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. Details of waste types, volumes and destinations are to be recorded in the Waste Management Register (Appendix D).

Where possible wastes will be removed off-site to a recycling facility or will be disposed of at a licensed waste facility.

## 5.7 Vegetation waste

Vegetation clearing will occur prior to construction and generate a large amount of green waste, especially in areas where the alignment diverges from the existing Pacific Highway. Large trees will be felled and transported for milling with the remaining vegetation mulched and where possible reused on site or transported to other sections of the Project. Weeds will be stockpiled for the required amount of time and assessed before reuse. Pacific Complete will manage the quantities and reuse requirements of vegetation waste.

A hierarchy will be used to identify the most appropriate use for vegetation waste and reduce the need for transportation:

1. Seed material will be collected for reuse in landscaping
2. Vegetation will be mulched and re-used for revegetation and landscaping
3. Millable timber will be separated for transport and processing offsite
4. Timber that is not suitable for offsite processing into timber products will be transported off site and utilised in local energy generation facilities
5. Transported to nearby approved environmental recovery projects
6. Given to local councils and businesses.

## 5.8 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
- Establishing administrative policies and incentives to reduce greenhouse gas production and energy consumption
- Project contractors will be required to identify and implement their own discipline or trade specific measures
- Site office and facilities will be established with energy efficient equipment
- Energy efficient lighting to be used in all office/compound facilities. Include LEDs or T5 energy efficient lighting
- For external facility lighting to utilise motion detection and light sensors or standalone solar-powered lamp posts
- External lights to utilise LEDs
- Maximise use of battery operated small tools to reduce the use of generators and air powered tools
- Switch off computers, computer screens, heating, air conditioning and other equipment at the end of each day or when not in use. Ensure staff awareness of energy consumption and mitigation methods.
- Orientate site cabins to maximise natural lighting through office/compound windows
- Installation of split-duct reverse cycle air conditioning units.

## **6 Environmental mitigation and management measures**

A range of environmental requirements are identified in the various environmental documents, including the EIS, Submissions / Preferred Infrastructure Report (SPIR), Statement of Commitments, 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.

The responsibilities of the roles identified in Table 6-1 are detailed in Section 4.2 of the CEMP.



**Table 6-1 Management and mitigation measures**

ID	Measure / Requirement	When to implement	Responsibility	Reference
<b>GENERAL</b>				
WE1	The cut and fill balance of the project will be further refined to obtain as much material as possible for re-use on the project.	Pre-construction	Pacific Complete Package Engineer Pacific Complete Supervisor Project Contractors Project Engineer Project Contractor's Environmental Representative	W2B Submissions / PIR (WM1)
WE2	The NSW Governments Waste Management Hierarchy of "avoid-reduce-reuse- recycle- dispose" will be followed as the framework of waste management throughout the project. 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.	Pre-construction Construction	Pacific Complete Environment Manager Project Contractor's Environmental Representative Project Contractor Project Engineer	G36 CoA B69
WE3	Relevant waste management measures from this CWREMP will be included in relevant Environmental Work Method Statements to be developed prior to the commencement of specific activities	Pre-construction / Construction	Pacific Complete Environment Manager Project Contractor's Environmental Representative	Good practice
WE4	A resource use management strategy will be prepared for construction of the project and identify the hierarchy for sourcing and use of resources. It would include the following provisions: <ul style="list-style-type: none"> <li>Available project cutting material (including SMZ and verge material) will be used for the construction of the embankments, SMZ and verge within that section to the extent that it is suitable.</li> <li>Project sections with a deficit in material will import surplus material from other project sections in preference to external sources.</li> </ul>	Pre-construction and construction	Pacific Complete Environment Manager Project Contractors Project Engineer Project Contractor's Environmental Representative	W2B Submissions / PIR (WM2)

