APPENDIX B7

Construction Waste and Energy Management Sub-plan

Foxground and Berry bypass

September 2017

Document control

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Plan approved by:

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Contractor Project Director	Contractor EM	RMS representative

Revision history

Revision	Date	Description	Approval
H	11/09/17	Updated project personnel	
G	28/07/16	Additional note included to waste management register, transport number won't be recorded for general or recycled waste	
F	29/10/15	Construction phase revision Updated with minor editorial changes (tracked) to Sections 4,	
E	27/08/14	Fifth draft in response to DP&E comments. Updated Glossary / Abbreviations to include Director General and Secretary. Also amended Section 5 CWEMM9.	
D	25/07/14	Fourth draft for submission to DP&E. All comments addressed. The EPA had no specific comments to make on the CWEMP.	
C	18/07/14	Third draft for review by RMS and ER. Comments from RMS and ER addressed. Comments from EPA pending.	
B	25/06/14	Second draft for EPA review and comment	
A	28/04/14	Draft for RMS and ER review	

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1	RMS – Ryan Whiddon	Revision H
2	Project ER – Toby Hobbs	Revision H
3	Fulton Hogan – Michael Phillips Ryder	Revision H

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Glossary / Abbreviations

Application to land (of waste)	As defined in Clause 39 of Schedule 1 to the *Protection of the Environment Operations Act 1997.*
CEMP	Construction Environmental Management Plan
CoA	Condition of Approval
CT	Contaminant Threshold
CWEMP	Construction Waste and Energy Management Sub-plan
DECC	Department of Environment and Conservation
Director General	Director General of the NSW Department of Planning and Infrastructure (or delegate). Now the Secretary of the Department of Planning and Environment.
DP&E	Department of Planning and Environment
Drilling fluid	As defined in *The treated drilling mud exemption.* In the 2011 exemption, drilling fluid means a mixture of water and chemical additives including but not limited to bentonite, soda ash (sodium carbonate), sodium hydroxide, lime and polymers.
Drilling mud	As defined in *The treated drilling mud exemption.* In the 2011 exemption, drilling mud means a mixture of naturally occurring rock and soil, including but not limited to materials such as sandstone, shale and clay, and drilling fluid generated during drilling operations such as horizontal directional drilling or potholing. This does not include drilling mud that has been generated by: a) deep drilling for mineral, gas or coal exploration, or b) drilling through contaminated soils, acid sulphate soils (ASS) or potential acid sulphate soils (PASS).
EA	Environmental Assessment
EEC	Endangered Ecological Community
ENM	Excavated Natural Material, as defined in *The excavated natural material exemption*.
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPL	Environmental Protection Licence
EWMS	Environmental Work Method Statement
FM Act	*Fisheries Management Act 1994*
GHG	Greenhouse gas emissions
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
PESCP	Progressive Erosion and Sediment Control Plan
Project, the	The Princes Highway Upgrade - Foxground and Berry Bypass Project, defined as *"The construction and operation of approximately 11.6 kilometres of two lane divided carriageways (with the exception of the cutting through Toolijooa Ridge which comprises two lanes plus a climbing lane in each direction), with provisions for the possible future widening to three lanes within the road corridor (if required in the future)."*
RAP	Reclaimed asphalt pavement
RMS	Roads and Maritime Services
Secretary	Secretary of the Department of Planning and Environment
SoC	Revised Statement of Commitments included in the Submissions Report

SCC	Specific Contaminant Concentrations
TCLP	Toxicity Characteristics Leaching Procedure
VENM	Virgin Excavated Natural Material, as defined in Schedule 1 of the *Protection of the Environment Operations Act 1997*.
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
WRAPP	Waste Reduction and Purchasing Policy

1 Introduction

1.1 Purpose

This Construction Waste and Energy Management Sub-plan (CWEMP) describes how Fulton Hogan will minimise the amount of waste for disposal; manage waste; and reduce energy consumption during construction of the Foxground and Berry bypass Project (the Project).

This CWEMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the RMS Statement of Commitments (SoC), the mitigation measures listed in the *Foxground and Berry bypass Environmental Assessment* (EA) (AECOM, 2012) and applicable legislation.

