

Construction Waste and Resources Management Plan

CHBPW-FGJV-NWW-WM-PLN-000001- Revision C - Coffs
Harbour Bypass

FERROVIAL GAMUDA JOINT VENTURE

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GLOSSARY/ABBREVIATIONS

Abbreviation	Expanded Text
C&D	Construction and Demolition
CEMP	Construction Environmental Management Plan
CHB	Coffs Harbour Bypass (the Project)
MCoA	Ministers' Condition of Approval
CT	Contaminant Threshold
CWRMP	Construction Waste and Resources Management Plan
EIS	Environmental Impact Statement
ENM	Excavated Natural Material
EPA	Environment Protection Authority
EWMS	Environmental Work Method Statements
FGJV	Ferrovial Gamuda Joint Venture
HDPE	High-density Polyethylene
MRF	Materials recovery facility
PET	Polyethylene Terephthalate
PoEO Act	Protection of the Environment Operations Act 1997 (NSW)
PoEO (Waste) Regulation	Protection of the Environment Operations (Waste) Regulation 2005 (NSW)
REMM	Revised Environmental Mitigation Measures
RAP	Remedial Action Plan
RR	Reuse and Recovery
SCC	Specific Contaminant Concentrations
TCLP	Toxicity Characteristics Leaching Procedure
TfNSW	Transport for New South Wales (the Client)
VENM	Virgin Excavated Natural Material
WM Act	Water Management Act 2000

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1 INTRODUCTION

1.1 CONTEXT

This Construction Waste and Resources Management Sub Plan (CWRMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Coffs Harbour Bypass (the Project).

This CWRMP has been prepared to provide a framework to facilitate effective management of waste and resource consumption during construction in accordance with the requirements of the Minister's Conditions of Approval (MCoA), the Revised Environmental Management Measures (REMMs) listed in the Coffs Harbour Bypass Environmental Impact Statement (EIS) and all applicable legislation.

1.2 BACKGROUND

The Coffs Harbour Bypass EIS (Chapter 22) considered the potential waste generation and resource consumption impacts during the construction of the project. The background of the project is described in Section 1 of the CEMP.

The Project includes the construction of a 14-kilometre bypass of Coffs Harbour, including a 12-kilometre new build from south of Englands Road to Korora Hill in the north and a two-kilometre upgrade of the existing highway between Korora Hill and Sapphire. The Project would provide a four-lane divided highway that bypasses Coffs Harbour, passing through the North Boambee Valley, Roberts Hill and then traversing the foothills of the Coffs Harbour basin to the west and north to Korora Hill.

1.3 ENVIRONMENTAL MANAGEMENT SYSTEMS OVERVIEW

The CEMP describes the overall system for environmental management of the project being delivered by Ferrovial Gamuda Joint Venture (FGJV).

This CWRMP has been developed in response to REMM WM01 to be prepared and implemented as part of the CEMP. It provides specific guidance on measures and controls to be implemented to support minimising the amount of waste produced and appropriately handle and dispose of unavoidable waste.

Where relevant, the environmental management and mitigation measures herein will be incorporated into location or activity-specific environmental work method statements (EWMS). EWMS will be developed and approved by environment and management representatives prior to associated works and construction personnel will be required to undertake works in accordance with the identified requirements and associated mitigation measures.

Used together, the CEMP and EWMS form management guides that clearly identify the required environmental management actions that will be referenced by all personnel and contractors on the project.

This plan will be subject to the review and improvement processes described in the CEMP (refer to Section 9 and Section 10 of the CEMP).

2 PURPOSE AND OBJECTIVES

2.1 PURPOSE

The purpose of this Plan is to describe how waste and resources will be managed to reduce potential impacts during construction of the Project.

2.2 OBJECTIVES

The key objectives of the CWRMP are to ensure all project approval requirements, environmental management measures and licence requirements relevant to waste and resources are described, scheduled and assigned responsibility as outlined in:

- The Environmental Impact Statement, Submissions and Amendment Reports prepared for the CHB project
- Ministers Conditions of Approval
- Transport for NSW (TfNSW) Specifications G36, G38 and G40
- NSW EPA issued Environment Protection Licence

To achieve compliance with the conditions and objectives of the Project documents above, the Ferrovia Gamuda Joint Venture (FGJV) will undertake the following:

- Ensure measures are identified and implemented to minimise waste and conserve resources 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 MCoA outlined in Table 1 and the safeguards detailed in the Submissions Report REMMs in Table 2.
- Ensure best management practice controls and procedures are documented, communicated and implemented during construction activities to avoid or minimise waste generation and resource consumption impacts.

2.3 TARGETS

The following targets have been established for the management of waste and resources during the project as part of the Project Sustainability Management Plan:

- 100% of usable spoil (uncontaminated surplus excavated material) reused/recycled (not including Virgin Excavated Natural Material (VENM))
- 100% of VENM reused/recycled
- 90% by volume of construction and demolition (C&D) waste (overall uncontaminated material excluding spoil) reused/recycled
- 60% by volume of office waste reused/recycled
- 33% of non-potable water demand which is sourced from non-potable water sources during construction
- 20% of water (rainwater, stormwater, wastewater, groundwater) generated/collected during construction which is reused, recycled or reclaimed
- 5% of non-potable water that is used during operation of the roadheaders/tunnelling machines
- 100% clean concrete beneficially reused
- 100% clean asphalt pavement reclaimed
- 30% of cement replacement material, measured by mass, used in concrete during the construction stage
- 20% of recycled material used in road base and subbase during the construction stage
- 25% improvement in construction energy efficiency versus a business-as-usual baseline
- 25% improvement in supply chain carbon emissions intensity (including embodied energy in materials) versus a business-as-usual baseline

- 100% of office paper used on the Project Site that is high recycled content paper (50 per cent or more recycled content)
- 0% of single use and/or non-recyclable kitchen items supplied to on-site facilities

2.4 PERFORMANCE OUTCOMES

The project design has been prepared in consideration of the ‘desired performance outcomes’ provided in the EIS. Table 1 below outlines how each performance outcome will be achieved by the project in relation to the CWRMP, sourced from EIS Table 29-4.

