

APPENDIX B7

Waste and Energy Management Sub Plan

Warrell Creek to Nambucca Heads

DECEMBER 2014

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Glossary / Abbreviations

ASM Acid Sulphate Material ASR Acid Sulphate Rock Materials (ASR) CEMP Construction Environmental Management Plan CoA Condition of Approval EA Environmental Assessment EEC Endangered Ecological Community ENM Excavated Natural Material EPA Environmental Planning and Assessment Act 1979 EPL Environmental Protection Licence EPRM Excavated Public Road Material EWMS Environmental Work Method Statements FM Act Fisheries Management Act 1994 NOW NSW Office of Water OEH Office of Environment and Heritage PESCP Progressive Erosion and Sediment Control Plan SoC Revised Statement of Commitments included in the Submissions Report VENM Virgin Excavated Natural Material WARR Act Waste Avoidance and Resource Recovery Act 2001 WC2NH Warrell Creek to Nambucca Heads Project (Stage 2 of WC2U) WC2U Warrell Creek to Urunga WEMP Waste Reduction and Purchasing Policy	AFJV	ACCIONA Ferrovial Joint Venture
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WC2NH Warrell Creek to Nambucca Heads Project (Stage 2 of WC2U) WC2U Warrell Creek to Urunga WEMP Waste and Energy Management Sub Plan	VENM	Virgin Excavated Natural Material
WC2U Warrell Creek to Urunga WEMP Waste and Energy Management Sub Plan	WARR Act	Waste Avoidance and Resource Recovery Act 2001
WEMP Waste and Energy Management Sub Plan	WC2NH	Warrell Creek to Nambucca Heads Project (Stage 2 of WC2U)
3, 3	WC2U	Warrell Creek to Urunga
WRAPP Waste Reduction and Purchasing Policy	WEMP	Waste and Energy Management Sub Plan
	WRAPP	Waste Reduction and Purchasing Policy

1 Introduction

1.1 Context

This Waste and Energy Management Sub Plan (WEMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the upgrade of the Pacific Highway between Warrell Creek and Nambucca Heads (WC2NH). The WC2NH Project is Stage 2 of the Warrell Creek to Urunga (WC2U) Project, approved by the Minister for Planning and Infrastructure in 2011.

The WC2NH section of the WC2U Project involves the upgrade of approximately 19km of the Pacific Highway from the northern end of the Allgomera deviation south of Warrell Creek to Old Coast Road, west of Nambucca Heads. The WC2NH Project is being constructed by ACCIONA Ferrovial Joint Venture (AFJV).

This WEMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the Roads and Maritime Statement of Commitments (SoC), the mitigation measures listed in the Warrell Creek to Urunga Environmental Assessment (EA) and all applicable legislation.

1.2 Background

The Warrell Creek to Urunga – Upgrading the Pacific Highway - Environmental Assessment (RTA 2010) assessed the impacts of construction in terms of waste generation/ management and energy use, within chapter 19 (specifically sections 19.4 and 19.5).

The EA identified the various waste streams that would 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 EA identified the main sources of energy consumption for the Project and estimated the consumption of electricity and fuel to indicatively quantify greenhouse gas emissions. Measures to reduce energy consumption during construction were identified.

1.3 Environmental management systems overview

The overall Environmental Management System for the Project is described in the Construction Environmental Management Plan (CEMP).

The WEMP is part of the AFJV 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 AFJV personnel and contractors.

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

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the AFJV 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 AFJV 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 and SoC outlined in Table 3.2 and Table 3.3, and the mitigation measures detailed in the EA.
- 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.
- Compliance with 100% of the commitments detailed in Table 6-1.