1.2 Background

Section 8.4 and Section 8.5 of the *Princes Highway upgrade – Foxground and Berry bypass Environmental Assessment* (AECOM, 2012) assessed the impacts of construction in terms of waste generation and energy use.

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, liquid wastes and excavated material. 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.

The implementation of the mitigation measures in this CWEMP will assist to reduce waste and energy consumption during construction of the Project.

1.3 Structure of CWEMP

This CWEMP is part of Fulton Hogan's environmental management framework for the Project and is supported by other documents such as the Waste Register and environmental work method statements. The review and document control processes for this CWEMP are described in Chapter 10 of the CEMP.

1.4 Consultation for preparation of the CWEMP

This CWEMP has been developed in consultation with the EPA. A summary of consultation undertaken during the preparation of this CWEMP is provided in Appendix A2 of the CEMP.

2 Legal and other requirements

2.1 Legislation

Legislation 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*
- *Energy Efficiency Opportunities Act 2006* (EEO Act),
- *Clean Energy Act 2011*.

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

2.2 Guidelines and standards

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

- *Waste Avoidance and Resource Recovery Strategy 2007* (DECC, 2007)
- *Waste Reduction and Purchasing Policy* (RTA, 2009)
- *Waste Classification Guidelines 2009* (DECCW) (EPA Publication),
- *Best Practice Waste Reduction Guidelines for the Construction and Demolition Industry (tools for Practice),* Natural Heritage Trust, 2000.
- RMS has developed the following waste guidelines:
    - Waste Fact Sheet 1 - Virgin Excavated Natural Material
    - Waste Fact Sheet 2 - Excavated Natural Material
    - Waste Fact Sheet 3 - Excavated Public Road Materials
    - Waste Fact Sheet 4 - Recovered Aggregates
    - Waste Fact Sheet 5 - Asbestos Waste
    - Waste Fact Sheet 6 - Waste Sampling

2.3 Minister's Conditions of Approval

The CoA relevant to this CWEMP are listed in Table 2-1 below. A cross reference is also included to indicate where the condition is addressed in this CWEMP or other project / environmental management documents.

Table 2-1 Conditions of Approval relevant to this CWEMP

CoA No.	Condition Requirements	Document Reference
B35(e)(v)	…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;	Chapter 4 Chapter 5 Appendix B – Waste Register
	procedures for dealing with green waste including timber and mulch from clearing activities;	Chapter 4 Chapter 5 CFFMP Appendix A – Clearing and Grubbing EWMS CSWQMP Appendix D – RMS Environmental Direction No. 25 Management of Tannins from Vegetation Mulch
	and measures for reducing demand on water resources (including the potential for reuse of treated water from sediment control basins);	Chapter 4 CSWQMP Table 5-1 Mitigation Measure ID CSWQMM42, CSWQMM57, CSWQMM77.
C28	The Proponent shall not cause, permit or allow 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 *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	Chapter 5 Table 5-1 Mitigation Measure ID CWEMM3.
C29	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.	Chapter 4 Chapter 5
C30	The Proponent shall ensure that liquid and / or non-liquid waste generated on the site is assessed and classified in accordance with *Waste Classification Guidelines* (Department of Environment and Climate Change, 2008) and where removed from the site is directed to a waste management facility lawfully permitted to accept the materials.	Chapter 4 Chapter 5

2.4 Statement of commitments

Relevant SoC are listed in Table 2-2 below. This includes reference to required outcomes and the timing of when the commitment applies. A cross reference is also included to indicate where the condition is addressed in this CWEMP or other project/ environmental management documents.

Table 2-2 Statements of commitment relevant to this CWEMP

Outcome	Ref #	Commitment	Timing	CWEMP Reference
Minimise waste	SM2	The waste minimisation hierarchy principles of avoid, reduce, reuse, recycle or dispose will apply to all aspects of the Project.	Construction	Chapter 4 Chapter 5
Minimise greenhouse gas emissions and energy use	GG1	Energy efficient work practices will be implemented, including consideration of: • Energy efficient design of site buildings. • Design of site compounds and the batch plant to minimise unnecessary vehicle movement. • Regular servicing of site plant and equipment. • Training of construction personnel in energy efficient plant operation. • The use of accredited GreenPower. • Use of locally sourced materials where available and of suitable quality.	Pre-construction and construction	Chapter 4 Chapter 5

3 Environmental aspects and impacts

The key construction activities and the associated potential sources of waste and energy consumption were identified through a risk management approach. The consequence and likelihood of each activity's impact on the environment was assessed to prioritise its significance. The results of this risk assessment are included in Appendix A3 of the CEMP.