ID	Measure / Requirement	When to implement	Responsibility	Reference
	<ul style="list-style-type: none"> <li>Where possible, the distances that earthworks materials are moved across the project as a whole will be minimised, notwithstanding the above two requirements.</li> <li>Contractors will reduce the amount of unsuitable waste generated during excavations, where feasible (eg treatment at source)</li> <li>The generation and management of unsuitable material during project earthworks will be monitored to ensure appropriate management of the issue.</li> <li>Details on materials that will be sourced from the project (including location and type).</li> <li>Viable material suppliers (including water) near the project.</li> <li>Proposed sustainable material sources practices (such as recycled materials or use of waste water).</li> <li>Materials that could be recycled and re-used on-site or transferred to other project sections.</li> </ul>			
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	Pacific Complete Environment Manager Project Contractor's Environmental Representative	Good Practice W2B Submissions / PIR (WM10)
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	Project Contractors Project Engineer/ Foreman	Good Practice
WE7	Weeds will be managed, handled and disposed of in accordance to The Weed Management Strategy (refer to the FFMP). If disposal is appropriate, the weed material will be transferred to a licensed waste facility.	Construction	Pacific Complete Supervisor Project Contractors Project Engineer/Foreman	Good practice
WE8	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 and stabilised.	Construction	Pacific Complete Supervisor Project Contractors Project Engineer/Foreman	Good Practice
WE9	Where possible, materials will be bought in bulk to minimise the	Construction	Project Contractors	W2B Submissions / PIR

ID	Measure / Requirement	When to implement	Responsibility	Reference
	amount of package required. Sources of material that have sustainable packaging design, recycled and recyclable packaging will be favoured over other material sources where cost effective.		Project Engineer Project Contractor's Environmental Representative	(WM4)
WE10	All waste material generated on-site (including chemical, fuel and lubricant containers, and solid and liquid waste) will be classified and disposed of in accordance with the <i>Protection of the Environment Operations Act 1997</i> and <i>Waste Classification Guidelines Part 1: Classifying Waste</i> (DECCW, 2009), or any superseding document.  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.	Construction	Pacific Complete Supervisor Project Contractors Project Engineer Project Contractor's Environmental Representative	W2B Submissions / PIR (WM5) CoA B68, CoA B70
WE11	Waste minimisation and management measures will be developed based on the principles in the Waste Avoidance and Resource Recovery Act 2001, the NSW Government's Waste Reduction and Purchasing Policy, and waste exemptions including: <ul style="list-style-type: none"> <li>Excavated Natural Material Exemption (EPA, 2014)).</li> <li>Excavated Public Road Material Exemption (EPA, 2014))</li> <li>Raw Mulch Exemption (EPA, 2014)</li> <li>Reclaimed Asphalt Pavement Exemption (EPA, 2014)</li> <li>Recovered Aggregate Exemption (EPA, 2014)</li> <li>Stormwater Exemption (EPA, 2014)</li> <li>Treated Drilling Mud Exemption (EPA, 2014)</li> </ul>	Construction	Pacific Complete Environment Manager Project Contractors Project Engineer Project Contractor's Environmental Representative	W2B Submissions / PIR (WM6) G36
	Recycled material will be considered for use in all aspects of the project where feasible and reasonable and measures will seek to avoid, minimise, re-use, recycle, treat or dispose of waste streams during construction and address transport and disposal arrangements.			
WE12	Millable timber will be harvested for reuse off site. All other felled timber will be reused on-site in the form of habitat recreation or mulch in landscaping and erosion and sedimentation controls. Where mulch cannot be reused on-site, consideration will be given to making the mulch available to the public in accordance with the RMS Environmental Direction 25 (2012) and the Raw Mulch Exemption (EPA, 2014).	Construction	Pacific Complete Supervisor Project Contractors Project Engineer/ Foreman	W2B Submissions / PIR (WM7)

ID	Measure / Requirement	When to implement	Responsibility	Reference
WE13	Sediment removed from sedimentation basins will, where appropriate, be used on-site in landscaping and/or flattening of batters.	Construction	Project Contractors Project Engineer/ Foreman Project Contractor's Environmental Representative	W2B Submissions / PIR (WM8)
WE14	Where feasible, the contractor will be required to re-use materials. This could include, but is not limited to concrete formwork or surplus concrete pours.	Construction	Project Contractors Project Engineer Project Contractor's Environmental Representative	W2B Submissions / PIR (WM9)
WE15	At site compounds, on-site recycling facilities will be provided for recycling paper, plastic, glass and other re-useable materials.	Construction	Pacific Complete Environment Manager Project Contractor's Environmental Representative	W2B Submissions / PIR (WM11)
WE16	Regular visual inspections will be conducted to ensure that work sites are kept tidy and to identify opportunities for reuse and recycling.	Construction	Pacific Complete Supervisor Project Contractor's Environmental Representative Project Contractor Project Engineer/Foreman	W2B Submissions / PIR (WM12)
WE17	Water captured in excavations will be required to be either: <ul style="list-style-type: none"> <li>Managed in accordance with the construction Soil and Water Management Plan</li> <li>Transferred to a licensed sediment basin, treated and discharged in accordance with any licence conditions that apply to the discharge of water, or</li> <li>Re-used for construction water or dust suppression.</li> </ul>	Construction	Pacific Complete Supervisor Project Contractor's Environmental Representative Project Contractor Project Engineer/	W2B Submissions / PIR (WM13)
WE18	Topsoil (weed free) will be stockpiled in accordance with RMS criteria in allocated areas and reused for landscaping.	Construction	Project Contractor's Environmental Representative	G36

