

Appendix B5 Construction Waste and Resources Management Sub-plan

M12 Motorway West

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Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

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Document Review

Position	Name	Signature	Date
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Project Director	[REDACTED]	[REDACTED]	18/04/2023

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Acronyms and Abbreviations

Abbreviations	Expanded text
AEIs	Areas of Environmental Interest
AR	Amendment Report
ARSR	Amendment Report to the Submissions Report
ASS	Acid Sulfate Soil
CCLMP	Construction Contaminated Land Management Sub-plan
CFFMP	Construction Flora and Fauna Management Sub-plan
CMS	Complaints Management System
CoA	Conditions of Approval
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the CEMP, works approved under a Site Establishment Management Plan, demolition of acquired residential houses, structures and sheds, and approved under an environmental management plan(s) in accordance with Condition A24.
CPBGG JV	CPB Contractors and Georgiou Group Joint Venture
CSEP	Community and Stakeholder Engagement Plan
CSSI	Critical State Significant Infrastructure
CTTMP	Construction Transport and Traffic Management Plan
CWRMP	Construction Waste and Resources Management Sub-plan
CWSMP	Construction Soils and Water Management Plan
DAWE	Commonwealth Department of the Water, Agriculture and Environment
DECCW	Former Department of Environment, Climate Change and Water, now EES
DPE	NSW Department of Planning and Environment (formerly DPIE)
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Planning, Industry and Environment
EES	Former Environment, Energy and Science Group (now Environment and Heritage Group)
EIS	Environmental Impact Statement
ESCP	Erosion and Sediment Control Plan
EMS	Environmental Management System
ENM	Excavated Natural Material, as defined in <i>The excavated natural material exemption</i>
Environmental Assessment Documentation	All environmental documentation including the EIS, Amendment report, Submissions report and all supplementary reports. Collective reference to the M12 EIS (Oct 2019), Submissions Report (Oct 2020), Amendment Report (Oct 2020), Amendment Report – Submissions Report (Dec 2020), Biodiversity M12 West and Central Consistency Assessments, Sydney Water Crossings Consistency Assessment, Design Boundary Changes Consistency Assessment, Minor Consistency

Abbreviations	Expanded text
	Assessment and supplementary reports as detailed in NSW CoA A1. Collective reference to the M12 EIS (Oct 2019), Submissions Report (Oct 2020) and Amendment Report (Oct 2020), Amendment Report-Submissions Report (Dec 2020) and supplementary reports as detailed in NSW CoA A1.
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
ESM	Environment and Sustainability Manager (TfNSW)
ESR	Environmental Site Representative (CPBGG JV)
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection Licence
ERG	Environmental Review Group
ESM	Environment and Sustainability Manager (TfNSW)
ESR	Environmental Site Representative (CPBGG JV)
EWMS	Environmental Work Method Statements
FCC	Fairfield City Council
GHG	Greenhouse Gas
GREP	NSW Government Resource Efficiency Policy
ISC	Infrastructure Sustainability Council
IS	Infrastructure Sustainability
LCC	Liverpool City Council
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007</i>
OCEMP	Overarching Construction Environmental Management Plan
OCS	Overarching Communication Strategy
OEH	Former NSW Office of Environment and Heritage; now EES
PCC	Penrith City Council
POEO Act	<i>Protection of the Environment Operations Act 1997</i> (NSW)
Planning Secretary	Secretary of the NSW Department of Infrastructure, Planning and Environment, or delegate
Primary CoA/REMM	CoA/REMM that are specific to the development of this Plan
QA	Quality Assurance
RAP	Reclaimed asphalt pavement
REMM	Revised Environmental Management Measures
Resource	Resource covers energy, fuel, oil, water and other materials used for construction of the Project
Roads and Maritime	Former NSW Roads and Maritime Services. Now Transport for NSW

Abbreviations	Expanded text
RMS	Resource Management Strategy
SEARs	Secretary's Environmental Assessment Requirements
Secondary CoA/REMM	CoA/REMM that are related to, but not specific to, the development of this Plan
SEMP	Site Establishment Management Plan
SEO	Senior Environment Officer
SMP	Spoil Management Plan
tCO₂-e	Tonnes of CO ₂ equivalent
TfNSW	Transport for New South Wales (formerly Roads and Maritime Services (RMS))
VENM	Virgin Excavated Natural Material
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i> (NSW)
Work	Any physical work to build or facilitate the building of the CSSI, including low impact work, environmental management measures and utility works. However, it does not include activities that inform or enable detailed design of the CSSI and generate noise that is no more than 5 dB(A) above the rating background level at any sensitive receiver.
WRAPP	Waste Reduction and Purchasing Policy
WSIA	Western Sydney International Airport
WSP	Western Sydney Parklands

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 M12 Motorway West Project (the Project).

An Overarching Construction Environmental Management Plan (OCEMP) has been prepared by TfNSW to address the requirements of the NSW Conditions of Approval (CoA), the Revised Environmental Management Measures (REMMs) listed in the M12 Motorway Environmental Impact Statement (EIS), Amendment Report (AR), Amendment Report Submissions Report (ARSR), all applicable legislation and Transport for New South Wales (TfNSW) Quality Assurance (QA) specifications.

This CWRMP has been prepared by CPBGG JV to address the requirements of the OCEMP, all relevant TfNSW specifications, the environmental management system (EMS), EPL conditions and legislation.

The Project has undertaken an Infrastructure Sustainability (IS) Design and As Built Rating under the Infrastructure Sustainability Council (ISC) V1.2 IS Rating Tool and part of the IS Rating energy and carbon modelling. Monitoring data was captured on the Project (i.e. fuel, electricity usage) along with the implementation of energy and greenhouse gas (GHG) reduction initiatives. This has been used to inform the As Built energy and carbon modelling and is further discussed in Section 4.4.

1.2 Background

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres and is expected to be opened to traffic prior to opening of the WSIA.

The CPB Contractors and Georgiou Group Joint Venture (CPBGG JV) has been awarded the M12 West (construct only contract) – between The Northern Road, Luddenham and about 250 metres east of Badgerys Creek.

An Environmental Impact Statement (EIS) was prepared to describe and assess the Project and recommended management measures to address impacts. As part of EIS development, a detailed waste and resources assessment was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by DPIE and the Commonwealth EIS Guidelines issued by the Commonwealth Department of the Water, Agriculture and Environment (DAWE).

TfNSW developed a Construction Waste and Resources Management Sub-plan as part of the forms part of the Overarching Construction Environmental Management Plan (OCEMP) for the M12 Motorway Project. The OCEMP has been approved by the Planning Secretary in accordance with NSW CoA C3 on 21/12/2021.

1.3 Scope of the Plan

The scope of this CWRMP is to describe how the CPBGG JV propose to manage potential waste and resource impacts during construction of the Project. A Spoil Management Plan (Appendix B), Resource Management Strategy (Appendix C) and Procurement Strategy (Appendix D) have been developed for the project and are appended to this CWRMP.

Operational waste and resources impacts and operation measures do not fall within the scope of this CWRMP and are therefore not included within the processes contained within the CWRMP.

1.4 Environmental Management Systems overview

The overall Environmental Management System (EMS) for the Project is described in Section 1.5 of the CEMP.

This CWRMP forms part of CPBGG JV's environmental management framework for the Project, as described in Section 1.5 of the CEMP.

The CWRMP should be read in conjunction with the CPBGG JV Sustainability Strategy. The Sustainability Strategy includes objectives and targets for the delivery of the Project commitments to

sustainability and that are relevant and complementary to the management measures outlined in this CWRMP.

Management measures identified in this CWRMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the EWMS.

EWMS will be prepared by the Environmental Site Representative (ESR) and reviewed by the TfNSW Environment and Sustainability Manager (ESM) (or delegate) and independent Environmental Representative (ER) prior to the commencement of the construction activities to which they apply. Construction personnel undertaking a task governed by an EWMS will undertake the activity in accordance with the mitigation and management measures identified in the EWMS.

Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by TfNSW and CPBGG JV.

The review and document control processes for this CWRMP are described in Section 3.12 and 3.13 of the CEMP. TfNSW will review this management plan to confirm consistency with the requirements of this OCEMP and specifications.

1.4.1 CWRMP preparation, endorsement and approval

This CEMP sub plan will be approved by the CPBGG JV Project Director and ESR prior to submission to TfNSW. This CWRMP has been prepared in accordance with the Overarching CWRMP.

The CEMP and Sub-Plans will go through a review and update process as described in section 3.1 of TfNSW Specification G36 to ensure the CEMP and associated documents have been developed in accordance with the OCEMP. TfNSW will provide the CEMP and all sub plans to the ER for approval prior to commencement of construction. Construction not to commence until the CEMP, sub-plans and monitoring programs have been approved by the ER.

A hold point shall be submitted in accordance with G36 Section 3.1 - Preparation and submission of CEMP. TfNSW shall consider the documents prior to authorising the release of the Hold Point. TfNSW may request additional information for inclusion in the CEMP before authorising the release of the Hold Point.

1.4.2 Interactions with other management plans

This Plan has the following interrelationships with other management plans and documents:

- The Construction Soil and Water Management Plan (CWSMP) in Appendix B8 of the CEMP addresses the erosion and sedimentation impacts associated with waste storage and handling as well as procedures for minimising water usage and managing wastewater and any contaminated waste including Acid Sulfate Soils (ASS) encountered during construction works
- The Spoil Management Plan (SMP) in Appendix B provides specific details for the management of spoil from construction works
- The Construction Contaminated Land Management Plan (CCLMP) in Appendix B3 of the CEMP provides detail for pre- and post-construction waste found within the Project footprint and disposal methods for any contaminated waste
- The Construction Flora and Fauna Management Plan (CFFMP) in Appendix B2 of the CEMP addresses reuse and recycling of green waste generated from vegetation clearing operations
- The Construction Transport and Traffic Management Plan (CTTMP) in Appendix B1 of the CEMP addresses the transportation and traffic impacts of waste transport and disposal
- The Sustainability Strategy sets out a framework covering energy management, workforce travel, resource use and procurement and water reuse
- The Water Reuse Strategy in Appendix B8 of the CEMP sets out a framework to address Environmental Assessment Documentation and Infrastructure Sustainability Council (ISC) requirements

1.5 Consultation

1.5.1 Consultation for preparation of the CWRMP

TfNSW consulted with government agencies and stakeholders during the development of the Overarching CEMP which included an overarching CWRMP. This included;

- Penrith City Council
- Liverpool City Council
- Fairfield City Council.

This CWRMP has been written in accordance with the TfSNW overarching CWRMP and no external consultation was required for its development.

1.5.2 Ongoing consultation during construction

Ongoing consultation between CPBGG JV, TfNSW and stakeholders, the community and relevant agencies regarding the management of waste and resources within the Project area will be undertaken during the construction of the Project as required. The process for the community consultation is documented in the Overarching Communication Strategy (OCS) and Community and Stakeholder Engagement Plan (CSEP).