4 Waste and energy management

4.1 Waste management hierarchy

The *Waste Avoidance and Resource Recovery Act 2001* ensures that resource management options are considered against a hierarchy of:

- avoidance of unnecessary resource consumption
- resource recovery (including reuse, recycling, reprocessing, and energy recovery), and
- disposal.

Refer to Figure 4-1 for the most recent waste hierarchy provided by the EPA in the *NSW Waste Avoidance and Resource Recovery Strategy 2013-21, 2013.*

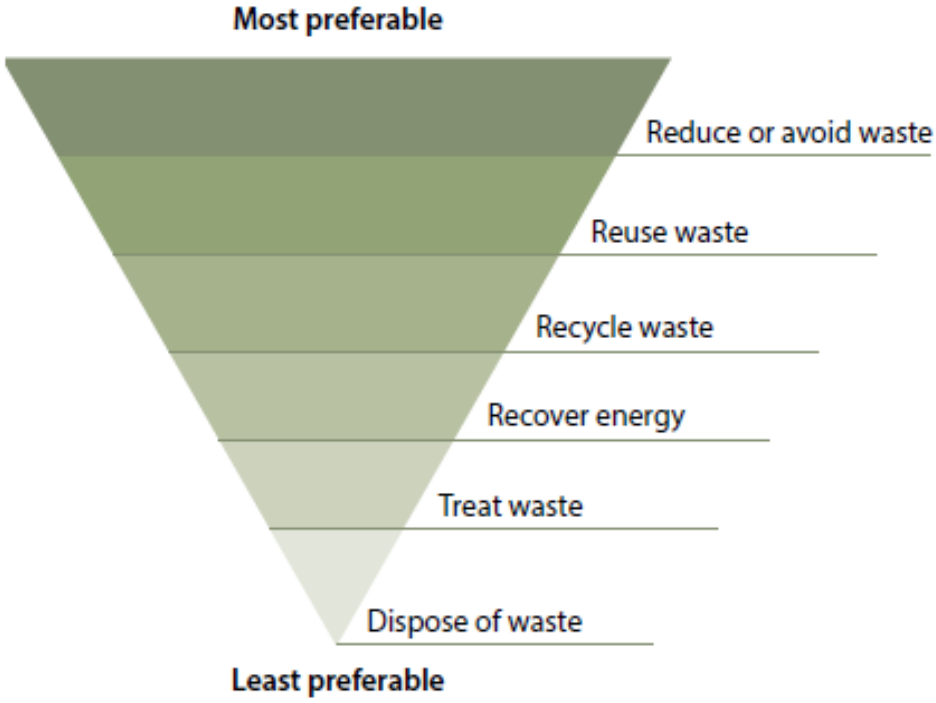

Figure 4-1: The waste hierarchy

The approach to the steps in the waste hierarchy most relevant to the Project are briefly described below.

4.1.1 Reduce or avoid

Reducing or avoiding the generation of waste is of primary importance to the project. The following approach will be adopted:

- Consider construction options that have a higher waste reduction capacity than alternatives.

- Order material/ goods with minimal packaging or request suppliers to remove packaging from site.
- Accurately estimate materials required to minimise wastage of product.

4.1.2 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:

- Segregate waste onsite – waste materials, including spoil, demolition waste, mulch and green waste will be separated onsite into dedicated bins / areas for either reuse onsite or collection by a waste contractor and transported to offsite facilities, and
- Separate waste offsite – wastes will be deposited into one bin where space is not available for placement of multiple bins, and the waste will be sorted offsite by a waste contractor.

4.1.3 Energy conservation

The Project Team will reduce greenhouse gases by adopting energy efficient work practices:

- develop and implementing procedures to minimise energy use, and
- conduct awareness programs for all site personnel regarding energy conservation methods.