Table 2-1 Construction waste streams and targets

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
Demolition	Bricks, tiles, etc.	General solid waste (non-putrescible)	2,000 m ³	General demolition waste expected to be disposed of, unless a reuse option is identified onsite.	50%
	Asbestos	Hazardous Waste	500 m ³	Asbestos-suspected material to be assessed by licensed assessor. Managed and disposed of by licensed sub-contractor	0%
Demolition	Timber, Steel, scrap metal	General solid waste (non- putrescibles)	500 m ³	Recycling/reuse of material onsite or send to off-site recycling facility.	100%
Clearing and Grubbing	Green Waste Vegetation, Trees etc.	General Solid Waste (non-putrescible)	5,000 m ³	Cleared vegetation will be reused or recycled to the greatest extent practicable. Including mulching of vegetation for use in erosion and sediment controls, landscaping and boosting topsoil organic matter content. Hollow logs and woody debris considered being suitable habitat for fauna will be relocated to suitable bushland areas as directed by the project ecologist. Donation of other timbers, i.e. root balls, sheared timber etc will be donated to community groups for reuse or sale where practical. All raw mulch and compost must meet the requirements of the following resource recovery exemptions: • The raw mulch exemption 2014; and • The compost exemption 2014.	100%
Clearing and Grubbing	Green Waste Weeds	General Solid Waste (non-putrescible)	1,000 m ³	Weeds will be managed, handled and disposed of in accordance with the Weed and Pathogen Management Plan. If disposal is appropriate, the	0%

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
				weed material will be transferred to a licensed waste facility.	
Excavation	Topsoil	General Solid Waste (non putrescible)	5,000 m ³	Stockpiled in accordance with the Stockpile Management Protocol. If topsoil is able to be re-used, it will be treated (if required) and re-used in accordance with the Urban Design and Landscape Management Plan.	100%
Excavation	Potentially contaminated topsoil (weeds)	General Solid Waste (non putrescibles)	1,000 m ³	Potential contaminated (weeds / pathogens) topsoil will be separately stockpiled and treated in accordance with the Weed and Pathogen Management Plan. If disposal is required, it shall be transferred to a licensed waste facility.	0%
Excavation	VENM / ENM	Classification based on soil tests and in accordance with Waste Classification Guidelines (DECCW 2009)	20,000 m ³	VENM to be 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 For material to be considered VENM, it must meet the requirements of the <i>Protection of the Environment Operations Act 1997.</i> Where an excavated material cannot be classified as VENM, it may be eligible for reuse under the excavated natural material exemption (ENM). Surplus material may also be reused	100%
				offsite if they met the above requirements. Material will be managed appropriately (i.e. no mixing of different material types) to ensure any materials reused on and offsite	

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
				meet the relevant VENM and ENM requirements.	
Excavation	Potentially contaminated soils	Classification based on soil tests and in accordance with Waste Classification Guidelines (DECCW 2009)	10,000 m ³	Unless contaminated soil can be appropriately treated and validated, contaminated spoil to be disposed of in accordance with the Soil and Water Management Sub-Plan.	0%
Earthworks	Acid Sulphate Materials (ASM)	Hazardous Waste* or General Soil Waste (Non Putrescible)*	10,000 m ³	Acid Sulphate suspected materials shall be tested to determine its waste classification. Material shall be treated and separately stockpiled pending testing to confirm the acid generating capacity is neutralised. Once the material has been tested and confirmed neutralised, it may be reused on site. Residual material not suitable for reuse will be disposed of in accordance with the Acid Sulphate Material Management Procedure.	80%
Earthworks	Arsenic Rock Materials	Hazardous Waste* or General Soil Waste (Non Putrescible)*	0	Arsenic Rock suspected materials shall be managed for reuse on site in accordance with the Arsenic Rock Management Strategy.	100%
Mobile Plant	Exhaust Emissions	Gaseous emissions to atmosphere	28,000kg CO ₂ -e	Release to atmosphere – mobile plant to provide service records to minimise exhaust emissions	0%
Site Compound	Toners, Paper, cardboard, plastic, etc.	General Solid Waste (non-putrescible)	Recycled Waste 48 m³/month	Toners collected by company for refill or recycling as required.	100%
	General waste, food scraps, etc.	General Solid Waste (putrescibles)	General Waste	Clean office paper reused as scrap paper or placed in proprietary type waste bins for recycling.	85%
	22.3po, 5.6. (pull 650 lblc	,	24 m ³ /month	All other office waste shall be placed in proprietary type waste bins and	0%