TABLE 1 PERFORMANCE OUTCOMES

Desired performance outcome	Project Outcome	Where addressed
All wastes generated during construction and operation of the project are effectively stored, handled, treated, reused, recycled and/or disposed of lawfully and in a manner that protects environmental values	<p>Earthworks spoil is reused within the construction footprint to minimise waste where possible.</p> <p>Off-site waste and re-use is managed in accordance with the relevant EPA resource recovery exemptions and requirements</p>	Section 6.2 and 6.8

3 ENVIRONMENTAL REQUIREMENTS

This section describes the legislative, regulatory and guidance framework that applies to the Project.

3.1 RELEVANT LEGISLATION AND GUIDELINES

3.1.1 LEGISLATION

The principal legislation and regulation that applies to waste generation and resource consumption management is as follows:

- *Protection of the Environment Operations Act 1997*
- *Protection of the Environment (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*
- *Work Health and Safety Act 2011*
- *Work Health and Safety Regulation 2017*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Water Management Act 2000*

3.1.2 GUIDELINES

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

- Waste Classification Guidelines, Part 1: Classifying Waste (NSW EPA, November 2014)
- Waste Classification Guidelines, Part 1: Classifying Waste, Addendum (NSW EPA, October 2016)
- Waste Classification Guidelines, Part 4: Acid Sulfate Soils (NSW EPA, November 2014)
- NSW Government Resource Efficiency Policy (OEH, 2019) (Refer to Carbon and Energy Management Plan)
- NSW Government Resource Efficiency Policy (GREP) (OEH 2014)
- RMS Environmental Sustainability Strategy (2017)
- Best Practice Waste Reduction Guidelines for the Construction and Demolition Industry (tools for Practice), Natural Heritage Trust, 2000
- Environmental Best Practice Guidelines for Concreting Contractors (Department of Environment and Conservation, 2004)
- Local government guidelines for waste/recycling as appropriate
- Australian Dangerous Goods Code 7th Edition (ADG7) (National Transport Commission, October 2011)
- General resource recovery exemptions under Part 9, Clause 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014
- NSW Code of Practice: Demolition Work, 2016
- NSW Code of Practice: How to Manage and Control Asbestos in the Workplace, 2020
- Polychlorinated Biphenyls Management Plan, Revised Edition April 2003
- NSW Asbestos Waste Strategy 2019-2021 (NSW EPA, 2019)
- NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (EPA, 2014)
- Code of Practice – How to Safely Remove Asbestos (SafeWork NSW, 2019)
- Transport (Roads and Maritime Services) 2014 Environmental Procedure - Management of Wastes on Roads and Maritime Services Land
- Transport (Roads and Maritime Services) 2016 Technical Guide - Management of road construction and maintenance wastes

3.2 MINISTER’S CONDITIONS OF APPROVAL

The MCoA relevant to this Plan are listed in Table 2 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

TABLE 2 CONDITIONS OF APPROVAL RELEVANT TO THE CWRMP

MCoA No.	Condition Requirements	Document Reference
C5	The CEMP Sub-plans must state how: <ul style="list-style-type: none"> a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved; b) the mitigation measures identified in the documents listed in Condition A1 will be implemented; c) the relevant terms of this approval will be complied with; and d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed. 	Section 7 Section 7 Section 3.2 Section 3.3 Section 7
C6	Any of the CEMP Sub-plans may be submitted along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction.	Noted
C12	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been approved by the Planning Secretary.	Document control and approvals detailed in CWRMP version control table
E99	Waste generated during construction and operation must be dealt with in accordance with the following priorities: <ul style="list-style-type: none"> a) waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced; b) where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and c) where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of. 	Section 5
E100	The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of the current EPL for the CSSI, or be done in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, as the case may be.	Section 5.3
E101	Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, or to any other place that can lawfully accept such waste.	Section 6.5
E102	All waste must be classified in accordance with the EPA’s Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Section 6.1

3.3 REVISED ENVIRONMENTAL MANAGEMENT MEASURES

Relevant REMMs are listed in Table 3 below. This includes references 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 REVISED ENVIRONMENTAL MANAGEMENT MEASURES RELEVANT TO THIS CWRMP

Ref#	Commitment	Timing	CWRMP Reference
WM01	<p>A Waste Management Plan (WMP) will be prepared and implemented as part of the CEMP. It will provide specific guidance on measures and controls to be implemented to support minimising the amount of waste produced and appropriately handle and dispose of unavoidable waste. It will also address the importation of recycled materials to site for use in undertaking the project. The WMP will be prepared taking into account the TfNSW Environmental Procedure - Management of Wastes on TfNSW Land (2014c) and will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> Measures to avoid and minimise waste associated with the project Classification of wastes generated by the project and management options Classification of wastes received from off-site for use in the project and management options Identification of any statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions Procedures for storage, transport and disposal Monitoring, record keeping and reporting, including any documentation management obligations arising from resource recovery exemptions. 	Prior to construction	<p>This plan</p> <p>Section 7 Section 4.2 Section 5.3</p> <p>Section 3.1 Section 6.5 Section 8.5</p>
WM02	<p>Spoil would be beneficially reused as part of the project before alternative spoil disposal options are pursued. Any excess spoil would be managed using the following order of priorities:</p> <ul style="list-style-type: none"> Review alignment and profile refinements during detailed design Assess opportunities to reuse excess spoil in works such as landscaping and noise barriers within the construction footprint or in adjacent land (subject to property owner agreement and/or any project approval or POEO Act requirements) Beneficial reuse within the construction footprint for rehabilitation of ancillary sites used for the project (where it is within the requirements of the project approval) Transfer to other nearby TfNSW projects for immediate use, where possible, pending construction of other projects or for use on future projects or routine maintenance Transfer to a TfNSW approved site for reuse on concurrent private/local government projects (with appropriate approvals as required, eg a section 143 notice under section 143(3A) of the POEO Act) Disposal at an approved materials recycling or licensed waste disposal facility. 	During construction	Section 6.8
WM03	<p>Prior to construction, suitable areas within the ancillary sites or in other appropriate areas within the construction footprint would be allocated which provide adequate space and access for:</p> <ul style="list-style-type: none"> Separated storage of building materials Separated storage and sorting of construction waste Removal of construction waste for recycling, reuse or disposal Separated storage of known previously contaminated materials and contingency for unknown contaminated materials. 	Prior to and during construction	Section 6.5
WM04	<p>A hazardous materials assessment would be carried out of the buildings and structures to be demolished before demolition to identify presence of hazardous materials and ensure appropriate controls are implemented for the demolition, storage and disposal of materials.</p>	Detailed design	Section 4.2