2 Purpose and Objectives

2.1 Purpose

The purpose of this CWRMP is to describe how waste and resources will be protected and managed during construction of the Project.

2.2 Objectives

The objective of the CWRMP is to ensure that waste and resource impacts are managed appropriately throughout construction of the Project and consider mitigation and management measures referred to in:

- The Environmental Assessment Documentation prepared for M12 Motorway
- NSW Conditions of Approval (CoA) granted to the Project on 23 April 2021
- Commonwealth Conditions of Approval granted to the Project on 3 June 2021
- TfNSW Quality Assurance (QA) Specifications G01, G36, G38, G40
- EPL 21595

To achieve this objective, CPBGG JV will:

- Ensure measures are identified and implemented to minimise and manage waste and conserve energy throughout the construction of the Project outlined in Table 3-1
- Ensure the preferred waste management hierarchy of avoidance, minimisation, reuse, recycling and finally disposal, is followed in accordance with section 5.7
- Provide site personnel with an increased level of understanding and awareness of waste and resources use management as outlined in section 8.4
- Ensure appropriate measures are implemented to address the requirements of the CoA outlined in Table 3-1 and the REMMs detailed in Table 7-1.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3 of this CWRMP.

2.3 Targets

CPBGG JV are committed to ensuring the responsible management of unavoidable waste and promoting the reuse of such waste in accordance with the resource management hierarchy principles outlined in the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). The targets established for the management of waste and resources impacts during the Project are consistent with these resource management hierarchy principles, which are, in order of priority:

- Avoid the unnecessary production of waste during construction
- Resource recovery (including reuse, reprocessing, recycling and energy recovery)
- Dispose of waste materials in accordance with legislative requirements.

By adopting the above principles, the CPBGG JV aims to efficiently reduce resource use, reduce costs, and reduce environmental harm in accordance with the principles of ecologically sustainable development.

The following additional targets have been established for the management of waste impacts during construction of the Project:

- Minimise energy use and greenhouse gas emissions
- Optimise resource efficiency and waste management
- Efficiently manage water
- Minimise pollution generated by the Project.

Additionally, the Project will achieve the waste reuse / recycling targets nominated in Table 2-1, these targets are aligned with sustainability targets in Table 2-2. Performance against the waste reuse / recycling targets will be monitored monthly and reported to TfNSW in the monthly environmental report.

Table 2-1 Construction waste streams and targets

Construction activity	Material	Target description	Target
Demolition	Uncontaminated non-spoil	Beneficial reuse on site Recycling off-site	<ul style="list-style-type: none"> 100% of clean concrete will be used for beneficial reuse 100% of clean reclaimed asphalt pavement will be recycled
Excavation	Usable spoil including topsoil	Beneficial reuse on site Recycling off-site	<ul style="list-style-type: none"> 100% of uncontaminated VENM will be reused on site An average of 95% of usable spoil (non-VENM) will be reused and/or recycled across each stage
Construction	Uncontaminated non-spoil waste	Beneficial reuse on site Recycling off-site	80% of all construction uncontaminated waste (excluding spoil) reused/recycled
	Concrete	Procure goods, services, materials and works for infrastructure development and maintenance Projects that over their lifecycle deliver value for money and contribute to the environmental, social and economic wellbeing of the community	An average of 10% cement replacement material in concrete (by mass) whilst maintaining specified quality and whole-of life-costs will be used for each stage (refer to TfNSW QA Specifications B080 and 3211)
	Road base, sub-base		An average of 40% of recycled material used in granular base and sub base will be used for each stage of the Project (refer to TfNSW QA Specification 3051).
	Steel		Source from suppliers certified under Australian Certification Authority for Reinforcing Steels or similar international association or organisation
Vegetation clearance	Uncontaminated material		Beneficial reuse on site Recycling off-site
Energy use	Electricity	Minimise energy use and reduce carbon emissions without compromising the delivery of services to our customers	<ul style="list-style-type: none"> An average of 20% of renewable energy generated will be onsite and/or accredited GreenPower An average of 6% of energy use will be offset (in accordance with the Australian Government National Carbon Offset Standard) An average 10% improvement in energy efficiency versus a business-as-usual baseline.
Water use	Potable water	Minimise potable water use for the construction of the road and ancillary facilities	<ul style="list-style-type: none"> An average of 33% of non-potable water across each stage An average of 5% water (rainwater, stormwater, wastewater, groundwater) will be collected and reused / recycled / reclaimed across each stage

2.3.1 Sustainability targets

The following targets relevant to materials management, energy use and resource recovery are a minimum project requirement that respond to IS credits benchmarks which will be captured as part of the IS As Built rating. These targets have been used to develop the construction waste targets in Table 2-1. The Procurement Strategy in Appendix D articulates the processes and systems for ensuring these

targets are embedded in construction delivery, through contract requirements, subcontractor identification, evaluation, engagement and monitoring.

Table 2-2 Sustainability targets

Target	Requirement	IS credits
Percentage of usable spoil (uncontaminated surplus excavated material) reused/recycled (not including Virgin Excavated Natural Material (VENM))	95%	Was-1/Was-2
Percentage of VENM reused/recycled	100%	Was-1/Was-2
Percentage of construction and demolition waste (overall uncontaminated material excluding spoil) reused/recycled	80%	Was-1/Was-2
Recovery of clean concrete for beneficial reuse	100%	Was-1,2,3
Clean asphalt pavement reclaimed	100%	Was-1,2,3
Office waste diverted from landfill	100%	Was-1,2,3
Minimum glass content in asphalt	Wearing course 2.5% by mass (Max.of 2.5%) Base layer (other than wearing course)	Mat-1
Percentage of construction stage energy/ electricity sourced from renewable energy generated onsite and/or accredited GreenPower	20%	Ene-2
Percentage of construction stage energy use offset (in accordance with the Australian Government National Carbon Offset Standard)	6%	Ene-2
Percentage of water demand which is sourced from non-potable water sources during construction	33%	Wat-1 / Wat-2
Percentage of water (rainwater, stormwater, wastewater, groundwater, generated/collected during construction which is reused, recycled or reclaimed	5%	Wat-1 / Wat-2
Percentage of supplementary cementitious material (SCM), measured by mass, used in concrete during the construction stage	Refer to B080 (as different concrete strengths have different requirements) or QS spec 3211	Mat-1
Percentage of recycled material used in granular base and sub base during the construction stage	40% (as per QA Spec 3051)	Mat-1
Percentage improvement in construction energy efficiency versus a business-as-usual baseline	10%	Ene-1
Percentage improvement in supply chain carbon emissions intensity (including embodied energy in materials) versus a business-as-usual baseline	10%	Ene-1 / Mat -1
Percentage of office paper used on the Contract site that is high recycled content paper (50 per cent or more recycled content)	100%	Was-1
Percentage of single use and/or non-recyclable kitchen items supplied to on-site facilities	0%	Was-1
Percentage of timber to be sourced from either reused/recycled timber or from sustainably managed forests that have obtained Forest Management Certification (FMC)	100%	Mat-1 / Mat-2

The CPBGG JV Sustainability Strategy embeds sustainability objectives, commitments and targets into the Project delivery management systems. The CPBGG JV Sustainability Strategy complements the purpose, objectives and targets of the CWRMP.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this Plan is included in Appendix A1 of the CEMP. Legislation considered during the development of this Plan includes:

- *Environmental Planning and Assessment Act 1979* (EP& A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *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)
- *Dangerous Goods (Road and Rail Transport) Act 2008* (NSW)
- *Dangerous Goods (Road and Rail Transport) Regulation 2014* (NSW)
- *Contaminated Land Management Act 1997*
- *National Greenhouse and Energy Reporting Act 2007* (NGER Act)
- *Biosecurity Act 2015*
- *Environmentally Hazardous Chemicals Act 1985*.

3.1.2 Additional approvals, licences permits and requirements

Refer to Appendix A1 of the CEMP.

3.1.3 Guidelines and standards

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

- TfNSW QA Specification G36 – Environmental Protection (Management System)
- NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (Environment Protection Authority (EPA), 2014)
- Waste Classification Guidelines (EPA, 2014)
- NSW Government Resource Efficiency Policy (Office of Environment and Heritage, 2014)
- Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2008)
- Environmental Sustainability Strategy 2019-2023 (Roads and Maritime, 2019)
- Management of wastes on TfNSW land (TfNSW, 2014)
- Management of road construction and maintenance wastes (TfNSW, 2016)
- Technical Direction: Legal offsite disposal of Roads and Maritime Services waste (TfNSW, 2015)
- Technical Direction: Coal tar asphalt handling and disposal (TfNSW, 2015)
- Stockpile Site Management Guideline (TfNSW, 2011)
- Transport for NSW waste fact sheets:
 - 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
 - Waste Fact Sheet 7 - Reclaimed Asphalt Pavement
 - Waste Fact Sheet 9 - Re-use of waste off-site.

3.2 Minister's Conditions of Approval

It is noted that there are no Primary NSW CoA relevant to the development of this CWRMP. Secondary CoA relevant to this Plan have been listed in Appendix E.

3.3 Revised Environmental Management Measures

The primary REMMs relevant to the development of this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the REMM is addressed in this Plan or other Project management documents.

Table 3-1 Environmental management measures relevant to this CWRMP

ID	Measure/requirement	Timing	CWRMP Reference
W01	A Construction Waste and Resources Management Plan (CWRMP) will be prepared for the Project and outline appropriate management procedures. It will include, but not be limited to:	Prior to construction	This CWRMP
	<ul style="list-style-type: none"> • Identification of the waste types and volumes that are likely to be generated by the Project 		Section 4.1
	<ul style="list-style-type: none"> • Adherence to the waste minimisation hierarchy principles of avoid/reduce/ reuse/recycle/dispose 		Section 5.7
	<ul style="list-style-type: none"> • Waste management procedures to manage the handling and disposal of waste, including unsuitable material or unexpected waste volumes 		Section 5
	<ul style="list-style-type: none"> • Identification of reporting requirements and procedures for tracking of waste types and quantities 		Section 8.8
	<ul style="list-style-type: none"> • A Resource Management Strategy (RMS) detailing the process to identify reuse options for surplus materials 		Appendix C
	<ul style="list-style-type: none"> • A procurement strategy to minimise unnecessary consumption of materials and waste generation in accordance with relevant legislation and guidelines. 		Section 5.1
W02	A Spoil Management Plan (SMP) will be prepared for the Project as part of the CWRMP and in line with the CSWMP. The SMP will outline appropriate management procedures for the generation and importation of spoil. It will include, but not be limited to:	Prior to construction	Appendix B
	<ul style="list-style-type: none"> • Procedures for classification of spoil 		
	<ul style="list-style-type: none"> • Identification of spoil reuse measures 		
	<ul style="list-style-type: none"> • Spoil stockpile management procedures 		
	<ul style="list-style-type: none"> • Spoil haulage routes 		
	<ul style="list-style-type: none"> • Spoil disposal and reuse locations 		
<ul style="list-style-type: none"> • Imported spoil sources and volumes 			

3.4 TfNSW QA Specifications

TfNSW QA Specifications are a key source of environmental protection management processes relevant to this CWRMP.