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
				removed by the waste disposal subcontractor	
Site Compound	Sewerage Ablution Waste	Liquid	72,000L/month	Ablution waste will be removed from site by the waste disposal subcontractor on a regular basis	0%
Road Construction	General & Recyclable Waste Paper, Glass, Plastics, Silt Fences, Survey Pegs, Aluminium Cans, Hessian Bags etc.	General Solid Waste (non-putrescible)	5,000 m ³	Paper, Plastic, Glass, and Metals placed in Proprietary Type Recycle Bins provided by the waste subcontractor at various locations on site including the main site storage compound. Non-recyclable waste e.g. kitchen waste, non-recyclable packing etc. placed in Proprietary Types Waste Bins provided by the waste subcontractor at various locations on site including the main storage compound.	70%
Road Construction	Construction Waste Asphalt, Concrete, Metal, Culverts, Steel, Timber, Steel Straps, Guide Posts, Guard Rail, etc.	General Solid Waste (non-putrescible)	22,000 m ³	The reuse and/or recycling on site of waste materials generated will be maximised as far as practicable. Alternatively they will be sent off site for recycling.	
				 Some of the timber and formwork may be salvaged for reuse on site or for reuse on future projects. 	70% 70%
				 Pavement materials and asphalt will be reused (such as through processing where possible) 	70%
				Where plastic is used to line concrete washout sumps, it will be separated from crushed concrete prior to reuse. Where possible, AFJV will consider alternative linings (such as clay) to achieve an impermeable floor/wall in concrete washout facilities.	

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
Road Construction	Tyres	Special Waste	200 tyres	Removal to licensed contractor for reuse /recycling where possible. Tyres may be disposed of in licensed landfill.	50%
Road Construction	Contaminated Absorbent Products Sand, Soil and Proprietary Absorbent Products Contaminated with Chemicals, Oil and Fuel, Hydraulic Hoses etc.	Hazardous Waste	3 tonne/year	Stored in appropriate bunded containers in locked storage areas and disposal by licensed subcontractors to a suitably licensed landfill.	0%
Road Construction	Empty Containers Used for Herbicides, fuel, lubricants and Other Hazardous Chemicals	Hazardous Waste	1 tonne/year	Stored in appropriate bunded containers in locked storage areas and disposal by licensed subcontractors. Steel drums will be recycled where practical if a reliable drum reconditioning service is available.	0%
Road Construction	Waste Fuel and Oils	Liquid	2000 L/year	Stored in appropriate bunded containers in locked storage areas and recycled by licensed subcontractors.	100%
Road Construction	Waste water site run-off water captured in sediment basins	Liquid	(Refer to Sediment Basin Management and Discharge Procedure)	Sediment basin and collected stormwater will be reused onsite for dust suppression, watering of landscaping areas and any other suitable construction activity when of appropriate quality, where practical and where it meets the dewatering requirements for the sediment basin. Any water discharged off site will be tested to ensure it complies with EPL water quality criteria in accordance with the Soil and Water Management Subplan.	50%

Construction Activity	Waste Type	Waste Classification	Likely quantity	Disposal methods	Reuse / Recycle Target
Road Construction	Sediment removed from sediment basins and farm dams	General Solid waste (non- putrescible)	(Refer to Sediment Basin Management and Discharge Procedure)	Sediment removed from sediment basins and farm dams will be collected and reused onsite as general fill material or it will be incorporated within landscaping / topsoil material where practicable and in accordance with the Urban Design and Landscape Management Plan.	100%
Road Construction	Removal of redundant utility services	General Solid waste (non- putrescible)	TBD	Separately stockpiled at various locations onsite before disposal by	0%
				subcontractor. Copper wire will be recycled.	100%
Road Construction	Concrete washout water (from concrete trucks)	Liquid	TBD	Concrete wash water will be reused on site in the concrete batching process or used for dust suppression (high pH water will be used under strict conditions, i.e will not be used near waterways).	100%

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 Operations (General) Regulation 2009.
- Protection of the Environment Operations (Waste) Regulation 2005.
- 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.