WM05	<p>If the hazardous assessment investigations identify asbestos containing materials, an Asbestos Management Plan will be developed and implemented. The plan will include:</p> <ul style="list-style-type: none"> • Identification of potential asbestos on site procedures to manage and handle any asbestos, including potential areas where asbestos may be found within soils • Procedures to manage asbestos if encountered during construction • Measures to minimise the total volume of asbestos contaminated material that is generated. These would include separate stockpiling to ensure that asbestos contaminated material is not mixed with clean stockpile material • Procedures for disposal of asbestos in accordance with NSW EPA guidelines, Australian standards and relevant industry codes of practice 	Detailed design	Section 4.2
WM06	Where reasonable and feasible, water captured within the construction footprint will be prioritised for reuse as construction water or dust suppression.	During construction	Section 5.4

3.4 LICENSES AND PERMITS

An Environmental Protection Licence (EPL) will apply to the Project. The importation of waste and storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of the EPL (once granted). The following licensing or permits or regulatory processes will also apply to the Coffs Harbour Bypass:

- Optimisation of waste reuse offsite will be managed through the Resource Recovery Orders / Exemptions under the POEO Waste Regulation.
- FGJV will only dispose of waste at appropriately licensed facilities or other facilities that have appropriate approvals to receive re-useable wastes including waste meeting a resource recovery order.
- The transportation of asbestos waste, asbestos soils or waste tyres will be undertaken by waste removal contractors registered under the EPA’s Waste Locate system.

4 ENVIRONMENTAL ASPECTS AND IMPACTS

The following sections summarises the potential environmental impacts of waste generation and resource use from construction.

The key reference document is Chapter 22 of the EIS.

4.1 RESOURCE USE

The main construction materials and resources to be used for the project include earthworks material, concrete, asphalt, steel, water, fuel and electricity. Estimated volumes of material consumed by the project as considered in the EIS are described below, it is noted that these will be refined during detailed design phase:

- Earthworks material – around 378,000 m³ of imported select fill material from external sources may be required depending on the construction method. Not all material can be won from site due to the quality of the material being cut. Where possible, the imported select fill would be sourced from existing, approved or potential quarries near the project
- Concrete – around 218,000 m³ would be used for construction of the road and pavements, kerbing, retaining walls, drainage structures, bridges and tunnel structures. A concrete batching plant(s) is proposed to be established for the project as identified in Chapter 6 of the EIS. Cement and fly ash would likely be imported by rail and road from Newcastle, Sydney or Brisbane
- Asphalt – around 53,000 m³ would be used for construction of road surfaces. An asphalt batching plant has been assessed (Chapter 6 of the EIS) will be established for the project, bitumen would likely be sourced from refineries in Sydney or Brisbane
- Steel – around 36,200 t would be used for construction of fencing, steel pipes, bridges and tunnel support. This would likely be supplied from accredited steel suppliers in either Wollongong, Sydney or Brisbane

Water – a number of activities would require water use during construction. If required, a concrete batching plant would use around 200 kL of potable water per day. Additional water uses include around 70kL per day of non-potable water for dust control, 60 kL per day for drilling, 18 L/m³ for earthwork compaction and 70 L/m³ for earthwork stabilisation.

The resource quantities required for the project's construction are unlikely to be affected by resource availability.

4.2 WASTE GENERATION

The project could generate a number of waste streams as a result of construction activities, including:

- Special waste
 - Asbestos, waste tyres
- Liquid waste
 - Concrete slurry
 - Wastewater, including sewage from site compounds
 - Chemical spills
- Hazardous waste
 - Contaminated excavated material
- Restricted solid waste
- - Contaminated material excavation
- General solid waste (putrescible)
 - Timber and green waste
 - MSW
 - Contaminated material excavation
- General solid waste (non-putrescible)
 - VENM
 - Excavated natural material
 - Concrete, steel and plastic from demolition

- Concrete and asphalt from construction
- Packaging materials
- Vehicle maintenance waste.

The construction aspects and types of wastes, which may be generated during construction, are outlined with classifications in Table 4 below.

TABLE 4 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)	Native Vegetation – Reuse as biodiversity measures, Native vegetation – Beneficial reuse of selected timber to local mills/State Forest. Native vegetation – Beneficial reuse of selected feed trees to local wildlife organisations where appropriate Mulch – Reuse on site or offsite Weeds – Off site disposal or deep burial Rootballs – donated to Council, Landcare or other river remediation projects (subject to pathogen management)
	Concrete, asphalt and gravel	General solid waste (non-putrescible)	Crushed and used as backfill or as road base
	Asbestos	Special waste	Off site disposal at an approved facility, or as otherwise recommended in the Remedial Action Plan (RAP).
	Scrap metal	General solid waste (non-putrescible)	Off site recycling
Bulk Earthworks	ENM (Excavated Natural Material) or VENM (Virgin Excavated Natural Material)	If material is taken off site classification will be carried out, based on soil tests in accordance with the EPA <i>Waste Classification Guidelines: Parts 1 and 2</i> (EPA 2014); Or as required under an existing resource recovery order /exemption.	Beneficial reuse onsite (such as landscape and noise mounds) Beneficial reuse offsite (s143 requirement) Balance cut and fill earthworks, where possible, to optimise reuse on the Project. Relocate VENM or ENM to another TfNSW project
	Potentially Contaminated Soils		Offsite disposal at an approved facility Off site reuse as engineering fill or used in earthworks On site encapsulation / remediation Final option to be developed in consultation with contamination consultant through the development of a Remedial Action Plan (RAP)
	ASS/PASS		Treated on site to neutralise acid generating potential, and re-used within permanent landscape mounds or other no structural earthworks element.
Road Construction	Steel Reinforcing	General solid waste (non-putrescible)	Off site recycling
	Conduits and pipes	General solid waste (non-putrescible)	Off site Recycling
	Concrete (solids and washouts) and asphalt	General solid waste (non-putrescible)	Crushed and used as backfill or as road base where compliant with RMS specification R44. Alternatively it can be sent to off site recycling
	Timber formwork	General solid waste (non-putrescible)	Reuse onsite where possible or off site recycling
	Packaging Materials, including wood, plastic, cardboard and metals	General solid waste (non-putrescible)	Off site recycling
	Empty oil and other drums	General solid waste (non-putrescible)	Return to supplier where possible Off site disposal at an approved facility