The TfNSW QA Specifications set out the minimum requirements for the detailed outcomes in terms of quality or performance expected in the finished product for construction projects and are relevant to various construction activities on work sites to minimise impacts to the environment.

The specifications set out environmental protection requirements, including Hold Points that must be complied with by CPBGG JV during construction of the Project. A Hold Point is a point beyond which a work process must not proceed without express written authorisation from TfNSW.

The relevant TfNSW QA Specifications for the development of this CWRMP are:

- TfNSW G36 – Environmental Protection
- TfNSW G38 – Soil and Water
- TfNSW G40– Clearing and Grubbing
- TfNSW R178 – Vegetation
- TfNSW R179 – Landscape Planting
- TfNSW G1 Annexure L – Sustainability Requirements
- TfNSW G3051 – Granular Pavement Base and Subbase Materials.

Section 3.2.7 of the CEMP lists out the hold points required under G36, G38 and G40 specifications.

3.5 EPL conditions

The EPL 21595 conditions for the project relevant to waste management include the following;

Condition O5.1 The licensee must prepare and provide to the EPA a Construction Waste Management Plan (CWMP) prior to the commencement of licensed activities. The CWMP must include (at a minimum):

- a) the proposed quantities of each waste type generated on the premises for the duration of the project;
- b) the anticipated waste classification of each type of waste generated at the premises for the duration of the project in accordance with the Waste Classification Guidelines Part 1: Classifying waste (EPA, 2014);
- c) details of how and where the waste is anticipated to be reused, recycled, stockpiled or disposed of;
- d) the proposed location(s) for all waste anticipated to be stockpiled at the premises, if different from source location;
- e) details of proposed sampling and testing methods; and
- f) The licensee must consider the guidance in Construction and demolition waste: a management toolkit (EPA, 2019) when preparing and implementing the CWMP.

Condition O5.2

The licensee must keep detailed records of waste generated, received or removed from the premises that includes (at a minimum):

- a) the addresses and facility/business names of destination location(s) for all waste generated and transported off the premises for any purpose (including recycling, reuse, processing, treatment and disposal);
- b) written confirmation from each place of disposal that they can lawfully receive the types of waste proposed to be transported there;
- c) the location for all waste stored at the premises, if different from source location;
- d) details of all waste received on the premises or transported off the premises that is subject to a Resource Recovery Order and/or Exemption under the Protection of the Environment Operations (Waste) Regulation 2014, and demonstration that the waste meets the requirements of the Order and/or Exemption;

- e) legible copies of all documents/records evidencing that all waste transported from the premises was taken to a facility/premises that lawfully accept that waste type;
- f) And records of all compliance checks conducted under condition O5.4.

Condition O5.3

The CWMP must be implemented for the duration of licensed activities, and records must be updated as licensed activities progress, with the following information (at a minimum):

- a) comparisons showing the proposed waste quantities and waste types against the actual waste quantities and waste types; and
- b) Intended reuse, recycling or disposal locations against actual reuse, recycling and disposal locations.

Note: A copy of an up-to-date CWMP and records must be kept on the premises for the duration of the licence and provided to an EPA officer upon request.

Condition O5.4

The licensee must conduct monthly compliance checks of the CWMP while it is in effect (being while the licensed activities are occurring and not after) to ensure that all waste is being managed, transported, reused, recycled or disposed in a lawful manner. The compliance checks must take the form of:

- a) desktop investigations (such as contacting reuse, recycling or disposal facilities directly, reviewing waste disposal docket, reviewing exemption requirements against particular loads of waste, reviewing environment protection licences);
- b) site inspections to reuse, recycling or disposal locations; and/or
- c) Any other method approved in writing by the EPA.

Condition O5.5

The licensee must not cause, permit or allow any waste generated outside the licensed premises to be received at the licensed premises, except virgin excavated natural material or as expressly permitted by a condition of this licence or a resource recovery order and/or resource recovery exemption under the Protection of the Environment Operations (Waste) Regulation 2014.

4 Environmental Aspects and Impacts

4.1 Construction waste streams

Waste generated during construction will primarily be from civil works associated with site preparation, relocation of utilities, construction of road infrastructure and landscaping.

The following construction related waste streams have been identified during the EIS:

- Surplus construction material including fencing, geofabrics, sediment, concrete, steel, timber and sand bags
- Excavated materials including spoil
- Vegetation waste from the removal of trees, shrubs and ground cover
- Excavated spoil unsuitable for reuse including contaminated spoil
- Contaminated water
- Demolition materials including concrete, bricks, road base, tiles, timber (untreated and treated), metals, plasterboard, carpets, electrical and plumbing fittings and furnishing (doors, windows). May also include tyres, asbestos and lead paint
- General construction waste including timber formwork, scrap metal, steel, concrete, plasterboards, and packaging material (crates, pallets, cartons, plastics and wrapping material)

- Surplus construction material including fencing, sediment, gravel/crushed rock, asphalt, concrete, steel, aggregate, formwork, asphalt, landscaping material and sand bags
- Sediment and sludge within sediment basins
- General waste from site offices including putrescibles, paper, cardboard, e-waste plastics, glass, site litter, cigarette butts, printer cartridges and sewage waste
- Waste from operation and maintenance of construction vehicles and machinery including adhesives, lubricants, waste fuels, cleaning products and chemicals, and oils, engine coolant, batteries, hoses and tyres
- Clean up waste in the event of an accidental spill of fuel or chemicals.

4.2 Resource use

The main construction materials required for the Project include:

- Fill for earthworks (general and select)
- Sand and soils for landscaping
- Geotextile materials
- Pavement materials including road base and sub-base
- Materials for lining drainage channels
- Aggregate for concrete, asphalt and bitumen
- Cement and concrete and pre-cast concrete (pipes, culverts, barriers)
- Steel
- Wood for use in formwork and other temporary structures
- Water for dust suppression, compaction of excavated fill material, gravel pavements, road sweepers, office amenities and landscape establishment
- Mechanical and electrical equipment for Variable Message Signs (VMS).

4.3 Energy Use

Energy use during construction of the Project will result from the manufacture, processing and transport of materials (concrete, steel, asphalt, aggregate, timber, and piping), from the use of electricity, diesel and other fuels, waste generated, and land use and clearing.

Sources of construction related energy consumption (fuel and power) for the Project include:

- Procurement and delivery of materials to site
- Vegetation removal
- Site establishment, including compound and ancillary facility set up
- Operation of the concrete batching plant
- Relocation and protection of services
- Earthworks including earth and rock cuttings and retaining walls
- Removal, relocation and compaction of excavated material in fill embankments
- Construction of pavements, bridges and culverts
- Demolition of structures and pavements
- Operation of site compounds, ancillary facilities and lighting
- Construction plant including cranes, rollers, excavators, bulldozers, graders and water trucks
- Removal of waste from site.

4.4 Greenhouse gas emissions

The main sources of GHG emissions during construction of the Project include:

- Construction vehicles and plant
- Use of construction materials

- Vegetation clearing.

The GHG assessment presented in the Environmental Assessment Documentation was undertaken in accordance with the Greenhouse Gas Protocol (World Business Council for Sustainable Development and World Resources Institute, 2004). The Protocol provides guidance on the calculation and reporting of carbon footprints and defines three categories for GHG emissions:

- Scope 1 – direct emissions from sources that are owned or operated by a reporting organisation (e.g. combustion of diesel in company owned vehicles or used in on-site generators)
- Scope 2 – indirect emissions associated with the import of energy from another source (e.g. importation of electricity or heat)
- Scope 3 – other indirect emissions (other than Scope 2 energy imports) which are a direct result of the operations of the organisation but from sources not owned or operated by them (e.g. business travel (by air or rail) and product usage).

Table 4-1 provides a summary of the construction GHG emissions estimated for the M12 West Motorway Project based on estimated totals in the EIS Amendment Report (AR). Note that no Scope 2 GHG emissions, as defined by the GHG Protocol, are estimated for the Project.

Table 4-1 Construction emission estimates

Emission Type	Percentage of total emission (%)	Emissions of the Entire M12 Motorway Project as per the Amendment Report (tCO ₂ -e)	Estimated Emissions for the M12 West Motorway Project (tCO ₂ -e)
Scope 1 emissions	43	148,441	59,376
Scope 2 emissions	0	0	0
Scope 3 emissions	57	193,774	77,509
Total	100	342,225	136,885

4.5 Impacts

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

- Generation of large volumes of construction waste, such as excavated soil and rock
- Mixing of suitable and unsuitable material/contaminated material leading to materials that would have ordinarily been reused being rendered as waste
- Generation of vegetation waste from corridor clearing
- Generation of domestic waste from construction personnel
- Inappropriate disposal of hazardous waste
- Generation or spread of contaminated waste/soils, e.g. groundwater, used or expired chemicals, or construction materials
- Disturbance of contaminated soils
- Adverse effects on flora and fauna due to contamination of water or soils
- Water pollution due to sediment runoff from soil excavation and excess spoil storage
- Weed infestation from dispersion of seeds and so forth during clearing and access upgrading activities
- Odour impacts and increases in vermin from inappropriate general waste storage and disposal
- Consumption of non-renewable resources such as energy, diesel and other chemicals
- Greenhouse gas emissions due to consumption of energy from non-renewable resources.

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

- Excessive waste being directed to landfill
- Various type of waste being generated and stored on site, with the potential for misclassification
- Water pollution
- Land contamination.

Waste classification will be required during construction to determine appropriate soil management and disposal, as detailed in Section 5.8 and Section 5.9. All Waste sampling must occur in accordance with the requirements of the TfNSW Waste Sampling fact sheet (EFS-706).

A full list of management measures is included in Section 7 of this CWRMP.

5 Waste Management

5.1 Management of surplus material approval

Earthworks will be required for construction activities, including road construction, bridge construction and drainage. To ensure the amount of waste is minimised, earthwork requirements will be managed across the entire Project, with construction staging taking into account efficient resource use and opportunities for reusing materials to limit waste generation.

Surplus material excavated from the earthworks may consist of virgin excavated natural material (VENM) (being natural rock, soil, topsoil, sand and clay), excavated natural material (at least 98% natural soil or rock material) or excavated public road materials (typically asphalt or concrete pavement materials). Surplus material from clearing and fencing includes offcuts, timber logs, boulders, stumps, roots, undergrowth, rubbish and other debris. The preferred approach to managing surplus material is to re-use or recycle the material on-site (with the exception of contaminated material) and within the Project boundary. CPBGG JV will also investigate whether unused resources could be used on other TfNSW or Western Sydney Infrastructure Program Projects.

Unsuitable material is surplus material that cannot be used beneficially elsewhere on-site. Off-site disposal of unsuitable material will be required. Surplus material (including spoil) that is unable to be reused on-site will be transported for beneficial reuse off-site in accordance with a relevant EPA resource recovery exemption or disposed of at a licensed waste facility.