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:

- Waste Classification Guidelines, DECCW (2009).
- NSW Waste Avoidance and Resource Recovery Strategy 2007.
- NSW Waste Reduction and Purchasing Policy (1997).
- Best Practice Waste Reduction Guidelines for the Construction and Demolition Industry (tools for Practice), Natural Heritage Trust, 2000.
- Storing and Handling Liquids: Environmental Protection Participants Manual, Department of Environment & Climate Change.
- Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management – Part B Review of Best Practice and Regulation. Department of Environment and Conservation NSW.
- Heads of Asbestos Coordination Authorities (HACA) Charter, NSW Government.
- How to Manage and Control Asbestos in the Workplace Code of Practice, NSW Workcover.
- Managing Risks of Hazardous Chemicals in the Workplace code of practice, NSW Workcover.
- RMS D&C G36 Environment Protection, in respect to Waste Management and Resource Recovery (Clause 4.14).

The Waste Management and Resource Recovery provisions of the RMS specification D&C G36 outline the specific requirements that must be addressed within the Waste and Energy Management Plan as outlines in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 RMS specification D&C G36 requirements for a WEMP

Clause No.	Condition Requirements	Document Reference
4.14.1	The Waste and Energy Management Plan must:	
(a)	Identify the waste streams that will be generated during the deed	Table 2.1 and section 4.1
(b)	Provide details, for each of the identified waste streams, of the following:	
	 the waste classification (refer to EPA's "Waste Classification Guidelines" and RMS Waste Fact Sheets); 	Table 2-1, Table 5-2 and Appendix C Waste Management Register
	(ii) how and where the waste is to be reused, recycled, stockpiled or disposed of;	Table 2-1, Table 5-2 and Appendix C Waste Management Register
	(iii) the receptacles that will be used for storing identified waste materials prior to reuse, recycling, stockpiling or disposal;	Section 5.5
	(iv) how, and by whom, will the waste be transported between generation, storage and point of reuse, recycling, stockpiling or disposal;	Table 6-1, Appendix A Waste contact list, Appendix B Location of Waste facilities, and Appendix C Waste Management Register
	(v) sampling and testing requirements (refer to RMS Waste Fact Sheet "Waste Sampling");	Section 5.1
	(vi) procedures for verifying licenses and permits for handling, transportation and disposal of waste;	Section 5.6 and 7.3
(c)	include the methods for monitoring the implementation of the Waste Management Plan;	Table 6-1 and Section 7.3, and Appendix C Waste Management Register
(d)	identify the need or otherwise for "s.143 Notices" or any other additional approval, licence and/or permit from an appropriate authority or RMS Representative;	Table 6-1
(e)	comply with the requirements of the <i>POEO Act</i> for any non-licensed as well as licensed waste activities that involve the storage, transport, treatment and/or disposal of waste.	This Plan

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3.2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-2 Conditions of Approval relevant to the WEMP

CoA No.	Condition Requirements	Document Reference
B30	Prior to the commencement of construction, the Proponent shall prepare and (following approval) implement a Construction Environmental Management Plan for the Project. The Plan shall outline the environmental management practices and procedures	Table 6-1 and this plan

CoA No.	Condition Requirements	Document Reference
	that are to be followed during construction, and shall be prepared in consultation with the EPA, DPI and relevant Council and include, but not necessarily be limited to:	
B30(e)(ii)	Measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; how contaminated materials would be handled and disposed; use of secondary waste material in construction wherever feasible and reasonable; procedures for dealing with green waste including timber and much from clearing activities; and measures for reducing demand on water resources (including the potential for reuse of treated water from sediment control basins).	Table 6-1 Refer to SWMP for mulch management
C24	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the <i>Protection of the Environment Operations Act 1997</i> , if such a licence is required in relation to that waste.	Table 6-1
C25	The Proponent shall maximise the reuse and/or recycling of waste materials generated on site as far as practicable, to minimise the need for treatment or disposal of those materials off site.	Table 6-1
C26	The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with Waste Classification Guidelines (DECCW, 2009), or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept the materials.	Table 6-1

3.3 Statement of commitments

Relevant SoC are listed in Table 3-3 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-3 Statements of commitment relevant to this WEMP

Outcome	Ref #	Commitment	Timing	WEMP Reference
Minimise waste production	WR1	The waste minimisation hierarchy principles of avoid / reduce / re-use / recycle / dispose will apply to all aspects of the Proposal, including work programs, purchase strategies and site inductions. Quarterly assessments will identify opportunities for improvement	Pre- Construction and Construction	Table 6-1
Minimise waste produced and dispose appropriately.	WR2	Where reuse or recycling of water is not possible, it will be sent to an appropriately licensed facility.	Construction	Table 6-1