4.1.4 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 will apply:

- spoil, topsoil and mulch will be stockpiled onsite in allocated areas, where appropriate, and mitigation measures for dust control and surface water management will be implemented in accordance with the CAQMP and the CSWMP
- liquid wastes will be stored in appropriate containers in bunded areas until transported offsite. Bunded areas will have the capacity to hold 110% of the liquid waste volume for bulk storage or 120% 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, and
- all other recyclable or non-recyclable wastes will be stored in appropriate covered receptacles (e.g. bins or skips) in appropriate locations onsite and subcontractors commissioned to regularly remove / empty the bins to approved disposal or recycling facilities.

4.1.5 Waste disposal

Waste disposal will 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 appropriately licensed waste facility following classification (refer to Section 4.2). Appendix A outlines the waste facilities in the vicinity of the Project that may be utilised during construction. Details of waste types, volumes and destinations will be recorded in the Waste Register provided in Appendix B.

4.2 Waste classification

Where waste cannot be avoided, reused or recycled it will be classified and appropriately disposed of. The classification of waste will be undertaken in accordance with the DECCW *Waste Classification Guidelines Part 1: Classifying Waste* (2009). 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.

The general classification principles are as follows:

- If a special waste is mixed with another waste, the waste must be managed to meet the requirements of both the special wastes and the other class of waste.
- If asbestos waste is mixed with any other class of waste, all of the waste must be classified as asbestos waste.
- If liquid waste is mixed with hazardous or solid waste and retains the defined characteristics of liquid waste, it remains liquid waste.
- Two or more classes of waste must not be mixed in order to reduce the concentration of chemical contaminants. Dilution is not an acceptable waste management option.
- Where practicable, it is desirable to separate a mixture of wastes before classifying them.

4.3 Waste exemptions

Clause 51 of the *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 4-1 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 4-1 Resource recovery exemptions

Exemption	General Conditions
The 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.
The excavated natural material exemption 2014	The chemical concentration or other attributes of the excavated natural material listed in the Excavated Natural Material Exemption must not be exceeded. 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
The excavated public road material exemption 2014	The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land. 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.
The raw mulch exemption 20014	The raw mulch can only be applied to land for the purposes of filtration or as a soil amendment material or used either singularly or in any combination as input material(s) to a composting process. The consumer must land apply the raw mulch within a reasonable period of time.
The recovered aggregate exemption 2014	The chemical concentration or other attribute of the recovered aggregate listed in the 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:

Exemption	General Conditions
	• 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 (c) it is to provide access (temporary or permanent) to a development approved by a Council, or (d) the works undertaken are either exempt or complying development.
The blast furnace slag exemption 2014	Blast furnace slag or blended slag can only be applied to land in cementitious mixes such as concrete or in non-cementitious mixes such as an engineering fill in earthworks or roadmaking activities.
The reclaimed asphalt pavement exemption 2012	Reclaimed asphalt can only be applied to land for road related activities including road construction or road maintenance

4.4 Classification of potential waste streams from the project

The construction activities and types of wastes that may be generated during construction are outlined in Table 4-2. This table also identifies expected volumes, preferred reuse/recycling/disposal methods and reuse/recycling targets depending on the waste classification. Waste classification was determined based on the six step process provided in the DECCW *Waste Classification Guidelines Part 1: Classifying Waste* (2009). For additional information refer to Section 4.2 of this CWEMP.