ID	Measure / Requirement	When to implement	Responsibility	Reference
			Project Contractor Project Engineer/Foreman in consultation with Pacific Complete Package Engineer	
WE19	Any contaminated waste will be handled, separated, contained, managed and disposed of to prevent migration and further contamination.	Construction	Pacific Complete Supervisor Project Contractor Project Engineer/Foreman Waste Contractor	CLM Act G36
<b>WASTE DISPOSAL</b>				
WE20	A waste register will be maintained, detailing types of waste collected, amounts, date/time and details of disposal.	Construction	Pacific Complete Environment Manager Project Contractor Project Engineer/ Project Contractor's Environmental Representative Waste Contractor	W2B Submissions / PIR (WM3)
WE21	Waste will be managed and disposed of in accordance with the PoEO Act and the WRAPP. Wastes that are unable to be reused or recycled will be disposed of offsite at a licensed waste management facility, or premises lawfully permitted to accept the materials following classification.	Construction	Pacific Complete Environment Manager Project Contractor Project Engineer/ Project Contractor's Environmental Representative Waste Contractor	G36 CoA B71
WE22	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	Pacific Complete Environment Manager Project Contractor Project Engineer/ Project Contractor's Environmental Representative	G36

ID	Measure / Requirement	When to implement	Responsibility	Reference
			Waste Contractor	
WE23	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	Pacific Complete Environment Manager Project Contractor Project Engineer/Project Contractor's Environmental Representative	PoEO Act G36
WE24	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	Pacific Complete Environment Manager Project Contractor Project Engineer/Project Contractor's Environmental Representative	G36
WE25	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	Pacific Complete Planning and Approvals Leader Waste Contractor	G36
WE26	All trucks transporting wastes off site will be appropriately licensed to carry the materials to appropriately licensed waste facilities.	Construction	Pacific Complete Planning and Approvals Leader Waste Contractor	G36
<b>GREENHOUSE GAS AND ENERGY CONSERVATION</b>				
WE27	Roads and Maritime will investigate the use of LED lighting in place of incandescent lamps as part of the project's detailed design, and use them where practicable to reduce electrical energy consumption. Any energy-efficient alternatives will have to meet lighting standards for major roads.	Pre-construction	Pacific Complete Environment Manager	W2B Submissions / PIR (GHG6)
WE28	Flyash content within concrete will be specified where feasible. Contractors will be required to propose recycled content construction materials where they are cost, quality and performance competitive.	Pre-construction and construction	Project Contractor Project Engineer/Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG1)
WE29	Reuse of excavated road materials will be maximised as far as	Pre-construction and	Project Contractor	W2B Submissions / PIR

ID	Measure / Requirement	When to implement	Responsibility	Reference
	possible where they are cost, quality and performance competitive to reduce use of materials (with embedded energy).	construction	Project Engineer/Project Contractor's Environmental Representative in consultation with Pacific Complete Package Engineer	(GHG2)
WE30	Steel with high recycled content will be specified where feasible where they are cost, quality and performance competitive. Contractors will be required to propose recycled content construction materials where they are cost, quality and performance competitive.	Pre-construction and construction	Project Contractor Project Engineer/Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG3)
WE31	An energy management plan will be developed during the construction of the project. The plan will include a commitment to monitor on-site energy consumption and identify and address on-site energy waste.	Pre-construction and construction	Pacific Complete Environment Manager Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG5)
WE32	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or B80) will 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 will be planned to minimise fuel use.	Construction	Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG4)
WE33	Onsite energy consumption is to be monitored as part of the implementation of the CWEMP during construction.	Construction	Pacific Complete Supervisor Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG5)
WE34	Inefficient use of energy is to be identified and measures are to be taken to address on-site energy waste.	Construction	Pacific Complete Supervisor Project Contractor's Environmental Representative	W2B Submissions / PIR (GHG5)
WE35	An education program will be developed and delivered to the construction personnel to promote energy-efficient work practices.	Construction	Pacific Complete Environment Manager Project Contractor's Environmental	W2B Submissions / PIR (GHG7)