Outcome	Ref #	Commitment	Timing	WEMP Reference
Minimise greenhouse gas and energy	G1	Wherever feasible and reasonable detailed design will consider whole of life reductions in greenhouse gas emissions and energy consumption.	Pre- Construction and Construction	Table 6-1
consumption	G2	Energy efficient work practices will be adopted to limit energy use. Where reasonable and feasible, equipment and management measures will be adopted to minimise energy use and greenhouse gas production.	Pre- Construction and Construction	Table 6-1

4 Environmental aspects and impacts

4.1 Construction waste streams and energy use

The following construction related waste streams have been identified:

- Demolition wastes from existing structures that require demolition (including asbestos), pipe work, pavements and concrete pathways.
- Excavation wastes (detailed further in Table 5-2).
- Vegetation from removal of shrubs and trees.
- Packaging materials associated with items delivered to site such as pallets, crates, cartons, plastics and wrapping materials.
- Wastes produced from the maintenance of various heavy construction equipment including liquid hazardous wastes from cleaning, repairing and maintenance.
- Non-hazardous wastes would be generated through the use of worker's facilities such as toilets.
- General wastes including office wastes, scrap materials and biodegradable wastes.

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.

4.2 Impacts

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

- Inappropriate disposal of construction waste, such as excavated soil and rock.
- Inappropriate disposal of vegetation waste from corridor clearing.
- Inappropriate disposal of domestic waste from construction personnel.
- Inappropriate disposal of hazardous waste.
- Litter from project-related activities.

- Generation or spread of contaminated waste/soils, e.g. groundwater, used or expired chemicals, or construction materials.
- Consumption of non-renewable resources such as electricity, diesel and other chemicals.
- Water Pollution due to sediment runoff from soil excavation and excess spoil storage.
- Weed infestation from dispersal of seeds from incorrectly stored and managed topsoil.
- Greenhouse gas emissions due to consumption of energy from non-renewable resources.

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 EPA 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.

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 in addition to the relevant WorkCover requirements under work, health and safety legislation.

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). Sampling for waste soils and aggregates that have been excavated from the project site and are to be taken to a non road construction site or project (e.g. as fill material to a building site) should be undertaken in accordance with the RMS waste sampling procedure (RMS Waste Fact Sheet # 6).

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 2005 enables the EPA to grant exemptions to the licensing and payment of levies for the land application or use of waste. The EPA has issued general 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 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 exemptions

	•		
Exemption	General Conditions		
Effluent Exemption 2008	The effluent can only be applied to land for the purposes of irrigation or as a soil amendment material.		
	The consumer must land apply the effluent within a reasonable period of time.		
Excavated Natural Material Exemption	The chemical concentration or other attributes of the excavated natural material listed in the Excavated Natural Material Exemption must not be exceeded.		
2012	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 exemption		
Excavated Public Road Material 2012	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 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 exemption 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.		
Raw Mulch Exemption 2014	Under the general exemption Raw mulch only includes: a) horticultural barks, leaf mulch and wood chip mulch produced from forestry and sawmill residues, and urban wood residues; and b) branches, tree stumps and bark that are absent of leaves, flowers, fruit and plant propagules. Raw mulch must 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 can only be applied to land as a soil amendment.		

Exemption

General Conditions

The processor must ensure that the raw mulch is ready for land application prior to transport to a consumer.

The consumer must:

- not undertake further processing of the raw mulch at the land application site.
- land apply the raw mulch as soon as possible after receipt at the land application site.
- ensure that they do not cause or permit the migration of leachate from the land application site.

Compost Exemption 2014

The compost can only be applied to land as a soil amendment material.

Detailed responsibilities for the processor and the consumer of compost are outlined in detail in the exemption.

Specific quality requirements for compost and contaminant concentrations, and the sampling and test methods are specified within the exemption.

Organic Outputs Derived from Mixed Waste Exemption 2014

The pasteurised and biologically stabilised organic outputs produced from the mechanical biological treatment of mixed waste can only be applied to land as a soil amendment material for:

- soil improvement or site rehabilitation at mine sites
- · plantation forestry use, or
- non-contact agricultural use, or
- broad acre agricultural use.