Before any surplus material is disposed off-site, it will be sampled in accordance with the requirements of the TfNSW Waste Sampling fact sheet (EFS-706). Following receipt of the sampling test results from a NATA accredited laboratory it will be classified in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (EPA, 2014) and the POEO Act.

Measures to avoid the risk of importation of pathogens or weeds into Project construction areas are included in the Construction Flora and Fauna Management Plan (refer to Appendix B2 of the CEMP).

Waste generated outside the site will not be received for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under the POEO Act, if such a licence is required in relation to that waste.

The Spoil Management Plan (Appendix B) has been prepared in accordance with relevant EPA guidelines, TfNSW QA Specifications and the TfNSW overarching Spoil Management Plan. The purpose of the Spoil Management Plan is to:

- Identify the environmental management issues associated with the sourcing, handling, transportation, stockpiling, disposal and reuse of spoil material
- Document and describe the systems and procedures developed to mitigate environmental impacts
- Provide practical measures that will be implemented during construction of the Project to minimise adverse impacts on the surrounding environment resulting from spoil management

In accordance with W01, CPBGG JV have developed a stage specific Procurement Strategy, contained in Appendix C. The strategy will minimise unnecessary consumption of materials and waste generation in accordance with relevant legislation and guidelines.

5.2 Management of cleared vegetation waste

Vegetation cleared from the Project area to facilitate construction works will be collected and reused on- and off-site wherever possible. Wherever possible, vegetation removal will be minimised. Cleared tree hollows, dead wood, dead trees, fallen logs and cleared tree trunks which provide fauna microhabitats if agreed by the TfNSW ESM (or delegate) and in consultation with local landowners and stakeholders, may be relocated under the supervision and direction of an Ecologist within the Project footprint for use in conjunction with soil erosion and sediment control measures. Native tree materials may also be reused on-site as fencing material or for other suitable purposes.

If reuse of cleared native trees and vegetation cannot be reused, CPBGG JV will consult with relevant councils, Western Sydney Parklands Trust and Landcare groups and relevant government agencies, to determine if others in habitat enhancement, beneficial re-use and rehabilitation work could use the cleared vegetation instead of other disposal options. Refer to the Habitat Compensation Plan Appendix D of the CFFMP for specific details.

Non-reusable vegetation, such as exotic plant species and priority weeds will be disposed off-site, at a licensed landfill facility. Disposal of priority weeds will be carried out in accordance with their category under the *Biosecurity Act 2015* and following Department of Primary Industry guidelines.

CPBGG JV will prepare a Clearing and Grubbing EWMS to detail the procedures for the disposal of priority weeds and exotic plants and for the recycling and disposal of all other materials from clearing and grubbing operations during construction of the Project (refer to Section 3.2.5 and Appendix B2 of the CEMP). CPBGG JV will prepare a Clearing and Grubbing EWMS before undertaking any clearing activities and submit to TfNSW under G40 Hold point 2.4.

5.3 Mulch

Native trees removed during clearing and grubbing that are not reused in conjunction with soil erosion and sediment control measures or other identified purposes will be converted to mulch and stockpiled for use during landscape planting. Native vegetation used for mulch in the landscaping works will take priority over the use of native vegetation in soil erosion and sediment control measures. Refer to the Habitat Compensation Plan Appendix D of the CFFMP for specific details.

Excess mulch will be disposed off-site for beneficial reuse where practical. Any mulch material applied or stockpiled on land must fulfil the requirements of the Mulch Exemption and the Mulch Order as if the mulch were being applied to an environmentally sensitive area. See section 5.10 for EPA resource recovery exemptions.

Preventative actions to control the potential spread of weeds will be implemented in accordance with the Construction Flora and Fauna Management Plan (refer to Appendix B2 of the CEMP).

5.4 Water

Construction activities that require the use of water, both non-potable and potable, include dust suppression, compaction of fill, pavement works, road finishing works, landscaping and use of office amenities.

Where available and practicable, and of appropriate chemical and biological quality, stormwater, recycled water or other water sources (e.g. treated water from sediment basins, harvested rainwater) will be used in preference to potable water. The Project will target to source at least 33% of non-potable water use (e.g. dust suppression, concrete mixing) from non-potable sources.

A Construction Water Reuse Strategy in accordance with REMM SWH03 has been prepared as part of the CSWMP (Appendix B8 of the CEMP). This strategy details considerations of the current and future demand of potable water within the Project corridor and consider possible alternate water sources to be used for the Project, where potable water may not be required.

5.5 Management of Asbestos

Demolition activities for construction of the Project may require disposal of asbestos pipes, conduits and pits. The EIS (Chapter 8.1) also identified Areas of Environmental Interest (AEIs) in 2017 that may potentially contain asbestos, including historical structures, fill sites and illegally dumped stockpiles. One AEI is within the M12 West construction footprint and this is AEI 19, a summary of the site is below and further detail is with the Construction Contaminated Land Management Plan (refer to Appendix B3 of the CEMP).

Table 5-1 Areas of Environmental Interest - M12 West

AEI	Site	Location	Potential contaminants of concern
19	Miscellaneous construction activities and stockpiles of building materials	Luddenham Road, Luddenham (within construction footprint)	Heavy metals BTEX Asbestos TRH OCP OPP PAH

EWMS will be prepared to document the procedure for disposal of asbestos pipes, conduits, pits, structures, fill and stockpiles in the Asbestos Management Plan. The Asbestos Management Plan is found in the Construction Contaminated Land Management Sub-Plan (refer to Appendix B3 of the CEMP). Removal of asbestos materials will be carried out by a licensed asbestos removalist (where required) holding a current licence issued by SafeWork NSW. Removal of asbestos materials must comply with the *Work, Health and Safety Act 2019* and the SafeWork Australia code of practice for '[How to Safely Remove Asbestos](#)'.

Off-site disposal of the asbestos material will be at facilities legally authorised to accept such material.

5.6 Coal Tar Management

Coal tar may be present in the existing pavement and around utilities to be removed or cold milled during construction of the Project. Coal tar is classified within the Australian Hazardous Substances regulatory regime as a Category 1 Carcinogen.

Coal Tar was not identified within the M12 West project area during previous contamination investigations. However, if coal tar is unexpectedly identified within the Project area, construction activities will cease, and the ESR will notify the TfNSW Senior Environment Officer (or delegate).

The most distinctive identifier of coal tar asphalt from bitumen is the odour given off when heated during the milling process and the friction of the milling machine releases the coal tar fumes. If potential coal tar asphalt is identified then work will cease immediately and the supervisor notified. Prior to any further work, any areas of exposed skin should be washed with soap and water and dried well. Barrier cream and SPF 30+ sunscreen should be applied to exposed skin and rubbed in well.

If required, testing of the material will be undertaken in accordance with TfNSW Test Method T542. Should coal tar be encountered during construction of the Project, the CPBGG JV will prepare stage-specific Coal Tar Management Plan in accordance with the requirements of *Technical Direction: Coal tar asphalt handling and disposal* (TfNSW, 2015) and TfNSW QA Specifications. The purpose of the Coal Tar Management Plan is to:

- Identify the environmental management issues associated with the handling, transportation, and disposal of coal tar
- Document methods for the investigation, sampling and testing of materials potentially containing coal tar, including records of surveyed locations
- Provide practical measures that will be implemented during construction of the Project to minimise adverse impacts on the surrounding environment and human health resulting from coal tar management.

The CPBGG JV Coal Tar Management Plan will include, but not be limited to, the following:

- Outline of potential sources of coal tar
- Procedure for the identification of coal tar
- Process for the testing and classification of coal tar
- Measures for the safe handling of coal tar
- Locations of off-site disposal facilities
- Process for safe transportation of coal tar
- Performance criteria
- Potential impacts associated with spoil
- Management measures and mitigation strategies relevant to spoil
- Monitoring and reporting
- Process for corrective action.

The CPBGG JV Coal Tar Management Plan will be reviewed by TfNSW for consistency with the requirements of this overarching CWRMP, the CoA and the REMMs and will be appended to this CWRMP.

5.7 Waste Management Hierarchy

The general approach to the hierarchy of waste management for the Project is in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (EPA, 2014). The waste hierarchy provides guidance on the order of preference of approaches to achieve efficient resource use, as shown in Figure 5-1. The aspects of the hierarchy applicable to the construction of the Project are outlined below.

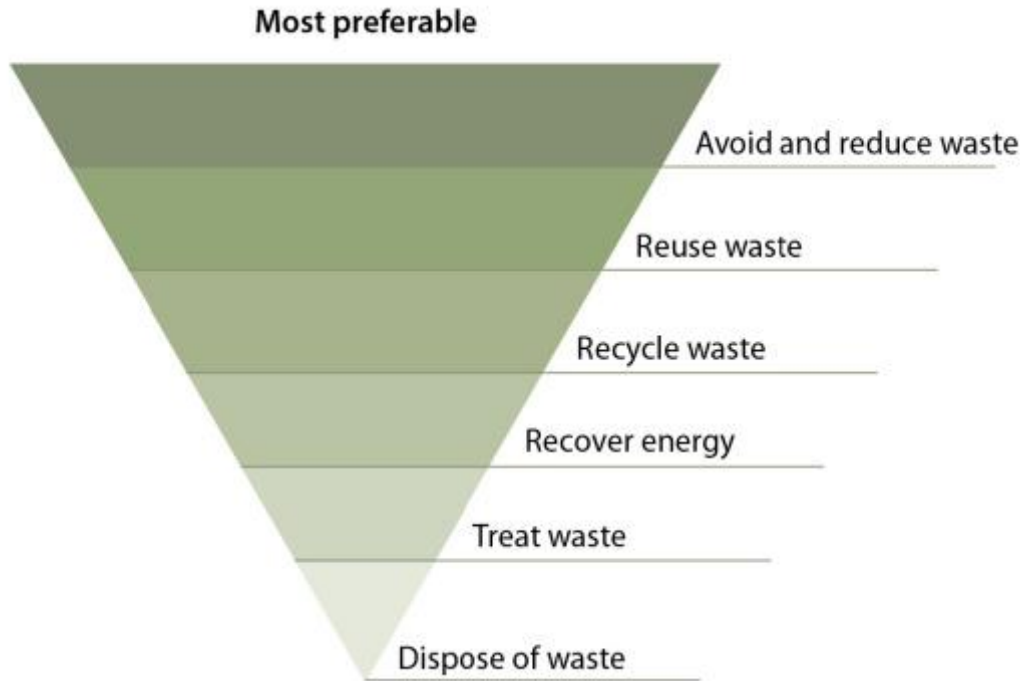


Figure 5-1 the waste hierarchy

5.7.1 Avoiding and reusing waste

Waste generation will be avoided and where avoidance is not reasonably practicable, waste generation will be reduced. This is because it preserves resources, avoids the use of additional resources to manage waste that would have been generated and aims to eliminate disposal costs. The goal is to maximise efficiency and avoid unnecessary consumption by:

- Selecting items with the least packaging or that require the least resources to produce
- Avoiding single-use materials or disposable goods
- Using products and materials that are recycled, recyclable, repairable, refillable, reusable or biodegradable.
- proposing recycled-content materials where they are cost and performance competitive and are at least the environmental equivalent of the non-recycled alternatives.