ID	Measure / Requirement	When to implement	Responsibility	Reference
CONTAMINATED LAND				
WE36	In the event of an unexpected find, the Unexpected Discovery of Contaminated Lands Procedure outlined in Appendix A of the Construction Contaminated Land Management Plan will be followed.	Construction	Pacific Complete Environment Manager Project Contractor's Environmental Representative	



## 7 Compliance management

Pacific Complete will manage the environmental performance and compliance of the work by undertaking independent waste inspections and audits, and reviewing reports submitted by both the construction contractors and waste contractors. Pacific Complete will report to the Department of Planning and relevant government bodies as required, to provide evidence of the works compliance with legislative requirements, conditions of approval and standards and guidelines.

### 7.1 Roles and responsibilities

The organisational structure and overall roles and responsibilities for Pacific Complete are outlined in Section 4.2 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Chapter 6 of this plan.

### 7.2 Procurement of waste contractors

Pacific Complete will engage waste contractors to manage the collection, recycling or disposal of waste that cannot be reused onsite. A number of different waste contractors will be required to appropriately manage the different waste streams generated onsite. To ensure the selection of reliable and experienced contractors, Pacific Complete will request the following information that will be included in any contract information:

- Experience
- Historical performance with each waste stream and similar projects
- Any non-conformance notices or environmental offences, penalties or notices
- Copies of licenses and permits for handling, transporting and disposing waste
- Management systems and policies (health and safety, environment and sustainability)
- Proof of compliance with legislation and guidelines
- Cost for collection, processing and recycling/disposal
- Destination of each waste stream
- Processing techniques
- Expected recovery rates of each waste streams.

Project Contractors will be required to submit their own environmental management plan (Project Contractors EMP) which will be required to include waste, resource and energy management and mitigation measures for their works. They will only be required to submit a plan tailored to their works that will include specific mitigations from this management plan pertinent to the subset of works that they will be carrying out for the project. Within this plan, project contractors will be required to include a project specific Sustainability Action Plan to address carbon emission and energy consumption issues. The Sustainability Action Plan will developed to align with the Project Contractor's Sustainability Policy and Pacific Complete's sustainability objectives and targets.

The submission of the Project Contractors EMP will be a hold point prior to the commencement of any works onsite.

## 7.3 Training

All employees, 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 plan
- Relevant legislation
- Incident response, management and reporting
- Waste reporting requirements
- Requirements of the waste hierarchy
- Waste/ recycle storage requirements
- Energy efficient best practices
- Other specific responsibilities for waste and reuse management.
- Further details regarding staff induction and training are outlined in Chapter 5 of the CEMP.

## 7.4 Monitoring and inspection

The Project Contractors will carry out regular monitoring and inspections. Pacific Complete will also conduct independent inspections to confirm the contractor's compliance with waste management requirements.

Table 7-1 outlines the monitoring and inspection activities that will be undertaken during construction by waste contractors, construction contractors and Pacific Complete.

**Table 7-1 Program for monitoring and inspections**

Item	Frequency
<b>Pacific Complete</b>	
Undertake weekly waste & energy inspections and record on the environment checklist	Weekly
Record results of any soil, surface or groundwater sampling	As required
Carry out waste management and energy use audits to assess extent of waste hierarchy and identify/address energy wastage. This should be undertaken at six monthly intervals during the construction stage of the work and will be used to assess compliance with waste targets / performance criteria	Six monthly
Keep records of waste contractors and landfill facilities used to ensure waste management can be traced from cradle to grave	Monthly
Verify licences and permits for handling, transporting and disposal of wastes	Provision of waste contractor agreement
Collate Project Contractor waste disposal data and maintain the project waste register.	Report monthly
<b>Project Contractor</b>	
Undertake weekly waste & energy inspections and record on the environment checklist	Weekly
Maintain and document the types and volumes of wastes generated, re-used, recycled and disposed of	Daily/ as required
Document the locations of stockpiled and stored waste	Daily/ as required

Item	Frequency
A Waste Management Register of all waste collected for disposal and/or recycling will be maintained on a monthly basis until final completion in accordance with the RMS G36 specification	Monthly
Record results of any soil, surface or groundwater sampling	As required
Maintain and record resource usage during construction works (e.g. energy, water, fuel, oil, etc.).	Monthly
<b>Waste Contractor</b>	
Maintain and document the types and volumes of wastes collected recycled and disposed of. Provide monthly reports on waste removal and disposal activities.	When waste is collected and report on a monthly basis

Additional requirements and responsibilities in relation to inspections, in addition to those in Table 6-1, are documented in Section 8.2 of the CEMP.