The organic outputs must not be used:

- · in urban landscaping,
- · at public contact sites,
- on or in home lawns and gardens,
- in potting mix, or
- in turf production.

Detailed responsibilities for the processor and the consumer of organic outputs of mixed waste are outlined in detail in the exemption.

Specific quality requirements for organic outputs and contaminant concentrations, and the sampling and test methods are specified within the exemption.

Pasteurised Garden Organics Exemption 2014

The pasteurised garden organics can only be applied to land as a soil amendment material.

Detailed responsibilities for the processor and the consumer of pasteurised garden organics is outlined in detail in the exemption.

Specific material property requirements for contaminants and test methods are specified within the exemption.

Recovered Aggregate Exemption 2010

The chemical concentration or other attribute of the recovered aggregate listed in Recovered Aggregate Exemption 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:

- 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:
 - 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
 - it is to provide access (temporary or permanent) to a development approved by a Council, or

Exemption	General Conditions
	d) the works undertaken are either exempt or complying development.
	Additionally, the following conditions must be met by the consumer:
	 Records of the quantity of the recovered aggregate received by the consumer and the suppliers' name and address must be kept for a period of three years.
	 The consumer must land apply the relevant waste within a reasonable period of time.

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 (below).

Table 5-2 Classification of potential waste streams

Aspect	Waste Types	Classification	Proposed reuse / Recycling / Disposal
Demolition / Site Clearing	Vegetation (logs, mulched timber, weeds)	General solid waste (non-putrescible)	Reuse/ Recycling / Disposal (weeds only)
	Concrete, asphalt and gravel	General solid waste (non-putrescible)	Recycling / Disposal
	Scrap metal	General solid waste (non-putrescible)	Recycling
	Asbestos	Hazardous	Managed by a Licensed contractor and disposed of to EPA approved facility
Bulk Earthworks	ENM (Excavated Natural Material)	If material is taken off site classification will be carried out, based	Beneficial reuse onsite (such as noise mounds). Balance cut and fill earthworks, where possible, to
	Potentially Contaminated Soils	on soil tests carried out pre-construction and in	optimise reuse.
	VENM (Virgin Excavated Natural Material)	accordance with the EPA Waste Classification Guidelines: Parts 1 and 2 (DECCW 2009)	Off site disposal at an approved facility
Road Construction	Steel Reinforcing	General solid waste (non-putrescible)	Recycling
	Conduits and pipes	General solid waste (non-putrescible)	Recycling/ Disposal
	Concrete (solids and washouts) and asphalt	General solid waste (non-putrescible)	Recycling / Disposal
	Timber formwork	General solid waste (non-putrescible)	Reuse/ Recycling / Disposal (if treated)
	Packaging Materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	Recycling / Disposal (if treated)
	Empty oil and other drums	General solid waste (non-putrescible)	Recycling/ Disposal
	Pesticides, herbicides, spill clean ups, paints and other chemicals	Hazardous waste	Disposal (approved facility)
	Metals and electrical cabling	General solid waste (non-putrescible)	Recycled

Aspect	Waste Types	Classification	Proposed reuse / Recycling / Disposal
Compounds	Tyres	Special Waste	Recycled/ Disposal
and Workshop Operation	Waste generated by the maintenance of equipment including air and oil filters and rags	General solid waste (non-putrescible)	Disposal(approved facility)
	Oils, grease, fuel, chemicals and other fluids	Liquid	Recycling/ Disposal
	Batteries	Hazardous waste	Recycling/ Disposal
	Radiator Fluid	Hazardous waste	Disposal
	Hydraulic Fluid	Hazardous waste	Disposal
	Domestic waste generated by workers	General solid waste (putrescible)	Recycling/ Disposal
	Sewage	General solid waste (putrescible)	Disposal
Office Operation	Paper, cardboard and plastic	General solid waste (non-putrescible)	Recycling
	Glass bottles and aluminium cans	General solid waste (non-putrescible)	Recycling
	Ink cartridges	General solid waste (non-putrescible)	Recycling/ Disposal
	Food Waste	General solid waste (non-putrescible)	Disposal
	Effluent (eg STP)	Liquid	Disposal

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.