Best endeavours will be used to target at least 40% of recycled material used in road base and sub-base, whilst maintaining current quality and whole-of-life costs (Table 2-1).

5.7.2 Reuse and recycling

Where avoiding or reducing waste is not possible, waste will be reused, recycled, or recovered. Waste separation and segregation will be promoted on-site to facilitate reuse and recycling as a priority of the waste management program as follows:

- Waste segregation on-site – waste materials, including spoil and demolition waste, will be separated on-site into dedicated bins/areas for either reuse on-site or collection by a waste contractor and transported to off-site facilities
- Water recovery – in accordance with Section 5.4.

5.7.3 Waste handling and storage

Where waste is required to be handled and stored on-site prior to on-site reuse or off-site recycling/disposal, the following measures apply:

- Spoil, topsoil and mulch will be stockpiled on-site in allocated areas, where appropriate, and mitigation measures for dust control and surface water management will be implemented as per the Construction Soil and Water Management Plan (refer to Appendix B4 of the CEMP)
- Liquid wastes will be stored in appropriate containers within bunded areas until transported off-site. 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 EPA waste disposal guidelines
- If asbestos or other hazardous materials are identified, they will be managed in accordance with the CPBGG JV Asbestos Management Plan (refer to Appendix B8 of the CEMP)
- All other recyclable or non-recyclable wastes will be stored in appropriate covered receptacles (e.g. bins or skips) in appropriate locations on-site and contractors commissioned to regularly remove/empty the bins to approved disposal or recycling facilities.
- Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. These suitable areas will be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.

5.7.4 Waste disposal

Where re-using, recycling or recovering waste is not possible, waste will be treated or disposed of at a waste management facility or premises lawfully permitted to accept the materials. Disposal of waste (and spoil) will be in accordance with the POEO Act and the WARR Act. Waste that is unable to be reused or recycled will be disposed of off-site to an appropriately licenced waste management facility following classification. Waste being transported between site and/or a disposal facility will be covered. Details of waste types, volumes and destinations will be recorded in the Waste Management Register in accordance with NSW CoA E104 (a template waste management register is included in Appendix A). CPBGG JV will collect and keep legible copies of all receipts and/or weighbridge dockets from transporters and/or contractors in relation to disposal of waste from the premises.

Where CPBGG JV is to dispose of waste in an off-site location that is not a licensed waste facility (i.e. private property), the CPBGG JV will complete a section 143 notice under the POEO Act for submission to the TfNSW Environment and Sustainability Manager (or delegate). Waste in this context refers to spoil, VENM, excavated natural material (ENM), crushed rock, reclaimed asphalt pavement, mulch, waste concrete, stormwater, effluent or any other construction waste material. See section 5.10 for specific detail on EPA resource recovery exemptions. The process for applying the section 143 notice will include;

- The S143 letter, using the template in ETD 2015/020. A copy will be sent to the owner and/or occupier receiving the waste.
Evidence of legal right to receive the described waste
Monitoring the cumulative total volume of each class of waste and/or material being transferred to each individual “waste site”, to ensure that volumes will be managed to meet the requirements stated in the “s.143 Notice”.

Materials classified under the *Waste Classification Guidelines Part 1: Classifying Waste* (EPA, 2014) as hazardous during construction, including those materials outlined in Table 5-2, will be transported in accordance with the *Dangerous Goods (Road and Rail Transport) Act 2008 (NSW)*, *Dangerous Goods (Road and Rail Transport) Regulation 2014 (NSW)* and *Australian Code for the Transport of Dangerous Goods by Road and Rail* (National Transport Commission, 2008).

The NSW EPA guidelines will be followed for regulations when transporting hazardous and/or liquid wastes. An EPL and waste tracking are required to transport higher risk wastes and some liquid wastes (other than water or oil) that may be potentially hazardous or potentially harmful to human health or the environment. Tracking will occur using the NSW EPA WasteLocate in accordance with clauses 76 and

79 of the Protection of the Environment Operations (Waste) Regulation 2014. Examples of waste that will require tracking using WasteLocate are when:

- Consigning, transporting or accepting tyres with a total weight of more than 200 kilograms, or 20 or more tyres, in any single load
- Consigning, transporting or accepting more than 100 kilograms of asbestos waste, or more than 10 square metres of waste asbestos sheeting, in any single load.

5.8 Classification of waste streams

Where waste cannot be avoided, reused, recovered or recycled it will be classified and disposed of appropriately. The classification of waste will be undertaken in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (EPA, 2014) with appropriate records and disposal dockets retained for audit purposes in accordance with NSW CoA E103. Where the waste is not pre-classified and sampling is required, all sampling will occur in accordance with the requirements of the TfNSW Waste Sampling fact sheet (EFS-706). The EPA guidelines identify six classes of waste: Special, Liquid, Hazardous, Restricted Solid, General Solid (putrescible) and General Solid (non-putrescible) and describe a six-step process to classifying waste:

Step 1: Is it 'special waste'?

Establish if the waste should be classified as special waste. Special wastes include clinical and related waste, asbestos waste and waste tyres.

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

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

If it is established that the waste is not special waste it must be decided if it is 'liquid waste'. Liquid waste means any waste that: has an angle of repose of less than 5° above the horizontal, becomes free-flowing at or below 60°C or when it is transported, and 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 special or 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 must be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste (putrescible or non-putrescible). If the waste is not chemically assessed, it must be treated as hazardous.

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

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

If the waste is chemically assessed as general solid waste, a further assessment is available to determine whether the waste is putrescible or non-putrescible. The assessment determines whether the

waste is capable of significant biological transformation. If this assessment is not undertaken, the waste must be managed as general solid waste (putrescible).

5.9 Classification and management of potential waste streams

The construction activities and types of wastes which may be generated during the construction of the Project are outlined and classified in Table 5-2.

Table 5-2 Management of waste streams

Construction Activity	Waste Type	Waste Classification	Reuse options and waste management approach	Potential waste quantity requiring removal offsite
Early works (including site establishment activities, installation of office accommodation, utilities, and other facilities and minor earthworks).	Surplus construction material including fencing, geofabrics sediment, concrete, steel, timber, and sand bags	General solid waste (non-putrescible)	<p>Materials that are potentially recyclable would be disassembled and removed carefully to maximise reuse and recycling. To ensure diversion from landfill, materials would be clearly separated and stored temporarily on-site for reuse or removal to a recycling facility. Stockpiled materials would be monitored and managed in accordance with the CEMP.</p> <p>As a priority, surplus construction materials are to be stored for reuse on the Project or be transferred to other sites for use in other TfNSW Projects.</p> <p>On-site assessment/treatment of surplus construction materials, such as visual assessment, screening/removal of oversized material, mixing and moisture conditioning, would facilitate the potential reuse of this material in the Project</p> <p>In the second instance, surplus construction materials may be recycled where possible. Sending surplus materials to landfill is to be avoided where possible.</p>	<p>Surplus construction material would be reused on-site or reused at alternate TfNSW Projects</p> <p>Estimate 10T of waste that requires disposal to landfill</p>
	Excavated materials including spoil	General solid waste (non-putrescible), restricted solid waste, hazardous waste and/or special waste	<p>Excavation associated with establishment of ancillary facilities is to be minimised through selection of suitable ancillary facility locations that are as flat as possible.</p> <p>Excavated materials suitable for reuse are to be appropriately segregated and stored for future use on the Project.</p> <p>On-site assessment/treatment of these surplus construction materials, such as visual assessment, screening/removal of oversized material, mixing and moisture conditioning, would facilitate the potential reuse of this material as general fill or for landscaping.</p> <p>Earthworks waste is discussed further in the section below.</p>	<p>Minimal surplus excavated material is anticipated, as the Project would reuse excavated material where feasible</p> <p>Estimate 100T of excavated materials that are not suitable for reuse onsite due to geotechnical or contamination status</p>
Earthworks ¹ , drainage works and creek	Vegetation waste from the removal of trees,	General solid waste (putrescible)	Where possible, vegetation clearing is to be minimised through Project design.	A majority of cleared vegetation is expected to be

¹ These activities will not necessarily be carried out concurrently and will include low impact works such as investigations including archaeological and cultural salvage, minor vegetation clearing and minor excavation across the Project.

Construction Activity	Waste Type	Waste Classification	Reuse options and waste management approach	Potential waste quantity requiring removal offsite
adjustment (including topsoil stripping, cut and fill preparation, and vegetation clearance)	shrubs and ground cover		<p>Vegetation that is cleared would be mulched and reused where possible, including consideration of the Mulch Order and Mulch Exemption allowing for reuse on other TfNSW Projects. This may include the reuse of timber for fauna habitat and root balls in the rehabilitation of waterways.</p> <p>Remaining vegetation that is not reused is to be sent to an approved facility for sale or disposal. Weeds would be disposed of off-site at an appropriate licensed disposal facility (waste disposal locations are discussed in the following sections below under 'waste disposal locations').</p> <p>On-site assessment/treatment of these surplus construction materials, such as visual assessment, screening/removal of oversized material, mixing and moisture conditioning, would facilitate the potential reuse of this material as general fill or for landscaping.</p>	<p>reused on-site or on other TfNSW Projects, other than weed species.</p> <p>Estimate 10T of weed contaminated vegetation waste that requires disposal to landfill</p>
	Excavated spoil (unsuitable for reuse (including contaminated spoil))	General solid waste (non-putrescible), restricted solid waste, hazardous waste, and/or special waste	<p>Material that is identified as contaminated is to be segregated from uncontaminated material on-site to prevent cross-contamination and removed off-site to a licensed disposal facility.</p> <p>On-site assessment/treatment of surplus excavated materials, such as visual assessment, screening/removal of oversized material, mixing and moisture conditioning, would facilitate the potential reuse of this material as general fill or for landscaping.</p> <p>If asbestos or other hazardous materials are identified, they are to be disposed off-site to a licensed facility or managed in accordance with a Remedial Action Plan. Where reasonable and feasible, asbestos may be emplaced under the road pavement in accordance with a Remedial Action Plan.</p> <p>Waste disposal locations are discussed in the following sections under 'waste disposal locations'.</p> <p>The excavation, handling, storage, movement and disposal of waste material that is identified as being contaminated would be carried out in accordance with the procedures detailed in this CWRMP in accordance with the <i>Work Health and Safety Regulation 2011 (NSW)</i>.</p>	<p>Minimal excavated material is anticipated, as the Project would reuse excavated material where feasible.</p> <p>A RAP will be developed to maximise the retention of any contaminated soils onsite through approved encapsulation methods.</p> <p>Estimate 5000T of spoil that is not suitable for reuse onsite due to geotechnical or contamination status</p>
	Contaminated water (e.g. generated by a spill leading to contamination of surface water or encountering (already) contaminated groundwater)	Liquid waste	<p>Erosion and sediment controls, appropriate bunding of all chemicals and use of water quality control measures would be implemented to minimise potential risk of surface water contamination.</p> <p>Contaminated water quantities are anticipated to be negligible or minor and are to be collected and disposed of by a suitably licensed contractor. Where contaminated water can be treated, it may be reused on-site for construction activities, including dust suppression, where possible.</p>	<p>estimate 10T of water that requires to be disposed offsite to liquid waste recycling facility</p>