	Pesticides, herbicides, spill clean ups, paints and other chemicals	Hazardous waste	Off site disposal at an approved facility
	Metals and electrical cabling	General solid waste (non-putrescible)	Off site recycling / Use on other RMS projects
	Aerosol cans	General solid waste (non-putrescible)	Off site disposal
Compounds and Workshop Operation	Tyres	Special Waste	Off site disposal / recycling at an approved facility
	Waste generated by the maintenance of equipment including air and oil filters and rags	General solid waste (non-putrescible)	Off site disposal at an approved facility
	Oils, grease, fuel, chemicals and other fluids	Liquid	Off site disposal at an approved facility
	Batteries	Hazardous waste	Off site disposal / recycling at an approved facility
	Radiator Fluid	Hazardous waste	Off site disposal at an approved facility
	Hydraulic Fluid	Hazardous waste	Off site disposal at an approved facility
	Domestic waste generated by workers	General solid waste (putrescible)	Off site disposal at an approved facility
	Sewage	General solid waste (putrescible)	Offsite disposal at an approved facility and/or treated and reused on site
Office Operation	Paper, cardboard and plastic	General solid waste (non-putrescible)	Off site recycling
	Glass bottles and aluminium cans	General solid waste (non-putrescible)	Off site recycling
	Ink cartridges	General solid waste (non-putrescible)	Off site recycling
	Food Waste	General solid waste (non-putrescible)	Off site disposal at an approved facility
	Effluent (eg STP)	Liquid	Offsite disposal at an approved facility and/or treated and reused on site

A hazardous materials assessment would be carried out of the buildings and structures to be demolished before demolition to identify presence of hazardous materials and ensure appropriate controls are implemented for the demolition, storage and disposal of materials.

If the hazardous assessment investigations identify asbestos containing materials, an Asbestos Management Plan will be developed and implemented. The plan will include:

- Identification of potential asbestos on site procedures to manage and handle any asbestos, including potential areas where asbestos may be found within soils
- Procedures to manage asbestos if encountered during construction
- Measures to minimise the total volume of asbestos contaminated material that is generated. These would include separate stockpiling to ensure that asbestos contaminated material is not mixed with clean stockpile material
- Procedures for disposal of asbestos in accordance with NSW EPA guidelines, Australian standards and relevant industry codes of practice

The EIS estimates the following quantities of waste from construction activities in Table 5 below.

TABLE 5 EIS ESTIMATEATED WASTE GENERATION

Material	Estimated Waste (tonnes)
Concrete	11,800
Asphalt	1,800
Steel	1,850
General Waste	550

Material	Estimated Waste (tonnes)
Other (bridge deck surface, dense graded base)	2,500
Green Waste	54,000

5 WASTE HIERARCHY

Waste generated during construction of the Project will be managed in accordance with the following priorities:

- A. waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;
- B. where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and
- C. where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.

This is captured in the EPA waste hierarchy, as shown in Figure 1

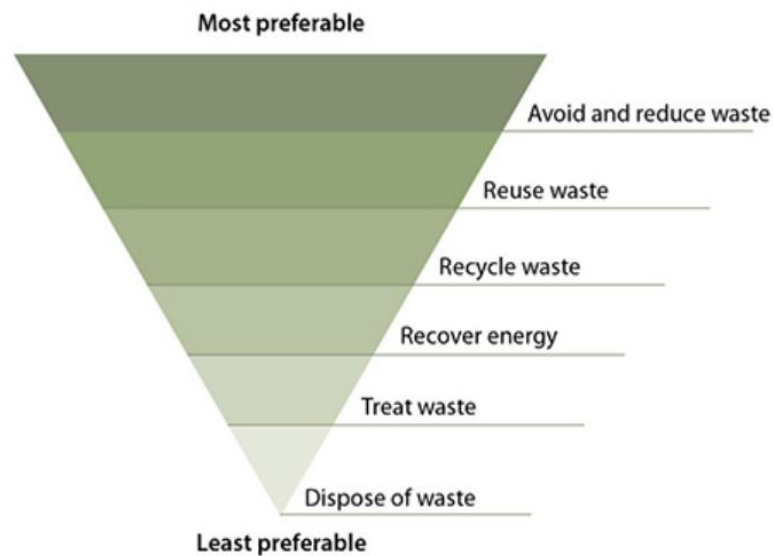


FIGURE 1 EPA WASTE MANAGEMENT HIERARCHY

Strategies for the implementation of this hierarchy are discussed in detail in the sections below.

5.1 WASTE AVOIDANCE / REDUCTION

As part of the design process, and during planning for delivery of the Project, Dematerialisation / Materials efficiency workshops will be held with the design team to identify opportunities to reduce wastage through a more efficient use of raw materials such that waste is eliminated through:

- Materials elimination
- Reduction in material usage
- Material reuse.

Consideration will be given to the potential reuse of materials. This includes:

- Materials available on site
- Materials available as a result of other contractors' works
- Materials available as an output from construction activities.

Particular consideration will be given to avoiding the production of hazardous waste where practical.

5.2 WASTE REUSE

Every effort will be made to ensure that waste material is seen as a resource and is used, either on-site within the Project or off-site either on other projects or by other persons. The Waste Reuse Principles adopted are:

- Identifying materials for a reuse purpose
- Segregating materials at the source of generation to facilitate reuse, and store or reuse those items, either on-site or off-site
- Re-useable formwork will be used where practicable
- Compostable erosion and sediment control measures will be used where possible
- Recycled and recyclable materials will be used where possible, without compromise to the structural integrity, longevity and visual quality of materials and structure.

5.3 RESOURCE RECOVERY EXEMPTIONS

Under the Protection of the Environment Operations (Waste) Regulation 2005, the EPA has issued general exemptions that allow for reuse of a range of common waste materials. They specify ways in which the waste can be reused, chemical concentrations or other attributes to be met as well as other requirements such as record keeping. Where the criteria specified in the exemption and/or order is met, public exemptions and orders may be applied to the works. Current potential exemptions are described in Table 6. Additionally, the project may seek specific resource recovery exemptions from the EPA as required.