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 Sub Plan and the Soil and Water Management Sub 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 contractors commissioned to regularly remove/empty the bins to approved disposal or recycling facilities.

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 locations 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). Only sub contractors approved by the AFJV procurement process will be engaged to manage and transport waste for disposal. All subcontractors must hold appropriate licences and permits for waste management activities.

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.

6 Environmental mitigation and management measures

A range of environmental requirements are identified in the various environmental documents, including the EA, Submissions Report, 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.

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 / Environment Manager	WARR Act SoC WR1 G36
WE2	Waste management measures from this WRMP will be included in relevant Environmental Work Method Statements to be developed prior to the commencement of specific activities	Pre-construction / Construction	Site Engineer / Environmental Officer	Good practice
WE3	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. The training will also highlight the level of competency expected as outlined in the EPL as follows:	Construction	Environment Manager / Foreman	Good Practice
	 the processing, handling, movement and storage of materials and substances used to carry out the activity; and the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity. 			
WE4	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
WE5	All waste will be classified and disposed of in accordance with the NSW EPA "Waste Classification Guidelines"	Pre-construction / Construction	Environment Manager / Environment Officer	Waste Classification Guidelines SoC WR2 G36
WE6	Recycled or secondary waste material will be considered for use in all aspects of the project where feasible and reasonable (such as fly ash for concrete production) in accordance with the NSW Government's Waste Reduction and Purchasing Policy.	Construction	Site Engineer	Waste Reduction and Purchasing Policy. Relevant Resource Recovery Exemptions G36

ID	Measure / Requirement	When to implement	Responsibility	Reference
WE7	Cleared vegetation will be reused or recycled to the greatest extent practicable for example:	Construction	Environment Manager	Good practice
	 Mulching of vegetation for use in landscaping; 			
	 Spreading of vegetation for fauna habitat in suitable areas where agreements are made for this (eg mulch, small timber, hollow logs); 			
	- Donation of other timber to community or environmental groups.			
WE8	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	Foreman	Noxious Weeds Act Good practice
WE9	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
WE10	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
WE11	Surplus existing materials (eg culverts, site sheds, traffic barriers, rumble grids, pipes, pumps etc.) from other nearby Roads and Maritime Pacific Highway projects will be identified and utilised where possible.	Pre-construction / Construction	Environment Manager / Engineers / Foreman / Superintendent	Good Practice
WASTEWAT	ER AND WATER CONSUMPTION			
WE12	The collection and reuse of captured water for dust suppression, wash down and use in amenities or revegetation will be carried out where possible.	Construction	Foreman	CoA B30(e)(ii)
WE13	Construction activities that typically have a high water use will be reviewed to identify viable opportunities for water use reduction (eg use of dust suppressants and other measures)	Construction	Environment Manager / Foreman / Superintendent	CoA B30(e)(ii)
WASTE / RE	JSE MATERIALS HANDLING			
WE14	Topsoil (weed free) will be stockpiled in accordance with RTA criteria in allocated areas and reused for landscaping.	Construction	Foreman / Environmental Officers	G36
WE15	Any contaminated waste will be handled, separated, contained, managed and disposed of to prevent migration and further contamination.	Construction	Forman	CLM Act G36

ID	Measure / Requirement	When to implement	Responsibility	Reference
WASTE DISF	POSAL	_		
WE16	A Waste Management Register of all waste collected for disposal and/or recycling will be maintained on a monthly basis until final completion.	Construction	Environment Manager / Environment Officer	G36
WE17	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, following classification.	Construction	Environment Manager / Environment Officer	POEO Act EPL POEO Act WRAPP Guidelines G36
WE18	Waste generated by maintenance of equipment including air / oil filters rags other hazardous liquids such as pesticides, paints and other chemicals 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	POEO Act Environmentally Hazardous Chemicals Act G36
WE19	A section 143 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
WE20	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	POEO Act G36
WE21	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	POEO ACT G36
WE22	All trucks transporting wastes off site will be appropriately licensed to carry the materials to appropriately licensed waste facilities.	Construction	Site Engineer / Foreman	POEO (Waste) Regulation G36
ENERGY CO	NSERVATION			
WE23	Energy efficient work practices will be implemented, including the consideration of: • Energy efficient design of site buildings;	Construction	Environment Manager / Construction Manger / Engineers	G36