Construction Activity	Waste Type	Waste Classification	Reuse options and waste management approach	Potential waste quantity requiring removal offsite
Demolition of existing structures on acquired/leased land and farm structures	Demolition materials including concrete, bricks, road base, tiles, timber (untreated and treated), metals, plasterboard, carpets, electrical and plumbing fittings and furnishing (doors, windows). May also include tyres, asbestos and lead paint.	General solid waste (non-putrescible), special waste and/or hazardous waste	Concrete and bricks are to be demolished using low impact techniques where practicable, so as to maintain the structure of the material, and thus its reusability. Materials are to be disassembled and removed carefully to maximise the potential for reuse and recycling. Where practical, removed road pavement is to be re-processed and used to provide sub-pavement layers for the Project or another TfNSW Project under a waste order or exemption where applicable. Where practical, concrete is to be recycled. Remaining material is to be disposed of at an offsite facility. Waste disposal locations are discussed in the following sections below under 'waste disposal locations'. Hazardous waste is to be removed by a qualified handler for recycling or recovery of energy where possible. If asbestos or other hazardous materials are identified, they are to be managed in accordance with a Remedial Action Plan or disposed of offsite at a licenced facility.	Minimal Estimate 1000T to be disposed offsite to waste recycling facility
Construction of pavements and bridges, retaining structures, including finishing works (e.g. line marking, installation of roadside furniture, landscaping and demobilisation and rehabilitation of construction facilities and disturbed areas)	General construction waste including timber formwork, scrap metal, steel, concrete, plasterboards, and packaging material (crates, pallets, cartons, plastics and wrapping material)	General solid waste (non-putrescible)	Materials that are potentially recyclable are to be disassembled and removed carefully to maximise further reuse and recycling. To ensure diversion from landfill, waste materials are to be clearly separated and temporality stored onsite for reuse or removal to a recycling facility. Stockpiled materials would be monitored and managed in accordance with the CEMP. Where possible, the amount of packaging waste is to be minimised by avoiding the ordering of unnecessary or excess supplies and by buying in bulk. Where reasonable and feasible, cost-effective suppliers that use sustainable, recycled and/or recyclable material are to be used. Packaging waste generated is to be sorted for recycling or disposal at an approved facility. In the event of excess supplies due to accidental over-ordering or design changes, excess material would be reused, returned to the supplier or recycled where feasible. Remaining material would be disposed of at a licenced facility.	Estimate 1000T to be disposed offsite
	Surplus construction material including fencing, sediment, gravel/crushed rock, asphalt, concrete, steel, aggregate, and formwork, asphalt, landscaping material and sand bags.	General solid waste (non-putrescible)	Materials that are potentially recyclable would be disassembled and removed carefully to maximise further reuse and recycling. To ensure diversion from landfill, waste materials would be clearly separated and stored temporarily on-site for reuse or removal to a recycling facility. Stockpiled materials would be monitored and managed in accordance with the CEMP. As a priority, surplus construction materials may be transferred to other sites for use or stored for future use. In the second instance, surplus construction materials may be recycled where possible. Surplus materials would be diverted from landfill where possible.	Surplus construction material would be reused on-site or reused at an alternate TfNSW Project where possible Estimate 1500T to be disposed offsite

Construction Activity	Waste Type	Waste Classification	Reuse options and waste management approach	Potential waste quantity requiring removal offsite
			<p>On-site assessment/treatment of surplus construction materials, such as visual assessment, screening/removal of oversized material, mixing and moisture conditioning, would facilitate the potential reuse of this material in the Project</p> <p>In the second instance, surplus construction materials may be recycled where possible. Sending surplus materials to landfill is to be avoided where possible.</p>	
Temporary works including the construction of work platforms, hardstand areas, and sediment basins	General construction waste including timber formwork, scrap metal, steel, concrete, plasterboards and packaging material (crates, pallets, cartons, plastics and wrapping material)	General solid waste (non-putrescible)	<p>To ensure diversion from landfill, waste materials would be clearly separated and stored onsite, monitored and managed in accordance with this CWRMP.</p> <p>Where possible, the amount of packaging waste would be minimised by avoiding the ordering of unnecessary or excess supplies and by buying in bulk. Where reasonable and feasible, cost-effective suppliers that use sustainable, recycled and/or recyclable material would be used. Packaging waste generated would be sorted for recycling or disposal at an approved facility. In the event of excess supplies due to accidental over-ordering or design changes, excess material would be reused, returned to the supplier or recycled where feasible.</p> <p>Materials that are potentially recyclable would be disassembled and removed carefully to maximise further reuse and recycling.</p>	Estimate 800T to be disposed offsite to waste recycling facility
	Sediment and sludge within sediment basins	General solid waste (non-putrescible)	<p>Sediment removed from basins would be dewatered and may be reused on-site (e.g. in landscaping works) or in non-structural fill embankments. If the material cannot be reused on-site, it would be disposed of at an appropriately licensed facility.</p>	Any sediment/ sludge is expected to be treated and reused on-site with no requirement for offsite disposal
Activities at site offices	General waste from site office including putrescibles, paper, cardboard, e-waste plastics, glass, site litter, cigarette butts, printer cartridges and sewage waste	General solid waste (non-putrescible)	<p>Waste and recycling generated by the site offices would be source-separated into dedicated bins, such as:</p> <ul style="list-style-type: none"> • General waste • Co-mingled recycling • Paper/cardboard • Toner/cartridges • E-waste • Food waste (where practicable). <p>The segregation of recyclables from the general waste stream would maximise resource recovery and minimise materials sent to landfill. Bins will be clearly labelled and coloured to reflect the correct stream. Staff will be trained about the internal office waste management system to ensure adequate understanding across all employees.</p>	<p>Volumes of waste produced will be dependent on the number of workers onsite at any one time</p> <p>Estimate 500T disposed offsite</p>

Construction Activity	Waste Type	Waste Classification	Reuse options and waste management approach	Potential waste quantity requiring removal offsite
			Sewage will be directed to the sewage mains or pumped out for disposal at an appropriately licensed facility.	
Operation of plant and equipment	Waste from operation and maintenance of construction vehicles and machinery including adhesives, lubricants, waste fuels, cleaning products and chemicals, and oils, engine coolant, batteries, hoses and tyres	Hazardous waste, special waste, liquid waste	Liquid waste will be collected and transferred to a dedicated recycling facility where possible, to ensure diversion from landfill. Batteries will be collected and recycled by a qualified handler.	Estimate 200T for offsite disposal
	Clean up waste in the event of an accidental spill of fuel or chemicals	Hazardous waste, Liquid waste	Materials collected during clean-up will be disposed of at an appropriately licensed facility	Any waste from spills will be dependent on the size and nature of the spill Estimate 5T disposed offsite

5.10 Waste Exemption

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 and Orders that may be applicable to the Project are defined in Table 5-3 below and at [EPA Current Orders and Exemptions](#). These are general gazette exemptions that do not require approval. A specific exemption may be granted where an application is made to the EPA.

Table 5-3 Waste Recovery Exemptions and Orders, and associated conditions relevant to the Project

Exemption/Order	General Conditions	Relevant Project Waste Type
<i>Compost Exemption 2016</i>	<p>The chemical concentration or other attributes of compost listed in the Compost Exemption must not be exceeded</p> <p>The compost can only be applied to land as a soil amendment</p> <p>The consumer must ensure that they do not cause or permit the migration of leachate from the site</p> <p>The consumer must ensure that any application of compost to land occurs within a reasonable period of time.</p>	Not relevant unless project plans to import landscape materials under this exemption
<i>Effluent Exemption 2014</i>	<p>The effluent can only be applied to land for the purposes of irrigation or as a soil amendment material.</p> <p>The consumer must apply the effluent within a reasonable period of time.</p>	Sewage from office facilities will be generated on the project. This will be disposed to licenced facility
<i>Pasteurised Garden Organics Exemption 2016</i>	<p>The chemical concentration or other attributes of the Pasteurised Garden Organics (PGO) listed in the Pasteurised Garden Organics Exemption must not be exceeded</p> <p>The PGO can only be applied to land as a soil amendment</p> <p>The consumer must ensure that they do not cause or permit the migration of leachate from the land application site</p> <p>The consumer must ensure that any application of pasteurised garden organics to land occurs within a reasonable period of time.</p>	Not relevant unless project plans to import landscape materials under this exemption
<i>The Excavated Natural Material Exemption 2014</i>	<p>The chemical concentration or other attributes of the excavated natural material listed in the Excavated Natural Material Exemption must not be exceeded.</p> <p>The excavated natural material can only be applied to land as engineering fill or used in earthworks.</p> <p>ENM handling, processing and testing requirements are outlined in detail in the exemption.</p>	Spoil generated in earthworks
<i>The Excavated Public Road Material Exemption 2014</i>	<p>The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land.</p> <p>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.</p> <p>The excavated public road material cannot be applied on private land.</p> <p>The consumer must land apply the relevant waste within a reasonable period of time.</p>	Spoil generated in earthworks
<i>The Mulch Exemption 2016</i>	<p>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.</p> <p>The consumer must land apply the raw mulch within a reasonable period of time.</p>	Mulch generated from clearing
<i>The Recovered Aggregate Exemption 2014</i>	<p>The chemical concentration or other attribute of the recovered aggregate listed in the Recovered Aggregate Exemption must be met.</p>	Demolition of existing roads in project footprint

Exemption/Order	General Conditions	Relevant Project Waste Type
	<p>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:</p> <ul style="list-style-type: none"> • Construction of dams or related water storage infrastructure • Mine site rehabilitation • Quarry rehabilitation • Sand dredge pond rehabilitation • Back-filling of quarry voids • Raising or reshaping of land used for agricultural purposes and • Construction of roads on private land unless: <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. 	
<i>The Blast Furnace Slag Exemption 2014</i>	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.	Project will not generate this waste. Only relevant if proposed to import
<i>The Reclaimed Asphalt Pavement Exemption 2014</i>	Reclaimed asphalt can only be applied to land for road related activities including road construction or road maintenance	Demolition of existing roads in project footprint
<i>Treated Drilling Mud Exemption 2011</i>	<p>At the time the treated drilling mud is received at the premises, the material must meet all chemical and other material requirements for treated drilling mud which are required on or before the supply of treated drilling mud under 'the treated drilling mud order 2014'.</p> <p>The treated drilling mud can only be applied to land as engineering fill or for use in earthworks.</p> <p>The consumer must keep a written record of the following for a period of six years:</p> <ul style="list-style-type: none"> • the quantity of any treated drilling mud received; and • the name and address of the supplier of the treated drilling mud received. <p>The consumer must make any records required to be kept under this exemption available to authorised officers of the EPA on request.</p> <p>The consumer must ensure that any application of treated drilling mud to land must occur within a reasonable period of time after its receipt.</p>	Drill muds generated onsite
<i>Stormwater Exemption 2014</i>	<p>The stormwater can only be applied to land within the definitions of "application to land".</p> <p>The consumer must ensure that any application of stormwater to land must occur within a reasonable period of time after its receipt.</p>	Stormwater runoff captured on site

5.11 Illegal Dumping of waste

Illegally dumped waste is defined as the disposal of waste larger than litter on land or in water without the correct approvals (an EPL or planning approval). The CPBGG JV will actively inform NSW EPA and/or the local regional illegal dumping squad (RID Squad) of any potential fly-tipping and/or illegally dumping identified during construction.