Table 4-2 Classification of potential waste streams and targets

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
Geotechnical investigations and surveys	Drilling mud (that has been dewatered)	Subject to chemical assessment	304m^3	Reuse onsite – Reincorporate drilling mud into the works. Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009). Reuse offsite – Apply treated drilling mud to land at an unlicensed premises where there is full compliance with *The treated drilling mud exemption*.	100%	In order for an exemption to apply, all the conditions of the exemption must be met. These conditions include, but are not limited to, sampling and testing requirements, chemical thresholds, use restrictions and record keeping requirements.
	Drilling fluid	Liquid waste	(600L /drill hole x 100 holes) 60,000L	Recycling onsite – recycle back into drill hole.	100%	In the event that disposal offsite is required, this will occur at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).
General demolition, including of houses	Concrete, bricks, ceramics	General solid waste (non-putrescible) (pre-classified by the EPA)	256 tonnes	Reuse onsite - If suitable, crush and use as backfill/ road base. Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009). Reuse offsite – Apply concrete to land at an unlicensed premises where there is full compliance with *The recovered aggregate exemption.*	100%	In order for an exemption to apply, all the conditions of the exemption must be met. These conditions include, but are not limited to, sampling and testing requirements, chemical thresholds, use restrictions and record keeping requirements.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
	Asphalt	General solid waste (non-putrescible) (pre-classified by the EPA)	2,250m^3	Reuse onsite - If suitable, use as backfill/ road base or for access roads. Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009). Reuse offsite – Apply asphalt to land at an unlicensed premises where there is full compliance with *The recovered aggregate exemption.*	100%	As above.
	Scrap metal	General solid waste (non-putrescible) (pre-classified by the EPA)	Unknown at this stage	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Glass	General solid waste (non-putrescible) (pre-classified by the EPA)	16 tonnes	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Timber	General solid waste (non-putrescible) (pre-classified as 'building and demolition waste' by the EPA)	32 tonnes	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
	Plasterboard	General solid waste (non-putrescible) (pre-classified by the EPA)	16 tonnes	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Asbestos	Special waste (Asbestos)	116 tonnes	Disposal offsite – disposal at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.	0%	Only bonded asbestos may be received at some premises. There may also be limits on the quantity of asbestos that can be stored on some premises at any time.
Clearing and grubbing	Native vegetation (branches, loppings, tree trunks, tree stumps)	General solid waste (non-putrescible) (pre-classified by the EPA as 'garden waste')	88 ha	Reuse onsite - mulch and stockpile for use during landscape planting and in conjunction with soil erosion and sediment control measures.	100%	Nil.
	Topsoil	Subject to chemical assessment	25,625 m^3	Reuse onsite - stockpile onsite for treatment and later reuse e.g. in landscaping, once topsoil is weed-free in accordance with the *Clearing and Grubbing Environmental Work Method Statement* (Appendix A of the CFFMP) Disposal by beneficial reuse offsite via topdressing of agricultural land under provisions of Section 143 of Waste Regulations and appropriate Development Consent or Exemption	100%	Nil. If reuse is not feasible disposal offsite will occur at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.
	Weeds	General solid waste (non-putrescible)	Unknown at this stage	Buried onsite, left to decompose or disposal offsite at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.	0%	Nil.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
Excavation	Excess spoil (unsuitable material)	Subject to assessment (ENM/VENM) General solid waste (non-putrescible) (pre-classified by the EPA)	50,000 m^3	Disposal reuse offsite under provisions of Section 143 of Waste Regulations and appropriate Development Consent or Exemption Reuse onsite – Balance cut and fill earthworks, where possible, to optimise reuse on the Project.	100%	Nil.
	Contaminated soils (unlikely) Site soils contaminated by oil or hydrocarbon spoils on site	Subject to chemical assessment	Nil Unknown (minimal)	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009). Treatment via landfarming in accordance with NSW EPA Guidelines: "Best Practice Note: Landfarming (April 2014)	0% 100% based on achieving NEPM F level criteria	Nil.
Building/ construction waste	Steel reinforcing	General solid waste (non-putrescible)	115 tonnes	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Conduits and pipes	General solid waste (non-putrescible)	Unknown at this stage	Reuse onsite - If suitable, crush and use as backfill/ road base. Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment	80%	Nil.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
				Protection Licence and the DECCW *Waste Classification Guidelines* (2009). Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).		
	Timber formwork	General solid waste (non-putrescible) (pre-classified as 'building and demolition waste' by the EPA)	900 m^3.	Reuse onsite - If suitable. Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	80%	Nil.
	Packaging materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	Unknown at this stage	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
Erosion and sediment control maintenance	Geotextile	General solid waste (non-putrescible)	1 tonne Avoid use of geotextile where practicable	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	0%	Nil.
	Sediment removed from sediment basins once they reach capacity.	General solid waste (non-putrescible)	7,451m^3	Reuse onsite - mixed with existing spoil and reused on site.		Nil.
	Sediment fence and sandbags	General solid waste (non-putrescible)	50 Tonne (3 truck & dog loads	Reuse where possible based on condition or dispose offsite at an appropriately licensed waste facility in accordance with the	10%	Nil.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
			at 33 tonne 50% full)	premises' Environment Protection Licence and the DECCW Waste Classification Guidelines (2009).		
Site compounds/ equipment maintenance	Tyres	Special waste	Unknown at this stage	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Drained oil filters, rags and oil-absorbent materials that only contain non-volatile petroleum hydrocarbons and do not contain free liquids.	General solid waste (non-putrescible) (pre-classified by the EPA)	Unknown at this stage	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	0%	Nil.
	Containers, previously containing dangerous goods, from which residues have been removed by washing or vacuuming	General solid waste (non-putrescible) (pre-classified by the EPA)	Unknown at this stage	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
Site compound and office use	Food waste	General solid waste (putrescible)	12,000 tonnes	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.	0%	Nil.