TABLE 6 WASTE RECOVERY EXEMPTIONS AND ORDERS

Exemption/Order	General Conditions
Excavated natural material (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.
Excavated public road material (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 apply the relevant waste within a reasonable period of time
Reclaimed asphalt pavement (2014)	The reclaimed asphalt can only be: Applied to land for road related activities including road construction or road maintenance activities, being: <ul style="list-style-type: none"> • A use as a road base and sub base, • Applied as a surface layer on road shoulders and unsealed roads, and • Use as engineering fill material. Used as an alternative raw material in the manufacture of asphalt.
Recovered aggregate (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: 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: <ul style="list-style-type: none"> • The relevant waste is applied to land to the minimum extent necessary for the construction of a road, and • 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 • The works undertaken are either exempt or complying development.
Stormwater (2014)	Stormwater can be applied to land by: <ul style="list-style-type: none"> • Spraying, spreading or depositing on the land, • Ploughing, injecting or mixing into the land, and • Filling, raising, reclaiming or contouring the land
Mulch (2016)	The 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. Mulch does not include plant material from kerbside waste collections.
Recovered plasterboard (2014)	The chemical concentration or other attributes of the recovered plasterboard material listed in the order must not be exceeded. Recovered plasterboard can only be applied to land as a soil amendment. Prior to application to land the soil to which the material will be applied must

be characterised to determine appropriate application rates. The recovered plasterboard must be incorporated into the topsoil. Handling, processing, sampling and testing requirements are outlined in detail in the order. Protection of the Environment Operations (Waste) Regulation 2014 applies to this order.

5.4 WATER REUSE

The Project has developed a water usage strategy based generally on the following principles, to minimise use of potable water and maximise water reuse on the project where reasonable and feasible:

1. Avoid water consumption
2. Reduce water consumption by using water efficient equipment and processes
3. Re-use harvested rainwater
4. Re-use treated groundwater
5. Re-use captured surface water
6. Re-use captured water without treatment where fit for purpose
7. Treat captured water for re-use where fit for purpose
8. Explore use of existing bores first prior to drilling new ones
9. Use potable water only where other sources are not viable

Further detail of proposed water reuse can be found in the Project Construction Soil and Water Management Plan, which incorporates a Water Reuse Strategy as required under CoA C11(b).

5.5 RECYCLING

Recycling is a process involving the collection and separation of waste materials, which are transformed into useable products. The principles adopted for the Project are:

- Erect signage to encourage the reuse and recycling of recovered waste material
- Identify materials for a recycling purpose
- Where practical, construction recycling facilities will be provided within the Site
- Sort materials into components/material streams to facilitate recycling. Separation of materials may occur off-site by specialised licensed waste handling contractors
- A waste contractor with access to a sophisticated materials reclamation facility will be contracted to sort and recycle and manage construction waste to be removed from site
- Implement packaging take-back initiatives with sub-contractors & suppliers.

FGJV will recycle or beneficially reuse 60% of office waste through:

- Onboarding process to include processes and opportunities to maximise office recycling
- Training of all office cleaning staff to ensure waste segregation processes are clearly understood and effective
- No individual under-desk bins
- Clearly signed and strategically placed recycling bins with informative recycling posters in communal kitchen and rest areas
- Conducting regular office waste audits to identify problematic waste streams
- Publicly displayed waste performance reporting, including printing data, to promote site-specific accountability.

5.6 DISPOSAL

Waste removal requires the transport and disposal of waste material off-site that cannot be reused or recycled. The following waste removal principles have been adopted:

- The Project will seek to limit the wastes which it sends directly to landfill. A waste contractor with a sophisticated recycling facility will be contracted to achieve the highest recycling rates achievable for the waste streams generated. Residual waste will be landfilled after the reclamation process is carried out at that facility
- Various types and sizes of waste receptacles will be provided to promote separation of materials for ease of reuse/recycling

- Hazardous and liquid wastes will be securely stored within appropriate receptacles within a bunded area prior to removal by licensed contractors
- A regular collection/removal or emptying of bins or skips will be implemented
- Waste will be classified and disposed of in accordance with the guidelines.

Wastes that are unable to be reused or recycled will be disposed of offsite to an EPA approved waste management facility following classification. Details of waste types, volumes and destinations are to be recorded in the Waste Register.

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. There will be two types of waste disposal, being:

- disposal to an EPA licensed facility, or
- disposal to a receiving site under Section 143(3A) of the POEO Act.

Prior to transporting wastes to a receiving site where an EPA licence is not required (such as an beneficial reuse site), a completed and signed notice under section 143(3A) of the POEO Act ("s.143 Notice") along with accompanying documentation confirming that the proposed disposal site holds appropriate licences / approvals to receive the waste will need to be reviewed by the Environment Manager (or delegate).

Facilities used for the receiving of waste will be appropriately licensed to accept the classified waste type. The Environmental Manager will review the licence of the receiving facility before any waste is transported. Refer to **Appendix A** for potential facilities and locations.

6 WASTE MANAGEMENT

6.1 WASTE CLASSIFICATION

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

Step 1: Is it 'special waste'?

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

Note: Asbestos and clinical wastes must be managed in accordance with the requirements of Clauses 42 and 43 of the Protection of the Environment Operations (Waste) Regulation 2005. Relevant WorkCover requirements will also be complied with and detailed further in Project WH&S documentation.

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

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

Liquid wastes are sub-classified into:

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

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

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

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

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

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

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

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

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

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

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

6.2 CONTAMINATED SPOIL

Spoil not classified as either VENM or ENM due to contamination from either construction material or other sources will be characterised in accordance with the Waste Classification Guidelines: Part 1 Classifying Waste (EPA 2014). This may include classification as General Solid Waste (Non-putrescible), Hazardous Waste, Special Waste or Restricted Waste.

Further detail on the management of contaminated spoil (including asbestos containing material) is described in the Construction Soil and Water Management Plan.

6.3 LIQUID WASTE

Liquid wastes are to be stored in appropriate containers in bunded areas until it can be transported off-site for disposal at a licenced facility. Bunded areas must have the capacity to hold 110% of the liquid waste volume for bulk storage.

Sediment laden water would be managed in accordance with the Soil and Water Management Plan. Where evidence of contamination is present (oil, grease) further testing would be carried out, and appropriate treatment or disposal if required.

Concrete washout water would be contained within the washout area and allowed to either evaporate or harden. In the event that capacity is reached, it would be removed by vacuum truck or pumped to an appropriately bunded container.

Waste from non-destructive digging would be taken offsite for disposal. Where there are significant quantities of waste, a bunded area would be established to allow the waste to be dried out and then reused on site where applicable.

Sanitary wastes from temporary site amenities would be removed by a licenced contractor and taken to an appropriately licenced liquid waste facility for treatment or disposal.