## 7.5 Auditing

Audits will be undertaken by Pacific Complete and third party external auditors to assess the effectiveness of environmental mitigation and management measures, compliance with this plan, MCoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 8.4 of the CEMP.

## 7.6 Reporting

Reporting requirements and responsibilities are documented in the Sections 8.4 and 8.5 of the CEMP, including incident reporting as outlined in the RMS *Environmental Incident Classification & Reporting Procedure*.

Waste contractors and construction contractors will report regularly to Pacific Complete on their waste management practices. Pacific Complete will review these reports; compare results between the various entities, and any data collected by Pacific Complete personnel. Pacific Complete will then relay the required information in the form of regular reporting to RMS and other stakeholders as required.

Table 7-2 outlines the reporting requirements for waste contractors, construction contractors and Pacific Complete.

**Table 7-2 Reporting requirements for waste contractors, construction contractors and Pacific Complete**

Item	Frequency
<b>Pacific Complete</b>	
Report power consumption (green power and other) in the Construction Compliance Reports	Three monthly
NGER reporting of waste and energy will be undertaken in accordance with legislative requirements under the NGER Act 2007.	Monthly
<b>Construction Contractor</b>	
Monthly waste register provided to Pacific Complete ( Appendix D)	Monthly
Records of resource usage during construction works (e.g. energy, water, fuel, oil, etc.) provided to Pacific Complete.	Monthly
<b>Waste Contractor</b>	
Monthly service provider waste reports provided to Pacific Complete (Appendix C)	Monthly

## **8 Review and improvement**

### **8.1 Continuous improvement**

Pacific Complete will review waste, resource and energy reports submitted by construction contractor and waste contractors and identify areas for improvement. Pacific Complete, in consultation with contractors, will evaluate the project's 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 CWEMP update and amendment**

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

Any revisions to the CWEMP 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**

## Location of waste facilities

Local Government Area	Facility Name	Waste Type	Contact Details	Relevant Section
Clarence Valley	Grafton Regional Landfill	<ul style="list-style-type: none"> <li>• General waste</li> <li>• eWaste (no cost)</li> <li>• Scrap metal and concrete recycling</li> <li>• Recycling</li> <li>• Vehicle wash bay</li> <li>• Oil waste storage</li> <li>• Household hazardous waste storage</li> <li>• drumMuster compound</li> <li>• Organics composting</li> <li>• Asbestos disposal</li> </ul>	704 Armidale Road South Grafton (02) 6641 4980	Section 3
Clarence Valley	Grafton Waste Transfer and Recycling Facility	<ul style="list-style-type: none"> <li>• General waste</li> <li>• Paper and cardboard commercial collection and security paper shredding service</li> <li>• green waste</li> <li>• eWaste (no cost)</li> <li>• Recycling</li> <li>• Ferrous and non ferrous metals</li> <li>• Motor oil, cooking oil</li> <li>• Vehicle batteries</li> </ul>	Corner Duke and Kirchner Streets Grafton (02) 6642 6428	Section 3
Clarence Valley	Maclean Waste Transfer and Recycling Centre	<ul style="list-style-type: none"> <li>• General waste</li> <li>• Recycling</li> <li>• Greenwaste</li> <li>• Scrap metal and concrete</li> <li>• eWaste</li> <li>• drumMuster compound</li> </ul>	Paperbark Drive Townsend (02) 6645 5225	Section 5
Richmond Valley	Nammoona Landfill	<ul style="list-style-type: none"> <li>• eWaste</li> <li>• Scrap metal and concrete</li> <li>• Construction &amp; demolition waste</li> <li>• Batteries</li> <li>• Tyres</li> <li>• Recycling</li> <li>• Greenwaste</li> <li>• General waste</li> <li>• drumMuster compound</li> </ul>	Dargaville Drive Casino (02) 6662 6580	Section 11
Richmond Valley	Bora Ridge-Coraki Landfill	<ul style="list-style-type: none"> <li>• eWaste</li> <li>• Scrap metal and concrete</li> <li>• Construction &amp; demolition waste</li> <li>• Batteries</li> <li>• Tyres</li> <li>• Recycling</li> <li>• Greenwaste</li> <li>• General waste</li> <li>• drumMuster compound</li> </ul>	Myall Creek Rd Bora Ridge (02) 6683 2691	Section 10