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/ recycling/ disposal methods	Reuse / Recycle Target	Comments
		(pre-classified by the EPA)				
	Sewage from amenities	General solid waste (putrescible) (pre-classified by the EPA)	234,000L	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.	0%	Nil.
	Paper, cardboard and plastic, glass, aluminium cans	General solid waste (non-putrescible)	2000 tonnes	Resource recovery offsite - Reuse, recycling, reprocessing or energy recovery at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence and the DECCW *Waste Classification Guidelines* (2009).	100%	Nil.
	Unwanted liquid chemicals	Liquid waste	Unknown at this stage	Disposal offsite - at an appropriately licensed waste facility in accordance with the premises' Environment Protection Licence.	0%	Nil.

5 Environmental mitigation measures

Specific mitigation measures to address waste management and energy use issues are outlined in Table 5-1.

Table 5-1 Waste and energy mitigation measures

ID	Mitigation Measure	Timing		Responsibility
		PC[1]	C[2]	
GENERAL				
CWEMM1	Adopt and promote the waste hierarchy (reduce or avoid waste, reuse waste, recycle waste, recover energy, treat waste, dispose of waste).	✓	✓	Environmental Manager Procurement Manager
CWEMM2	Keep site free of litter and maintain good housekeeping.		✓	Foreman
CWEMM3	Do not cause, permit or allow 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 *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste (CoA C28)		✓	Foreman
REDUCE OR AVOID				
CWEMM4	Calculate precise estimates prior to placing orders	✓	✓	Project Engineers
CWEMM5	Implement, where possible, agreements with suppliers to return excess construction materials or packaging for future reuse.	✓	✓	Contracts Manager
RESOURCE RECOVERY (REUSE, RECYCLE, ENERGY RECOVERY)				
CWEMM6	Establish a list of preferred suppliers for waste management services (e.g. – waste oil recyclers, metal recyclers, etc.).	✓	✓	Contracts Manager Environmental Manager
CWEMM7	Include in waste contractor subcontract agreements requirements to comply with statutory requirements, report quantities, types, dates and destination of material removed from site.	✓	✓	Contracts Manager
CWEMM8	Classify all wastes generated on the site during construction in accordance with the 2009 *Waste Classification Guidelines* prior to transporting waste off site.		✓	Site/ Project Engineers
CWEMM9	Obtain and provide receipts/dockets for waste removed from site to the EO.		✓	Foreman
CWEMM10	Record all waste removed from site in the Waste Register.		✓	Environmental Officer
CWEMM11	Provide appropriate facilities to ensure that materials for recycling are separated from materials that are to be disposed of as wastes. Facilities are to be labelled for the various waste streams to ensure easy recognition.		✓	Project Manager