6.4 WASTE REGISTER

A Waste Register shall be maintained which identifies all waste produced on site and subsequent management. The Register shall document the following:

- Type and quantity of waste.
- Whether the waste is to be recovered (either for use on-site or off-site) or sent for disposal.
- Tracking information of trackable waste streams.
- Upon removal of waste from site – date of removal, transport contractor information and final destination.

All relevant documentation such as dockets and receipts will be retained within the Waste Register (example attached as Appendix B).

6.5 WASTE HANDLING

Materials segregation and recycling facilities will be provided on site. This will include:

- Reusable materials will be stored separately, in secure facilities
- Recyclable waste will be stored separately from other waste and recycling bins will be stored adjacent to general waste bins
- Sufficient and suitable storage areas for:
 - Separated storage of building materials
 - Separated storage and sorting of construction waste
 - Removal of construction waste for recycling, reuse or disposal
 - Separated storage of known previously contaminated materials and contingency for unknown contaminated materials.
- Work sites will be kept free of litter and good housekeeping will be maintained
- Vermin proof bins will be used on site

- Specialist bins for specialist waste streams (including electrical and electronic waste, and equipment waste)
- Waste oil, other liquid wastes and spillages will be collected and stored in bunded areas.

6.6 WASTE TRANSPORTATION

Where waste cannot be reused on site, it will be transported off site using an appropriately licensed waste management contractor. All transport vehicles will be covered, and tailgates secured prior to trucks leaving the work site. All vehicles will be appropriate for transport of the waste as classified.

Transporters will hold an EPL if transporting higher risk wastes ('controlled' or 'trackable' waste). High risk waste will be tracked using EPA's online waste tracking system or the Project specific tracking system.

Further detail on the appropriate management of waste transportation is addressed in the Project Traffic Management Plan (doc number to be finalised).

6.7 MATERIAL TRACKING

Waste and material tracking data will aim to track waste from 'cradle to grave', capturing:

- Waste facility details
- Date transported
- Source and Quantity
- Waste classification
- Haulage company
- Truck registration
- Waste receival location
- Landfill docket numbers.

The quantity of waste in each solid waste stream is measured by weight and liquid waste stream by volume, with records provided by the waste transport contractor in the form of Waste Dockets.

A Waste Register (an example attached in Appendix B) will be kept detailing the information listed above. The information will be collated, and register maintained by the Environment Lead (or delegate).

If hazardous waste is being transported offsite, the EPA's online waste tracking system will be used to track waste movements. Any transportation of asbestos waste, asbestos soils or waste tyres will be tracked using the EPA's WasteLocate system.

6.7.1 TRACKABLE WASTE

Under the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation), the transport and disposal of certain high-risk or hazardous waste must be tracked when it is transported into, within or out of NSW.

Consistent with the Protection of the Environment Operations (Waste) Regulation 2014 the following wastes potentially encountered/generated are required to be tracked within NSW:

- Hazardous Wastes as defined by Table 3 in the NSW EPA 'Waste that must be tracked' guideline,
- Liquid Waste (Category 1 trackable waste),
- Waste oil/water, hydrocarbon/water mixtures emulsions, and
- Wastes listed in Table 1 of the NSW EPA 'Waste that must be tracked' Guideline.
- Trackable Waste must be tracked using the EPA's online waste tracking (OWT) system

A waste Transport Certificate is the document used to record the transport of a load of trackable waste from the consignor to the receiving facility. The Transport Certificate is created from a Consignment Authorisation by the consignor, transporter or receiving facility nominated on the Consignment Authorisation.

The creation of the Consignment Authorisation is done by the receiving facility, while the transport certificates that must accompany each load can be created by any of the relevant parties (consignor, transporter or receiver) – where they have the required access to the OWT system.

Details of waste types, volumes and destinations will also be recorded for all relevant waste movements.

6.7.2 WASTE LOCATE

FGJV acknowledges the requirement for transporters and receivers of certain types of material to be registered with the EPA's WasteLocate system. WasteLocate tracks each load from pick up to disposal using GPS, and generates a unique consignment number just like a parcel in the post. Waste required to be tracked by WasteLocate include:

- Tyre consignors, transporters and facilities transporting or receiving waste tyres in NSW weighing more than 200 kilograms or consisting of 20 or more tyres in one load.
- Asbestos transporters and facilities receiving asbestos waste in NSW, weighing more than 100 kilograms or consisting of more than 10 square metres of asbestos sheeting in one load.
- People transporting asbestos contaminated soil in NSW, weighing more than 100 kilograms.

Obligation to be registered with WasteLocate will be a mandatory requirement for applicable waste transporter or disposal facilities by the FGJV.

6.8 SPOIL MANAGEMENT

Spoil would be managed according to the following principles:

1. Review alignment and profile refinements during detailed design to minimise the generation of spoil;
2. Assess opportunities to reuse excess spoil in works such as landscaping and noise barriers within the construction footprint or in adjacent land (subject to landowner agreement and/or any project approval or POEO Act requirements);
3. Beneficial reuse within the construction footprint for rehabilitation of ancillary sites used for the project (where it is within the requirements of the project approval);
4. Transfer to other nearby TfNSW projects for immediate use, where possible, pending construction of other projects or for use on future projects or routine maintenance;
5. Transfer to a TfNSW approved site for reuse on concurrent private/local government projects (with appropriate approvals as required, eg a section 143 notice under section 143(3A) of the POEO Act);
6. Disposal at an approved materials recycling or licensed waste disposal facility.

6.9 RECORD KEEPING

The following records will be retained electronically on the Project's document management system:

- Records of inspections in relation to waste management and recycling activities, including weekly inspections of waste storage facilities
- Records detailing the beneficial re-use or recycling of material either within the project or at off-site locations.

The following records will be retained on site in a designated folder:

- Waste tracking forms and docketts
- Waste register.

7 ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

Specific measures and requirements to meet the objectives of this CWRMP and to address impacts from waste generation and resource consumption are outlined in Table 7.