Local Government Area	Facility Name	Waste Type	Contact Details	Relevant Section
Lismore City	Lismore Recycling and Recovery Centre	<ul style="list-style-type: none"> <li>• Household hazardous waste storage</li> <li>• eWaste</li> <li>• Scrap metal and concrete</li> <li>• Construction &amp; demolition waste</li> <li>• Batteries</li> <li>• Tyres</li> <li>• Recycling</li> <li>• Greenwaste</li> <li>• General waste</li> <li>• Asbestos</li> <li>• Chemicals &amp; liquids</li> </ul>	313 Wyrallah Road Lismore 1300 878 387	Section 11
Ballina Shire	Ballina Waste Management Centre	<ul style="list-style-type: none"> <li>• eWaste</li> <li>• Batteries</li> <li>• Oils</li> <li>• Tyres</li> <li>• Excavated materials</li> <li>• Construction &amp; demolition waste</li> <li>• Scrap metals</li> <li>• Recycling</li> <li>• General waste</li> </ul>	167 Southern Cross Drive Ballina (02) 6686 1287	Section 11

## **Appendix B**

Waste types, disposal methods and reuse/recycling targets



Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
<b>Clearing and Grubbing</b>	Green waste – trees		350,000 cubic metres (m <sup>3</sup> )	<ul style="list-style-type: none"> <li>Hollow logs and woody debris considered suitable habitats for fauna will be relocated to suitable bushland areas as directed by project ecologist</li> <li>Timber sent to mill for reuse</li> <li>Excess wood chips will be given to councils and local businesses.</li> </ul>	100%
	Green waste – vegetation	General solid waste (non-putrescible)	200,000 m <sup>3</sup>	<ul style="list-style-type: none"> <li>Re-use on site as mulch bunds for erosion and sediment controls, landscaping and boosting topsoil organic matter content</li> <li>Excess mulch will be given to councils and local businesses.</li> </ul>	100%
	Weeds	General solid waste (non-putrescible)	5000 m <sup>3</sup>	<ul style="list-style-type: none"> <li>Managed, handled and disposed of in accordance with the Weed and Pathogen Management Plan.</li> <li>Stockpiled on-site until appropriate to be used as mulch</li> <li>If disposal is required it will be transferred to a licensed waste facility.</li> </ul>	100%
<b>Demolition</b>	Timber	General solid waste (non-putrescible)	200 tonne (t)	Recycle/reuse of material onsite or send offsite to recycling facility.	100%
	Metal – pipes, sheets, reo, fencing	General solid waste (non-putrescible)	500 t	Recycle/reuse of material onsite or send offsite to recycling facility.	100%
	Highway pavement – Concrete, asphalt, gravel and road base	General solid waste (non-putrescible)	TBC	Crushed and reused as road base. Send offsite for recycling.	100%
	Bricks and tiles	General solid waste (non-putrescible)	200 t	General demolition waste expected to be disposed of, unless a reuse option is identified.	50%
	Asbestos	Special waste	1t	Assessed by a licensed assessor. Managed and disposed of by licensed sub-contractor.	0%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
	Cabling and lighting	General solid waste (non-putrescible)	TBC	Where possible send offsite to a recycling facility.	
	Redundant utility services	General solid waste (non-putrescible)	TBC	<ul style="list-style-type: none"> <li>Copper wires and pipes send off-site to recycling facility</li> <li>Separately stockpiled at various locations onsite before being sent offsite to a licensed waste facility.</li> </ul>	60%
	Plastics – PVC pipes, sheeting	General solid waste (non-putrescible)	TBC	Recycle/reuse of material onsite or send offsite to recycling facility.	90%
<b>Excavation and Earthworks</b>	Top soil	General solid waste (non-putrescible)	400,000m <sup>3</sup>	Stockpiled in accordance with the Stockpile Management Protocol. Treated (if-required) and re-used in accordance with the Urban Design and Landscape Management Plan.	100%
	Potentially contaminated top soil (weeds)	General solid waste (non-putrescible)	10,000m <sup>3</sup>	<ul style="list-style-type: none"> <li>Separately stockpiled and treated in accordance with the Weed and Pathogen Management Plan</li> <li>Stockpiled onsite until appropriate to use</li> <li>If disposal is required it will be transferred to a licensed waste facility.</li> </ul>	100%
	VENM/ENM	Classified based on soil tests and in accordance with Waste Classification Guidelines (DECCW 2009)	TBC	<ul style="list-style-type: none"> <li>Re-used on site, balance cut and fill where feasible or utilised in landscape mounds, noise mounds or to fatten batters in accordance with the Spoil and Fill Management Plan.</li> <li>For material to be considered VENM, it must meet the requirements of the Protection of the Environment Operations Act 1997. Where an excavated material cannot be classified as VENM, it may be eligible for reuse under the ENM.</li> <li>Surplus material may also be reused off-site if they meet the above requirements. Material will be managed appropriately (no mixing of different types) to ensure any materials reused on and offsite meet the relevant VENM and ENM requirements.</li> </ul>	100%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
	Unsuitable spoil	General solid waste (non-putrescible)	TBC	<ul style="list-style-type: none"> <li>Used for flattening batters, noise and visual mitigation mounds and landscaping along the formation.</li> <li>If there is no immediate use, temporarily stockpile and use in adjacent sections of the work.</li> </ul>	100%
	Potentially contaminated soils	Classified based on soil tests and in accordance with Waste Classification Guidelines (DECCW 2009)	TBC	Unless soil can be appropriately treated and validated, it will be disposed of in accordance with the Contaminated Land Management Plan.	0%