ID	Mitigation Measure	Timing		Responsibility
		PC[1]	C[2]	
CWEMM12	Collect and store waste oil in suitable containers and store in a bunded area until collected for recycling. All permanent bunded storage areas must be covered.		✓	Superintendent
CWEMM13	Reuse excavated spoil generated onsite where possible: • to flatten fill batters to blend the Project into the existing landscape, subject to the approval of RMS. • for noise mounds, subject to the approval of RMS. • to construct other road projects, subject to the third party obtaining the relevant approvals and subject to the approval of RMS. • for preloading activities required to treat soft soils on the Broughton Creek floodplain, where feasible.		✓	Environmental Officer Foreman
CWEMM14	Reuse waste material generated onsite where possible, including topsoil and mulch.		✓	Foreman
CWEMM15	Ensure that a 'Notice under Section 143' form has been completed prior to transporting material offsite to unlicensed premises.		✓	Foreman Environmental Officer
CWEMM16	Provide paper recycling bins/boxes in all site offices. All paper waste to be sent to recycling facility. Encourage all staff to separate paper waste.		✓	Receptionist Environmental Officer
CWEMM17	Use recycled products in construction to reduce demand on resources, where the use of the material is cost and performance competitive and RMS' specifications allow it. This may include the use of fly ash and slag within concrete mixes.		✓	Project / Site Engineer
CWEMM18	Set printers at the site office to default to double sided and black and white printing. Encourage all staff to minimise paper use through use of electronic media, re-use of paper etc. Refill or return printer cartridges for recycling.		✓	Receptionist
DISPOSAL				
CWEMM19	Store construction wastes which cannot be recycled in separate skips. The skips will be collected by a licensed waste contractor on a regular basis and transported to a licensed landfill.		✓	Superintendent
CWEMM20	Empty portable toilets regularly by subcontractors. Dispose wastes in accordance with the 2009 Waste Classification Guidelines. Connect toilets at the site compound to the sewerage network.		✓	Superintendent
	CWEMM6-CWEMM10 above also apply.			
ENERGY CONSUMPTION (FUEL AND POWER)				
CWEMM21	Select energy efficient plant, equipment and vehicles where feasible and reasonable to reduce greenhouse gas emissions, through consultation with subcontractors and suppliers.	✓	✓	Procurement Manager

ID	Mitigation Measure	Timing		Responsibility
		PC[1]	C[2]	
CWEMM22	Maintain all vehicles, including trucks entering and leaving the site, and construction equipment in accordance with the manufacturer's specification to comply with all relevant legislation.		✓	Procurement Manager Foreman
CWEMM23	Procure locally produced goods and services where feasible and cost effective to reduce transport fuel emissions.	✓	✓	Procurement Manager
CWEMM24	Consider the procurement of renewable energy technologies (e.g. solar photovoltaic, wind power) for power generation onsite during the construction stage.	✓	✓	Procurement Manager Project Manager
CWEMM25	Turn machinery and vehicles off when not in use.		✓	Subcontractors Foreman

[1] PC means pre-construction
[2] C means construction

6 Compliance management

6.1 Roles and responsibilities

Fulton Hogan's Project Team organisational structure and overall roles and responsibilities are outlined in Section 4.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Table 5-1 of this CWEMP.

6.2 Training

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

- existence and requirements of this CWEMP
- relevant legislation
- waste reporting requirements
- requirements of the waste hierarchy
- waste / recycle storage requirements;
- energy efficient best practices
- other specific responsibilities for waste and reuse management, and
- other specific responsibilities for energy management.

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

6.3 Monitoring and inspections

Regular monitoring and inspections will be undertaken during construction in accordance with Table 6-1. Additional requirements and responsibilities in relation to inspections and monitoring are documented in Sections 8.1 and 8.2 of the CEMP.

Table 6-1 Monitoring and inspection

Monitoring details	Record	Responsibility	Frequency
Track waste taken offsite	Waste Register	Environmental Officer	When waste taken offsite. Waste Register to be updated regularly.
	Waste receipts/dockets	Foreman	When waste taken off site to a waste facility.
	Transportation dockets	Foreman	When EPA 'trackable' waste taken off site.
Inspections for litter, unauthorised disposal of construction waste, contamination of waste streams and adequacy of capacity of waste receptacles (as part of weekly environmental inspection).	Environmental Inspection Checklist	Environmental Officer	Weekly

6.4 Non-conformances

Non-conformances will be dealt with and documented in accordance with Section 8.5 of the CEMP.

6.5 Complaints

Complaints will be recorded and addressed in accordance with Section 6.3 of the CEMP and the Community Communication Strategy (CCS).

6.6 Audits

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental mitigation measures, compliance with this CWEMP, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 8.4 of the CEMP.