TABLE 7 MANAGEMENT AND MITIGATION MEASURES

ID	Measure/Requirement	When to implement	Responsibility	Reference
WR1	The NSW Government's Waste Management Hierarchy of "avoid-reuse-reprocess-recycle-energy recovery-dispose" will be followed as the framework of waste management throughout the project.	Pre-construction Construction	Construction Manager Environment Lead	WARR Act MCoA E99
WR2	Waste management measures from this CWRMP 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	Best Practice
WR3	All staff and subcontractors will undergo a site induction and ongoing toolbox talks that will detail relevant waste legislation and sustainability targets.	Pre-construction Construction	Environment Lead Site Engineer	Best Practice
WR4	Procurement of materials will be planned and managed to avoid the over-ordering of products and to minimise excess packaging.	Construction	Site Engineer Site Supervisor	Best Practice
WR5	All waste will be classified and disposed of in accordance with the EPA "Waste Classification Guidelines".	Construction	Construction Manager Environmental Lead Superintendent	MCoA E100
WR6	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	SWTC D.5
WR7	Cleared vegetation will be reused or recycled to the greatest extent practicable for example: <ul style="list-style-type: none"> Mulching of vegetation for use in erosion and sediment control, soil stabilization and 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. 	Construction	Environment Lead	SWTC D.1 MCoA E65
WR8	Weeds will be managed, handled and disposed of in accordance with the Weed Management Strategy (see the Construction Biodiversity Management Sub-Plan). If disposal is appropriate, the weed material will be transferred to a licensed waste facility.	Construction	Site Supervisor	MCoA E65
WR9	The reuse and/or recycling on site of waste materials generated on site (such as VENM, concrete, asphalt, bricks/masonry and steel products) will be maximised as far as practicable. Alternatively they will be sent off site for recycling.	Construction	Site Supervisor	SWTC D.5
WR10	Any non-contaminated 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	Site Supervisor	Best Practice

WR11	Stormwater (eg from sediment control basins) and other recycled water will be used in construction activities, where possible and of appropriate quality.	Construction	Superintendent	SWTC D.5 WM06
WR12	Wastewater collection points for the workshop wash bays will contain oil/water separators to remove hydrocarbons.	Pre-construction / Construction	Foreman	Best Practice
WR13	Storage and handling of waste will be conducted in compliance with the requirements of the <i>PoEO Act</i> and PoEO (Waste) Regulation. <i>Waste streams shall be segregated to allow for optimal recycling.</i>	Pre- Construction Construction	Project Manager Construction Manager Environmental Lead	PoEO Act MCoA E100
WR14	Oils and other hazardous liquids will be labelled and stored in a sealed container within a bunded area. Material collected from within bunded areas will be disposed off site at a waste facility approved by the EPA.	Construction	Foreman/Environ ment Officer	QA Spec G36
WR15	Waste generated outside the site will not be received on site unless a relevant licence is held.	Construction	Construction Manager Environmental Lead	MCoA E100
WR16	Dangerous goods will be stored and handled in accordance with their Material Safety Data Sheet.	Construction	Construction Manager Environmental Lead Superintendent	Best Practice
WR17	Regular visual inspections will be conducted to ensure work sites are tidy and to identify opportunities for reuse/recycling.	Construction	Environmental Manager Superintendent	SWTC D.1
WR18	Bunded areas are to be used for storage of oils, chemicals, toxic substances and combustible liquids, and for potentially hazardous and contaminating activities (eg plant and equipment, handling and pouring hazardous materials and liquids etc).	Construction	Environmental Lead Superintendent	Best Practice
WR19	Spills will be contained immediately and used spill kit material/contaminated soil shall be stored in bunded areas until disposal. Waste will be classified and disposed of in accordance with the Waste Classification Guidelines: Part 1 Classifying Waste (EPA 2014) and disposed of at a facility that is licensed to receive the waste.	Construction	Environmental Lead Superintendent	SWTC D.1 Best Practice
WR20	Containers and / or skip bins for litter and other wastes are to be provided, with contents disposed of on a regular basis.	Construction	Superintendent	Best Practice
WR21	A Waste Register (refer to Appendix B) of all waste collected for disposal and/or recycling will be maintained on a monthly basis until final completion.	Pre- Construction Construction	Project Manager Construction Manager Environmental Lead	<i>PoEO Act</i>
WR22	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 Lead or Delegate	QA Spec G36
WR23	A s143 notice under the PoEO Act (including all necessary information such as nature of material, quantity, dates, transporter, locations etc.) will be completed should the off site disposal of road construction waste material be deemed necessary. A relevant development consent under the EP&A Act 1979 must be held by the relevant land owner where the material is not taken to a licensed landfill facility .	Construction	Foreman/ Environment Officer	PoEO Act QA Spec G36 TfNSW Specification G36 WM Act 2000 Water Act 1912

	<p>An s143 notice will not be required where the waste receiver has an EPL which allows receipt of that waste.</p> <p>The relevant licenses 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.</p> <p>Off site disposal of the above material will also consider approval requirements under the <i>Water Management Act 2000</i> (proximity of disposal site to waterfront land) and the <i>Water Act 1912</i> (ultimate use e.g. levee banks, flood mounds etc).</p>			EP&A Act 1979
WR24	The relevant licences of waste facilities utilised for the disposal of project waste shall be obtained (on a regular basis if necessary) to ensure they are legally able to accept that waste.	Construction	Foreman	QA Spec G36
WR25	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	QA Spec G36
WR26	All trucks transporting wastes off site will be appropriately licensed to carry the materials to appropriately licensed waste facilities.	Construction	Site Engineer / Foreman	QA Spec G36
WR27	Waste will be disposed at a facility licensed to accept the waste.	Construction	Environmental Lead Superintendent	MCoA E101
WR28	<p>Resource efficient work practices will be implemented, including the consideration of:</p> <ul style="list-style-type: none"> Material efficient design of site buildings; Design of site construction work sites to minimise unnecessary vehicle movement; Training of personnel in water efficient best practices; Use of locally sourced material where available and of suitable quality. 	Pre- Construction Construction	Project Manager Construction Manager Environmental Lead Superintendent Site Supervisor	Best practice FGJV Sustainability Policy
WR29	Construction plant and equipment will be operated and maintained to maximise efficiency and reduce emissions, with construction planning used to minimise vehicle wait times and idling on site and machinery turned off when not in use.	Construction	Site Engineer / Foreman	QA Spec G36
WR30	Where practicable construction water will either be reused on site wherever feasible and opportunities for the reuse of treated water would be considered in preference to discharge via licensed discharge points. As detailed within the Coffs Harbour Bypass Water Reuse Strategy (App E – CSWMP)	Construction	Site Engineer / Foreman	QA Spec G36 CSWMP – App E
WR31	Locally produced goods and services will be procured where feasible and cost effective to reduce transport fuel emissions.	Construction	Site Engineer / Foreman	QA Spec G36
WR32	Electricity supplied by the grid will be sourced from 100% renewable sources.	Construction	Environmental Lead	Sustainability Management Plan

8 COMPLIANCE MANAGEMENT

8.1 ROLES AND RESPONSIBILITIES

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

8.2 TRAINING

All employees, subcontractors and utility staff working on site will undergo site induction training prior to working on the Project. The induction training will address elements related to waste generation and resource consumption management including the requirements of the Sustainability Management Plan (as required by TfNSW Specification G36 clause 3.5)

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

8.3 MONITORING

Regular monitoring and inspections including waste and resource management and implementation of mitigation measures will be undertaken during construction.