	Acid sulphate soils	Hazardous waste or General solid waste (non-putrescible)	TBC	<ul style="list-style-type: none"> <li>Tested to determine its waste classification.</li> <li>Material shall be treated and separately stockpiled pending testing to confirm the acid generating capacity is neutralised.</li> <li>Once the material has been tested and confirmed neutralised it may be reused on site.</li> <li>Material not suitable for reuse will be managed in accordance with the Acid Sulfate Material Management Procedure.</li> </ul>	80%
<b>Mobile Plant / vehicles</b>	Exhaust Emissions	Gaseous emissions to the atmosphere	TBC	Released to atmosphere – mobile plant to provide service records to minimise exhaust emissions.	0%
<b>Road Construction</b>	General waste and recyclables – paper, glass, pastics, silt fences, survey pegs, aluminium, cans, hessian bags etc	General solid waste (non-putrescible)	50 t	<ul style="list-style-type: none"> <li>Recyclables placed in recycling bin and removed offsite to recycling facility by waste subcontractor.</li> <li>Other waste taken to a licensed waste facility by waste subcontractor.</li> </ul>	70%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
	Excess construction materials – asphalt, concrete, metal, culverts, steel, timber, steel straps, guide posts, temporary fencing, timber from formworks, guard rails etc.	General solid waste (non-putrescible)	40,000 t	<ul style="list-style-type: none"> <li>Reused on-site or made available for use on adjoining sections.</li> <li>Re-processed (concrete, asphalt) for use as road base or backfill.</li> <li>Removed off-site to a recycling facility or to a licensed waste facility.</li> </ul>	70%
	Sediment/sludge from sediment basin desilting	General solid waste (non-putrescible)	40,000m <sup>3</sup>	Collected and reused on-site as general fill material or incorporated within landscaping / topsoil material where practical and in accordance with the Urban Design and Landscape Management Plan.	100%
	Waste water site run-off captured in sediment basins	Liquid waste	TBC	<ul style="list-style-type: none"> <li>Reused onsite for dust suppression, watering of landscaping areas and other suitable construction activities when of appropriate quality, where practical and where it meets the dewatering requirements for the sediment basin.</li> <li>Any water discharged offsite will be tested with EPL water quality criteria in accordance with the Soil and Water Management Plan.</li> </ul>	50%
	Waste water from tannin affected water, contaminated runoff from concrete bridge decks, water captured in excavation, vehicle wash down and dam	Liquid waste	TBC	<ul style="list-style-type: none"> <li>Treated and reused onsite where possible.</li> </ul>	80%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
	de-watering				
	Packaging – pallets, crates, cartons, plastics and wrapping materials	General solid waste (non-putrescible)	TBC	Return to material supplier or send offsite for recycling.	60%
	Empty Containers used for pesticides, herbicides, fuel, lubricants, paints and other hazardous chemicals.	Hazardous waste	100 t	<ul style="list-style-type: none"> <li>• Stored in appropriate bunded containers in locked storage areas and disposed of by licensed subcontractors.</li> <li>• Steel drums will be recycled where practical if a reliable drum reconditioning service is available.</li> </ul>	0%
	Excess pesticides, herbicides, fuel, lubricants, paints and other hazardous chemicals.	Hazardous waste	1 t	<ul style="list-style-type: none"> <li>• Reused onsite or made available for use on adjoining sections.</li> <li>• Removed off-site to a licensed waste facility.</li> </ul>	100%
<b>Compounds and site office operations</b>	Waste fuels, oils and chemicals	Liquid waste	5,000 liquid t	<ul style="list-style-type: none"> <li>• Stored in appropriate bunded containers in locked storage areas and removed off-site to a licensed waste facility.</li> </ul>	100%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
	Radiator Fluid and Hydraulic Fluid	Hazardous waste	2,000 liquid t	<ul style="list-style-type: none"> <li>Stored in appropriate bunded containers in locked storage areas removed off-site to a licensed waste facility.</li> </ul>	0%
	Batteries	Hazardous waste	TBA	Removed offsite to a licensed waste facility and Disposed of as hazardous waste.	70%
	Oil filters, rags and oil absorbent materials	General solid waste (non-putrescible)	2 t	Removed offsite to a licensed waste facility and Disposed of as hazardous waste.	0%
	Concrete washout water (from batching plant)	Liquid waste	100 kilolitres (kL)	Stored in ponds at batch plant, treated and reused on site. Re-used in process where feasible.	90%
	Waste from concrete/asphalt batching plants	General solid waste (non-putrescible)	48,000 t	Stored in ponds at batch plant, treated and reused on site. Re-used in process where feasible.	100%
	Sewerage	Liquid	12,320 kL	Removed from site by the waste disposal subcontractor on a regular basis.	0%
	Recyclables – paper, cardboard, aluminium, plastic containers	General solid waste (non-putrescible)	18720 t	Recycling bins will be provided and removed offsite to a recycling facility.	100%
	Municipal general waste – food organics and other waste	General solid waste (putrescible)	9360 t	Removed off-site to a licensed waste facility.	0%
	Waste from litter and cigarettes	General solid waste (non-putrescible)	2 t	Collected and removed offsite to a licensed waste facility.	0%
	Toner cartridges	General solid waste (non-	4 t	Collected for refill or recycling as required.	100%