7 Review and improvement of CWEMP

The CWEMP will be reviewed annually to ensure compliance with legislative requirements and its suitability and effectiveness for the project.

The review may be in the form of:

- a formal management review
- a second party audit, and/or
- an inclusion as a separate item at a site meeting.

The Environmental Manager can review and update the CWEMP more regularly where:

- significant changes in construction activities occur
- where targets are not being achieved, or
- in response to audits and nonconformity reports.

Minor changes to the CWEMP will be approved by the Environmental Representative in accordance with section 1.7 of the CEMP.

Appendix A
Proposed waste facilities

Proposed waste facilities

EPL holder name	Premises	Scheduled activity	EPL No.	Waste Type	Contact Details
South Coast Concrete Crushing and Recycling Pty Ltd	Princes Highway Nowra NSW 2541	Crushing, Grinding or Separating Extractive Activities Resource Recovery	11765	Waste Crusher dust and road base material Virgin excavated natural Material Building and demolition Waste General or Specific exempted waste	(02) 4421 7766
South Coast Liquid Treatment Pty Ltd	13 Tom Thumb Avenue Nowra NSW 2541 (Lot 68 DP 1046768)	Waste storage Waste processing (non-thermal treatment)	11155	Waste mineral oils unfit for their original intended use Waste oil/water, hydrocarbons/water mixtures or emulsions Grease trap waste Liquid Food Waste Sewage sludge and residues including nightsoil and septic tank sludge Drilling mud General or Specific exempted waste	(02) 4421 0000
The Council of the Municipality of Kiama	Minnamurra Waste disposal & recycling facility 446 Riverside Drive, Minnamurra NSW 2533 (Lot 1 DP 439772, Lot 1 DP 659767, Lot 1 DP 1108856)	Composting Waste Storage	5958	Household waste from municipal clean-up that does not contain food waste, chemicals or liquid General or Specific exempted waste Waste Wood waste Building and demolition Waste Non-chemical waste generated from manufacturing and services (including metal, timber, paper, ceramics, plastics, thermosets, and composites)	(02) 4237 5148

EPL holder name	Premises	Scheduled activity	EPL No.	Waste Type	Contact Details
				Office and Packaging Waste Waste collected by or on behalf of local councils from street sweeping Virgin excavated natural Material Manure Food waste Garden waste	
Shoalhaven City Council	West Nowra Recycling & Waste Facility Flat Rock Road, Mundamia NSW 2540	Composting Waste disposal (application to land) Waste Processing (non-thermal treatment) Waste storage	5877	General solid waste (non-putrescible) General solid waste (putrescible) Asbestos waste Waste tyres Waste	(02) 4421 5281

Appendix B
Waste Register

Notes
1. In accordance with the DECCW NSW (2009) 'Waste Classification Guidelines' which can be accessed at http://www.environment.nsw.gov.au/waste/classification.htm
2. Where a facility has a weighbridge installed, records of all waste entering the facility should be based on the quantities (in tonnes) recorded by the weighbridge.
3. Reuse occurs when a material is used again for the same or similar use with no reprocessing. Reusing a product more than once in its original form reduces the waste generated and the energy consumed, which would have been required to be recycled.
4. Waste transport vehicle numbers will not be recorded for general or recycled waste.
Recycling involves processing waste into a similar non waste product consuming less energy than production from raw materials. Recycling spares the environment from further degradation, saves landfill space and saves resources that were used to originally make the material. eg. mulching cleared vegetation for reuse in landscaping.

DATE	WASTE DESCRIPTION (choose one of the 23 materials from the drop down list on each row)	WASTE CLASSIFICATION[1] (choose one of the 6 materials from the drop down list on each row)	TOTAL QUANTITY[2]	UNITS (e.g. tonnes)	INTENDED END USE[3] (choose one of the 3 options from the drop down list on each row)	RECEIVAL FACILITY	TRANSPORTED BY	DOCKET OR INVOICE NUMBER	WASTE TRANSPORT VEHICLE NUMBER	REFERENCE IN ENVIRONMENTAL SAMPLING REGISTER (eg. if monitoring carried out to demonstrate compliance with Resource Recovery Exemption OR to classify waste)	COMMENTS