ID	Measure / Requirement	When to implement	Responsibility	Reference	
	 Design of site construction work sites to minimise unnecessary vehicle movement; 				
	 Regular servicing off site plant and equipment; 				
	 Training of personnel in energy efficient best practices; and 				
	 Use of locally sourced material where available and of suitable quality. 				
MONITORING A	ND INSPECTION				
WE24	Regular inspections of waste disposal and minimisation measures will be undertaken	Pre-construction / Construction	Environment Manager / Environment Officer	Good practice	
WE25	Quarterly assessments of waste management will be undertaken to identify opportunities for improvements	Construction	Environment Manager	SoC WR1	
RECORDING					
WE26	All waste taken off site will be undertaken in accordance with the Waste Management Register. Refer to Appendix C	Construction	Environment Manager	PoEO Act G36	
WE 27	Quantities of waste will be recorder and reported to RMS in accordance with the WRAPP guidelines	Construction	Environment Manager	WRAPP Guidelines	
WE 28	Resources consumed including fuel, oil, lubricants and electricity will be recorded and reported (if required) by the NGER legislation	Construction	Environment Manager	NGER Legislation	

7 Compliance management

7.1 Roles and responsibilities

The AFJV 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 Chapter 6 of this Plan.

7.2 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; and
- Other specific responsibilities for waste and reuse management.

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

7.3 Monitoring and inspection

Regular monitoring and inspections will be undertaken during construction. Audits will be undertaken of Waste Contractors to ensure they are complying with relevant licences and legislation. This will be at the direction of the Environment Manager. This will include currency and compliance with Licence Conditions as well as waste tracking (with reference to the Waste Management Register) to ensure waste taken off site is disposed of legally and at the appropriate facility.

Additional requirements and responsibilities in relation to inspections are documented in Section 8.3 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

Reporting requirements and responsibilities are documented in the Sections 8.4 and 8.5 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 nonconformances 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 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 this Plan will be in accordance with the process outlined in Section 1.6 of the CEMP and as required, be provided to relevant stakeholders for review and comment and forwarded to the Secretary of DPE for approval.

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 AWaste contact list

Company Name	Waste Types	Contact Details
Handybin Waste Services	General waste	25 Englands Road, Coffs
Pty Ltd	 Recyclables 	Harbour, NSW, Australia
	Construction waste	Admin Tel: 02 6691 8700 Admin Fax: 02 6652 3002
	 Secure document shredding 	www.handybinwaste.com.au
	Greenwaste, concrete and masonry and uncontaminated soils	
	Liquid waste (septics)	
	Hazardous waste	
Others Subcontractor waste companies to be included as services are procured for other waste streams (eg asbestos)	•	

Appendix BLocation of waste facilities

Facility Name	Waste Types	Contact Details
Nambucca Waste	Green waste	711 Old Coast Road,
Management Facility	 Recyclables 	Nambucca Heads
	Domestic Food Wastes	(02) 6568 2170
	Mixed Building and Demolition Wastes	
	Scrap Metals	
	White Goods	
	Concrete and Masonry	
	Clean Fill	
	 Asbestos 	
	Hazardous chemicals (by prior arrangement only)	
Englands Road Waste	 General solid waste (putrescibles and non- putrescibles) 	25 Englands Road
Management Facility / Coffs Coast Resource Recovery		Coffs Harbour
Park(Coffs Harbour City Council)	 Asbestos 	(02) 6648 4580
Oddiony	Waste tyres	
Kempsey Shire Council Waste	General solid waste	Crescent Head Road
Management Facility	(putrescibles and non- putrescibles)	(02) 6562 2042
	Concrete and masonry	
	Clean fill	
	 Asbestos 	
	Contaminated soils	

Appendix C

Example waste management register

Waste management Register							
Date / Time Generated	Waste Classification	Amount of spoil or waste collected (tonnes)	Waste Use (Reuse, Recycled, Stockpiled or disposed)	Date of Waste Use	Transporter	Facility to receive	Invoice No / Tip Docket Ref

• Refer to Section 5.3 of this Plan and the EPA Waste Classification Guidelines – Part 1: Classifying Waste (NSW EPA)