6 Resource management and conservation

6.1 Energy conservation

CPBGG JV are dedicated to implementing energy conservation best practice and the reduction of GHG by adopting energy efficient work practices including:

- Developing and implementing procedures to minimise energy use, including:
 - Using LED and low energy equipment for signals and signage
 - Investigating options for using renewable energy sources to power electronic equipment
- Conducting awareness programs for all site personnel regarding energy conservation methods.

CPBGG JV will monitor and report on energy use during construction of the Project using the TfNSW Carbon Estimation Reporting Tool. The CPBGG JV will also prepare Quarterly Project Sustainability Reports during construction outlining actual performance against the nominated sustainability targets, the work that has been undertaken and the achievements that have been met, as well as identifying those areas where improvements were made (refer to the Sustainability Strategy).

6.2 Greenhouse gas emissions

Opportunities to reduce GHG emissions during construction exist through investigating alternative, lower embodied carbon options for construction including:

- Specifying lower embodied energy concrete, for example concrete that contains less Portland cement (which would be replaced with fly-ash) for lower strength concrete applications
- Specifying recycled steel which has about half the embodied emissions of virgin steel
- Using modern diesel engine equipment, to ensure highest fuel efficiency ratings
- Construction plant and equipment will be well maintained to maximise fuel efficiency
- Using biofuels (e.g. biodiesel, ethanol, or blends such as E10 or B80) which can considerably reduce the GHG emissions for construction equipment
- Reporting on and aiming to achieve compliance with air emissions standards for mobile non-road diesel plant and equipment as per the NSW Government Resource Efficiency Policy
- Reviewing cut and fill balances for earthworks to minimise transportation distances for materials
- Reviewing local options for import and export of fill materials to reduce transportation distances
- Preparing a construction workforce travel plan to reduce travel emissions
- Limiting vegetation clearance where feasible and revegetating with native species
- Taking a whole of life costing approach to identify and implement a range of opportunities with a financial payback of four years or less
- Use of on-site renewables i.e. solar
- Purchasing of green power
- Procuring of locally manufactures goods/ materials.

CPBGG JV would identify those opportunities that are reasonable and feasible to reduce the Projects GHG emissions to meet the sustainability targets outlined in the Sustainability Strategy.

7 Environmental Control Measures

A range of environmental requirements and management measures are identified in the Environmental Assessment Documentation, and relevant TfNSW documents. Specific measures and requirements to address waste impacts are outlined in Table 7-1.

Table 7-1 Waste, energy, and water management and mitigation measures

ID	Management Measure	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
WR1	The waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose will be used.	Prior to construction, during construction and operation	ESR	CoA E100	Section 5.7
WR1a	Remove any rubbish on the Site at the start of Work Under the Contract. Additionally, as part of this initial rubbish removal, remove any rubbish within 500 mm of existing surface levels on, or within, the limits of clearing defined in G40 Clauses 2.1, 2.2 and 2.3 whenever undertaking topsoil stripping.	Prior to construction, during clearing	ESR Project Manager Foreman/Site Supervisor	TfNSW G40	EWMS for clearing and grubbing
WR2	A Waste Management Register will be developed prior to any waste generation.	Prior to construction	ESR	CoA E104 TfNSW G36	Section 5.7.4 Appendix A – Template Waste Management Register
WR3	All wastes, including contaminated wastes, will be identified and classified in accordance with the EPA's <i>Waste Classification Guidelines: Part 1 Classifying Waste</i> .	During construction	ESR	CoA E103 REMM SC08	Section 5.8
WR4	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	During construction	ESR	REMM W03	Section 6
WR5	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	During construction	ESR Superintendent	REMM W04	Section 5.7.3
WR6	The Spoil Management Plan will be implemented for the Project as part of the CWRMP and CSWMP.	During construction	ESR	REMM W02	Appendix B – Spoil Management Plan
WR7	An annual Waste Avoidance and Resource Recovery Report will be prepared and submitted to TfNSW.	During construction	ESR	TfNSW G36	Section 8.8
WR8	Comply with s143 of the POEO Act when transporting and/or depositing of waste.	During construction	ESR	TfNSW G36	Appendix B – Spoil Management Plan
WR9	The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste will comply with the conditions of the current EPL for the Project, or be done in accordance with a Resource Recovery Exemption or Order issued under the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> .	During construction	ESR Superintendent	CoA E101	Section 5.10

ID	Management Measure	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
WR10	Waste will 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 <i>Protection of the Environment Operations (Waste) Regulation 2014</i> , or to any other place that can lawfully accept such waste.	During construction	ESR Project/Site Engineer Foreman/Site Supervisor	CoA E102	Section 5.10 Section 5.7.4
WR11	Prior to taking possession of any area of land nominated by the TfNSW as available for use by you for locating your site facilities, including areas for construction materials storage and stockpiling, arrange for a pre-construction land condition assessment of each area you intend to occupy. The submission of this Pre-construction Land Condition Assessment (PCLCA) is required by the G36 Hold Point Section 4.15.2 The purpose of the pre-construction land condition assessment is to identify any existing waste or stored materials on the land prior to the area being occupied by you. The pre-construction land condition assessment must be undertaken by an independent environmental consultant approved by the Principal, with experience in site environmental inspections and construction waste management.	Pre-construction	TfNSW ESR Project Manager	TfNSW G36	Site Establishment Management Plan (SEMP) Pre-construction Land Condition Assessment (PCLCA)
WR12	Where TNSW has authorised the use of other areas of the TfNSW's land, additional to those nominated, carry out the pre-construction land condition assessment of each area. Obtain, at your own cost, the necessary statutory and environmental planning approvals for the intended use of the land. Submit to TfNSW a report of the pre-construction land condition assessment for each area of land, prior to TfNSW granting approval for you to take possession of the area(s). The report must be in the format detailed in the TfNSW Environmental Procedure "Management of Wastes on Roads and Maritime Services Land". (A copy of this procedure is available at: http://www.rms.nsw.gov.au/documents/about/environment/environment-waste-on-rms-land-procedure.pdf)	Pre-construction	TfNSW ESR Project Manager	TfNSW G36	Site Establishment Management Plan (SEMP) Pre-construction Land Condition Assessment (PCLCA)

ID	Management Measure	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
WR13	<p>When the areas of TfNSW's land used for the CPBGG JV site facilities are no longer required, and after restoration of the areas in accordance with G36 Clause 4.16, arrange for a post-construction land condition assessment for each area that has been used.</p> <p>The purpose of the post-construction land condition assessment is to verify that that no unauthorised project waste remain on the land to be returned to TfNSW. The land condition assessment must be undertaken by an independent environmental consultant approved by the Principal.</p>	Post-construction	ESR Project Manager	TfNSW G36	<p>Site Establishment Management Plan (SEMP)</p> <p>Post-construction Land Condition Assessment</p>
WR14	<p>Prior to Completion, CPBGG JV will restore any areas disturbed (such as areas for site compounds, material storage, access and haul roads and the provision of the TfNSW's project accommodation) to a condition similar to that existing before disturbance, unless authorised otherwise by the Principal.</p> <p>Restoration includes, but is not limited to; removal of extraneous excavated materials (such as but not limited to imported earthworks materials, aggregates, concrete, loose rock, surplus spoil), unused construction materials and other wastes including rubbish.</p>	Construction	ESR Project Manager	TfNSW G36	<p>Site Establishment Management Plan (SEMP)</p> <p>Post-construction Land Condition Assessment</p>
WR15	Make any necessary arrangements to enable continuity of provision of services, such as garbage or recycling waste collection and mail delivery	During construction	Project Manager Foreman/Site Supervisor	TfNSW G10	<p>Traffic Management Plan</p> <p>Traffic Control Plans</p>
WR16	All ground cover slashings will be removed, recycled or disposed in a legally and environmentally responsible manner from the Site. All planting areas will be sprayed with approved herbicide and leave for two weeks before commencing excavation	During construction Prior to landscaping	ESR Project/Site Engineer Foreman/Site Supervisor	TfNSW R179	Landscaping contract
WR17	All rubbish and debris will be removed within the area of landscape planting, and recycled or disposed of in a responsible manner, the Site will be left in a clean and tidy condition.	During construction Prior to landscaping	ESR Project/Site Engineer Foreman/Site Supervisor	TfNSW R179	Landscaping contract
GHG1	Implement the Vegetation Clearing Procedure (Appendix C of the CFFMP) to minimise vegetation removal	During construction	ESR Project Manager Construction Manager Foreman/Site Supervisor	REMM GG03	Section 6.2

ID	Management Measure	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
GHG2	The procurement of goods and services will consider goods and services that: <ul style="list-style-type: none"> • Are from local suppliers • Make use of recycled materials or materials with a low embodied energy content. • Are energy efficient or have low embodied energy • Minimise the generation of waste. 	During construction	ESR Project Manager Construction Manager	REMM GG04	Section 6
GHG3	Construction plant and equipment will be well maintained to maximise fuel efficiency.	During construction	Superintendent Foreman/Site Supervisor	REMM GG05	Section 6.1

8 Compliance management

8.1 Roles and responsibilities

The Project organisational structure and overall roles and environmental responsibilities are outlined in Section 3.3.1 of the CEMP. Specific responsibilities for the implementation of construction waste and energy management measures are detailed in Section 7 of this CWRMP.

8.2 Communication

The CPBGG JV will adhere to the requirements as outlined in the OCS. The OCS identifies opportunities and tools for providing information and consulting with the community and stakeholders during the construction of the Project. The CSEP supports the OCS.

Waste and resources management information will be communicated to the community and stakeholders in accordance with the principles and procedures outlined in the OCS and CSEP where required.

Further detail about the CCS and CSEP is provided in Section 3.7.3 of the CEMP.

8.3 Complaints Management

A Complaints Management System (CMS) has been developed to document the overall approach to complaints management for the Project. The project team will adopt the requirements of the CMS, including reporting requirements. The CMS will include a Complaints Register which will record the details of all complaints relating to the Project.

Further detail about the CMS is provided in Section 3.7.5 of the CEMP.