Additional requirements and responsibilities in relation to inspections are documented in Section 8.2 of the CEMP.

8.4 AUDITING

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

Audit requirements are detailed in Section 8.3 of the CEMP.

8.5 REPORTING

As per the SWTC, FGJV will report on quantities of waste generated, recycled, beneficially re-used or disposed of and performance against waste targets, including spoil targets in the sustainability section of the monthly progress report.

Reporting requirements and responsibilities are documented in Section 8.5 of the CEMP.

8.6 IS RATING TOOL

FGJV are required to obtain a 'Design' and 'As Built' Infrastructure Sustainability (IS) rating version 1.2 under the Infrastructure Sustainability Council's (ISC) rating scheme, as required by the SWTC and MCoA. The Project will comply with IS rating tool requirements relevant to waste generation and resource consumption impacts, where required, such as ISv1.2's Was-1 and Was-2 credit.

9 REVIEW AND IMPROVEMENT

9.1 CONTINUOUS IMPROVEMENT

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

The continuous improvement process will be designed to:

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

9.2 CWRMP UPDATE AND AMENDMENT

The processes described in Section 1.5 and Section 9 of the CEMP may result in the need to update or revise this plan. This will occur as needed.

Only the Environment Lead, or delegate, has the authority to change any of the environmental management documentation.

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 1.3 and 1.4 of the CEMP.

APPENDICES



APPENDIX A POTENTIAL WASTE DISPOSAL FACILITIES AND LOCATIONS

Facility	Location	Proximity to the Site	Site History	Accepted Waste	Facility Type
<p>The Coffs Coast Resource Recovery Park / Coffs Harbour Community Recycling Centre</p>	31a Englands Road, Coffs Harbour	1.2 km west of the construction footprint by road, just south of Englands Road	The Coffs Coast Resource Recovery Park (CCRRP) is operated by Coffs Coast Waste Services (CCWS) who have a regional partnership with Coffs Harbour City Council. There are a number of facilities located at the CCRRP. A Materials Recovery Facility is located on site for the processing of recyclables. A Biomass Solutions facility which separately processes organics and mixed waste is located here. A Glass Processing Facility also recovers, and processes broken glass. CHCC own and operate the landfill site. The CCRRP accepts concrete waste including concrete slabs, concrete roof tiles, bricks and pavers.	<p>Construction waste types: Construction waste, general waste and concrete waste (concrete slabs, concrete roof tiles, bricks and pavers)</p> <p>Demolition waste types: Polystyrene, paper and cardboard, recyclables (glass, plastics, steel and aluminium and tetra packs), hazardous household items such as paint, chemicals, gas bottles, fluorescent globes, e-waste, scrap metals, building and tyres, asbestos and car parts.</p> <p>This facility accepts green waste for composting.</p>	Landfill, materials recovery facility (MRF), hazardous waste (including hydrocarbons)
<p>Nambucca Waste Management Facility (landfill and transfer station)</p>	711 Old Coast Road, Nambucca Heads	45 km south of the project by road, just west of Nambucca Heads	The Nambucca Waste Management Facility is owned and operated by the Nambucca Shire Council. This facility accepts construction and demolition (C&D) waste including concrete and bricks. This facility also accepts asbestos and clean fill (Coffs Coast Waste Services 2018).	<p>Construction waste: Green waste, concrete, clean fill, cardboard, and paper.</p> <p>Demolition waste: All types of vehicles accepted - concrete and bricks, asbestos and clean fill, green waste, recyclable materials including cardboard, paper, polyethylene terephthalate (PET) & high-density polyethylene (HDPE), scrap metal, car bodies, batteries and specified e-wastes.</p>	Landfill, MRF
<p>Raleigh Waste Management Centre (landfill and recycling)</p>	146 Short Cut Road, Raleigh	24 km south of the construction footprint by road, just west of the Pacific Highway in Raleigh	The Raleigh Waste Management Centre is owned and operated by the Bellingen Shire Council (Bellingen Shire Council 2014). This site has been used for solid waste disposal since 1978. This landfill received 733 tonnes of C&D waste and 569 tonnes of MSW in 2012-2013, with a total of 2496 tonnes of accepted waste. It does not accept C&I waste or contaminated soil. There is a resource recovery facility which collects and sorts items of value that may be sold back to the public and avoid going to landfill.	<p>Construction waste: General construction waste, green waste, cardboard and paper.</p> <p>Demolition waste: Asbestos, tyres, e-waste, green waste, household chemicals and timber. Recyclable materials including cardboard, paper, and scrap metal, car bodies, batteries and specified e-wastes.</p>	Landfill, MRF

<p>Grafton Regional Landfill and Resource Recovery Centre</p>	<p>704 Armidale Road, Elland</p>	<p>80 km north of the construction footprint by road, west of the Pacific Highway in Grafton</p>	<p>The Grafton Regional Landfill is owned and run by the Clarence Valley Council. This facility accepts C&D waste and asbestos (Coffs Coast Waste Services 2018).</p>	<p>Construction waste: Clean fill, concrete, general solid waste</p> <p>Demolition waste: Asbestos pipes, clean fill, concrete, clean soil – VENM, commercial quantities of household hazardous waste, dead animals, green waste, general solid waste, mixed building & demolition waste, mixed commercial and industrial waste, mixed waste, recyclables, sorted scrap metal, sorted mixed waste and tyres.</p>	<p>Landfill, MRF, Hazardous</p>
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APPENDIX B EXAMPLE WASTE REGISTER

Haulage Date	Mass		Docket/ Invoice Number	Vehicle Registration Number	Disposal Contractors Waste Description	Waste Classification	Waste Sub- Classification	Waste Code (Hazardous Waste Only)	Waste End Use	Transporter	Disposal Company and Address
	Volume (m3)	Weight (tonnes)									