Construction activity	Waste type	Waste classification	Likely quantity	Disposal methods	Reuse / recycle target
		putrescible)			
	Sanitary waste	Special waste (clinical waste)	TBC	Removed offsite to a licensed waste facility and disposed of as clinical waste.	0%
	Medical waste (first aid kits, diabetes care etc)	Special waste (clinical waste)	1 t	Removed offsite to a licensed waste facility and disposed of as clinical waste.	0%

## **Appendix C**

Example monthly waste service provider report



**Monthly waste service provider report**

**Waste Service Provider Name:**

**Reporting Period:**

**Report Prepared By:**

Date / Time	Description of waste (e.g. concrete, asphalt, vegetation)	Waste Classification	Type (skip, front lift, wheelie bin, pump out)	Container Size (M3 or Lt)	Number of containers	Amount of spoil or waste collected		Quantity to be recycled	Quantity to be sent to landfill for disposal	Facility to receive	Invoice No / Tip Docket Ref
						Weight (tonnes)	Total Volume (m3)				

## **Appendix D**

Example waste management register for  
construction contractor

**Waste management register for construction contractor**

Date / Time	Description of waste (e.g. concrete, asphalt, vegetation)	Waste Classification	Type (skip, front lift, wheelie bin, pump out)	Container Size (M3 or Lt)	Number of containers	Amount of spoil or waste collected		Quantity reuse on site	Quantity sent for recycling	Quantity sent to landfill for disposal	Transporter	Facility to receive	Invoice No / Tip Docket Ref	
						Weight (tonnes)	Volume (m3)							