8.4 Training

To ensure that this CWRMP is effectively implemented, all site personnel (including sub-contractors) will undergo site induction training relating to waste and energy management issues before construction commencing. The induction training will address elements related to waste and energy management, including:

- Existence and requirements of this CWRMP and all plans and procedures prepared under the CWRMPs
- Relevant legislation and regulations
- Incident response, management and reporting
- Waste reporting requirements
- Waste minimisation principles
- Requirements of the waste hierarchy
- Waste/recycle storage requirements
- Best practice energy efficiency
- Equipment start up and shut down procedures
- Location of refuse and recycling bins
- Other specific responsibilities for waste and reuse management
- Other specific responsibilities for energy management.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in waste and energy management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

The ER will review and approve the induction and training program before the commencement of construction and will monitor implementation.

Daily pre-start meetings conducted by the Foreman/ Site Supervisor will inform the site workforce of any environmental issues relevant to waste and energy that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are provided in Section 3.5 of the CEMP.

8.5 Monitoring and Inspection

The ESR will carry out regular monitoring and inspections of activities with the potential to generate waste for the duration of construction of the Project. Table 8-1 outlines the monitoring and inspection activities that will be undertaken during construction by CPBGG JV, and waste contractor.

Weekly and other routine inspections by the TfNSW ESM, Environmental Review Group (ERG) representatives and ER will occur throughout construction. Detail on the nature and frequency of these inspections are documented in Section 3.9 and Appendix A8 of the CEMP.

Table 8-1 Program for waste and energy monitoring and inspections

Item	Frequency
CPBGG JV	
Undertake waste and energy inspections and record on the environment checklist, including inspections for litter, unauthorised disposal of construction waste, contamination of waste streams and adequacy of capacity of waste receptacles	Weekly
Maintain and document the types and volumes of wastes generated, re-used, recycled and disposed of	Daily/as required
Document the locations of stockpiled and stored waste	Daily/as required
Develop a Waste Management Register prior to any waste collected for disposal and/or recycling until final completion in accordance with the TfNSW G36 Specification	Prior to any work and then monthly
Verify licences and permits for handling, transporting and disposal of wastes prior to disposal of waste offsite in accordance with TfNSW QA Specifications	prior to disposal of waste off-site
Keep records of waste contractors and landfill facilities used to ensure waste management can be traced from cradle to grave	Monthly
Carry out waste management and energy use audits to assess extent of waste hierarchy and identify/address energy wastage and to assess compliance with waste targets / performance criteria	Six-monthly
Record results of any soil, surface or groundwater sampling	As required
Maintain and record resource usage during construction work (e.g. energy, water, fuel, oil, etc)	Monthly
Waste Contractor	
Maintain and document the types and volumes of wastes collected recycled and disposed of. Provide monthly reports on waste removal and disposal activities.	When waste is collected and report on a monthly basis

Requirements and responsibilities in relation to monitoring and inspections, additional to those identified in Table 7-1 and Table 8-1 are documented in Sections 3.3.1, 3.9 and Appendix A8 of the CEMP.

8.6 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of waste and energy management measures, and compliance with this CWRMP, CoA and REMMs, and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3. of the CEMP.

The sustainability management plan outlines the IS rating requirement for independent waste audits by a suitably qualified professional for waste management with at least five years' waste management experience, or a NABERS Assessor, or equivalent. These audits will occur at least annually and include review of compliance for waste management to final destination for wastes sent offsite.

8.7 Non-Conformances

A non-conformance is the failure or refusal to comply with the requirements of Project system documentation, including this CWRMP. Any member of the CPBGG JV Project team may raise a non-conformance or improvement opportunity.

When a non-conformance is detected, the process described in Section 3.10 of the CEMP will be implemented. The Quality Plan describes the process for managing non-conforming work practices and initiating corrective/preventative actions or system improvements in accordance with the process outlined in Section 3.10 of the CEMP.

8.8 Reporting and identified records

Reporting requirements and responsibilities are documented in Section 3.9 and Appendix A8 of the CEMP.

CPBGG JV will maintain accurate records substantiating all construction activities associated with the Project or relevant to the conditions of approval, including measures taken to implement this CWRMP. Records must be made available to the DPE and DAWE upon request, within the timeframe nominated in the request.

CPBGG JV will collect and keep legible copies of all receipts and/or weighbridge dockets from transporters and/or contractors in relation to disposal of waste from the premises.

Waste contractors will report regularly on their waste management practices. The ESR will relay the required information through regular reporting to TfNSW and other stakeholders as required. Waste and energy use records will feed into the sustainability reporting under the Sustainability Strategy. Refer to the Sustainability Strategy for further detail.

Table 8-2 outlines the reporting requirements for TfNSW, CPBGG JV and waste contractors.

Table 8-2 Waste reporting requirements

Item	Frequency
CPBGG JV	
Monthly waste register provided to TfNSW (prepared in accordance with the template in App A)	Monthly
Records of resource usage during construction work (e.g. energy, water, fuel, oil, etc.) in the Quarterly Project Sustainability Report provided to TfNSW (refer also to the Sustainability Strategy)	Quarterly
Records of energy use and emissions in the Quarterly Project Sustainability Report provided to TfNSW (refer also to the Sustainability Strategy)	Quarterly
Records of waste management, take-back, and recycling in the Quarterly Project Sustainability Report provided to TfNSW (refer also to the Sustainability Strategy)	Quarterly
Waste Avoidance and Resource Recovery Report in accordance with TfNSW WA Specification G36/F provided to TfNSW	Annually
Waste Contractor	
Service provider waste reports provided to CPBGG JV	Monthly

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
- Identify environmental risks not already included in the risk register
- 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.

The ESR will be responsible for ensuring Project environmental risks are identified and included in the risk register and appropriate mitigation measures implemented throughout the construction of the Project as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in Section 3.2.1 of the CEMP.

9.2 CWRMP update and amendment

The processes described in Section 3.9, 3.10 and 3.12 of the CEMP may result in the need to update or revise this CWRMP. This will occur as needed.

Any revisions to this CWRMP will be in accordance with the process outlined in Section 3.13 of the CEMP.

A copy of the updated Plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure (refer to Section 2.1 of the CEMP).

Appendix A – Template Waste Management Register



Waste tracking register

										Tonne	m3	Classification (G36)
										0.00	0.00	
												Aggregates
												Asphalt
												Building and Demolition Materials (mixed)
												Concrete
												Fill
												Glass
Waste Tracking Register												
Docket Date	Source Location (Lat/ Long - Lot area)	EPA Waste Classification (Docket)	EPA Resource Recovery Exemption (if applicable)	Waste Type	Classification (G36)	Haulage & Disposal Company	Tipping location (Lat/ Long - Lot area)	EPL for Receiving Facility	Reused / Recycled Y/N	EPA Controlled tracking number for liquid and special waste	Quantity of material (T) use conversion tab	

Import Material Tracking tab

Date	Docket #	Name of Waste Transporter	Truck Rego	Source (Lat / Long)	Destination / Facility (Lat / long)	Classification Ref	Address	Material Type (VENM/ ENM/ GSW)	Waste Classification (EPA Waste Classification Guidelines)	Re-used, recycled, stockpiled, disposed	G36 Spec Hold Point No.	EPL Licence No	Budget Owner	Cost Code	Loads	Rate/T	T

Appendix B – Spoil Management Plan

Appendix C – Resource Management Strategy

Appendix D – Procurement Strategy

Appendix E – Secondary CoAs and REMMs

Secondary CoAs

CoA No.	Condition Requirement	Document reference
E15	<p>Prior to vegetation clearing, the Proponent must identify where it is practicable for the CSSI to reuse native trees and vegetation that are to be removed. If it is not possible for the CSSI to reuse all removed native trees and vegetation, the Proponent must consult with the relevant council(s), Western Sydney Parklands Trust and Landcare groups and relevant government agencies to determine if:</p> <ul style="list-style-type: none"> (a) Hollows, tree trunks, mulch, bush rock and root balls salvaged from native vegetation impacted by the CSSI; and (b) Collected plant material, seeds and/or propagated plants from native vegetation impacted by the CSSI, could be used by others in habitat enhancement, beneficial re-use and rehabilitation work, before pursuing other disposal options 	Section 5.2 CFFMP App D

CoA No.	Condition Requirement	Document reference
E100	<p>Waste generated during Work and operation must be dealt with in accordance with the following priorities:</p> <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 5.7

CoA No.	Condition Requirement	Document reference
E101	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 5.10 Section 3.5

CoA No.	Condition Requirement	Document reference
E102	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, except in accordance with Condition E15.	Section 5.10
E103	All waste generated by Works must be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes	Section 5.8

CoA No.	Condition Requirement	Document reference
E104	<p>The Proponent must develop and implement a waste tracking register prior to waste generated by Work that details:</p> <ul style="list-style-type: none"> (a) The quantity of each type of waste generated, its classification and source location (recorded using latitude and longitude coordinates); (b) The destination location(s) for all wastes generated during construction; (c) The quantities of any waste types imported onto the CSSI site, including their classification and emplacement location (recorded using latitude and longitude coordinates); (d) The quantities and types of wastes that are subject to a Resource Recovery Order and/or Exemption; and (e) Disposal records demonstrating that receiving facilities have lawfully accepted the waste type. <p>The waste tracking register must be made available to the Planning Secretary and EPA on request, within the timeframe stated in the request.</p>	Section 5.7.4 Appendix A

Secondary REMMs

ID	Revised environmental management measure	Timing	Document Reference
SC03	<p>A contaminated land management plan (CLMP) will be prepared for the project. The CLMP will include:</p> <ul style="list-style-type: none"> Control measures to manage identified areas of contamination, including surface soils in the vicinity of TP303, TP304, TP310 and TP311 containing heavy metal and PAH concentrations Procedures for unexpected contamination Measures to manage potential ASS (as required based on testing results) within sediments of the creeks in the construction footprint to minimise impacts to the environment Requirements for excavation of unexpected contaminants to be carried out in consultation with project Remedial Actions Plans Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014. 	Prior to construction	CCLMP Section 5.5
SC08	All waste will be classified in accordance with the NSW EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Prior to and during construction	Section 5.8
SWH03	A water reuse strategy will be developed for both construction and operational phases of the project to reduce reliance on potable water. This strategy will be prepared during the detailed design stage and implemented throughout the project and will outline the construction and operational water requirements and potential water sources to supply the water demand in consultation with Sydney Water. Alternative water supply options to potable water will be investigated, with the aim of reusing water using recycled water where feasible	Prior to and during construction	Section 5.4 Appendix F of CSWMP
W03	Wherever feasible and reasonable, construction material will be sourced from within the Sydney region.	During construction	Table 7-1
W04	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage	During construction	Section 5.7.3 Table 7-1

ID	Revised environmental management measure	Timing	Document Reference
GG03	Vegetation removal will be minimised where practicable.	During construction	CFFMP Table 7-1
GG04	The procurement of goods and services will consider goods and services that: <ul style="list-style-type: none"> • Are from local suppliers • Make use of recycled materials or materials with a low embodied energy content. • Are energy efficient or have low embodied energy • Minimise the generation of waste 	During construction	Table 7-1
GG05	Construction plant and equipment will be well maintained to maximise fuel efficiency.	During construction	Section 6.2