CopperString 2.0

Waste management

Volume 2 Chapter 12

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12. Waste Management

12.1 Introduction

12.1.1 Project overview

The Project involves the construction and operation of approximately 1,060 km of extra high voltage overhead electricity transmission line that will extend from Mount Isa to the Powerlink transmission network, via a new connection point near Woodstock, south of Townsville.

The Project involves construction of seven new substations at Woodstock, Hughenden, Dajarra Road (Cloncurry), Mount Isa, Selwyn, Cannington Mine and Phosphate Hill Mine.

The CopperString transmission network is divided into the following eight sections as shown in Figure 12-1:

1. Woodstock Substation
2. Renewable Energy Hub
3. CopperString Core
4. Mount Isa Augmentation
5. Southern Connection
6. Cannington Connection
7. Phosphate Hill Connection
8. Kennedy Connection (option).

12.1.2 Objectives

This chapter of the Environmental Impact Statement (EIS) aims to ensure that the construction and operation of the Project achieve the following:

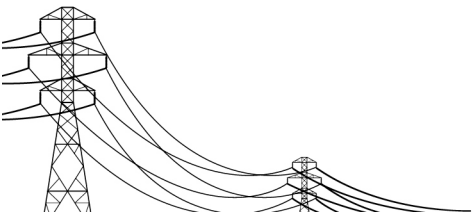
- Waste transported, generated, or received as part of carrying out the Project is managed in a way that protects all environmental values.
- Contributions to waste infrastructure upgrades (if required) are negotiated with CuString Pty Ltd and included in the project funding.

12.1.3 Purpose of chapter

This chapter assesses the potential impacts of waste generated by the Project on both existing waste management infrastructure and on the environment. The assessment is required to address the requirements of Sections 12.57, 12.58 and 12.59 of the Terms of Reference (ToR) for the EIS.

The scope of this report is defined by the following:

- Describe existing Council operated waste management infrastructure in the region (Section 12.3)
- Describe waste generating activities, types and quantities associated with the Project phases from construction through to decommissioning (Section 12.4)
- Propose measures to avoid or mitigate impacts to existing waste infrastructure and environmental values (Section 12.5)



This report is for all wastes with the exclusion of wastewater, which is included in Volume 2 Chapter 9 Water Resources and Water Quality.

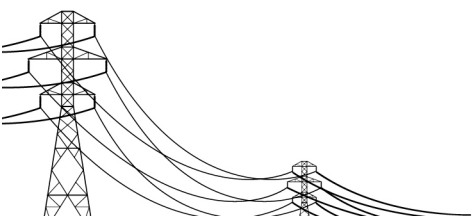
12.1.4 Defined Terms

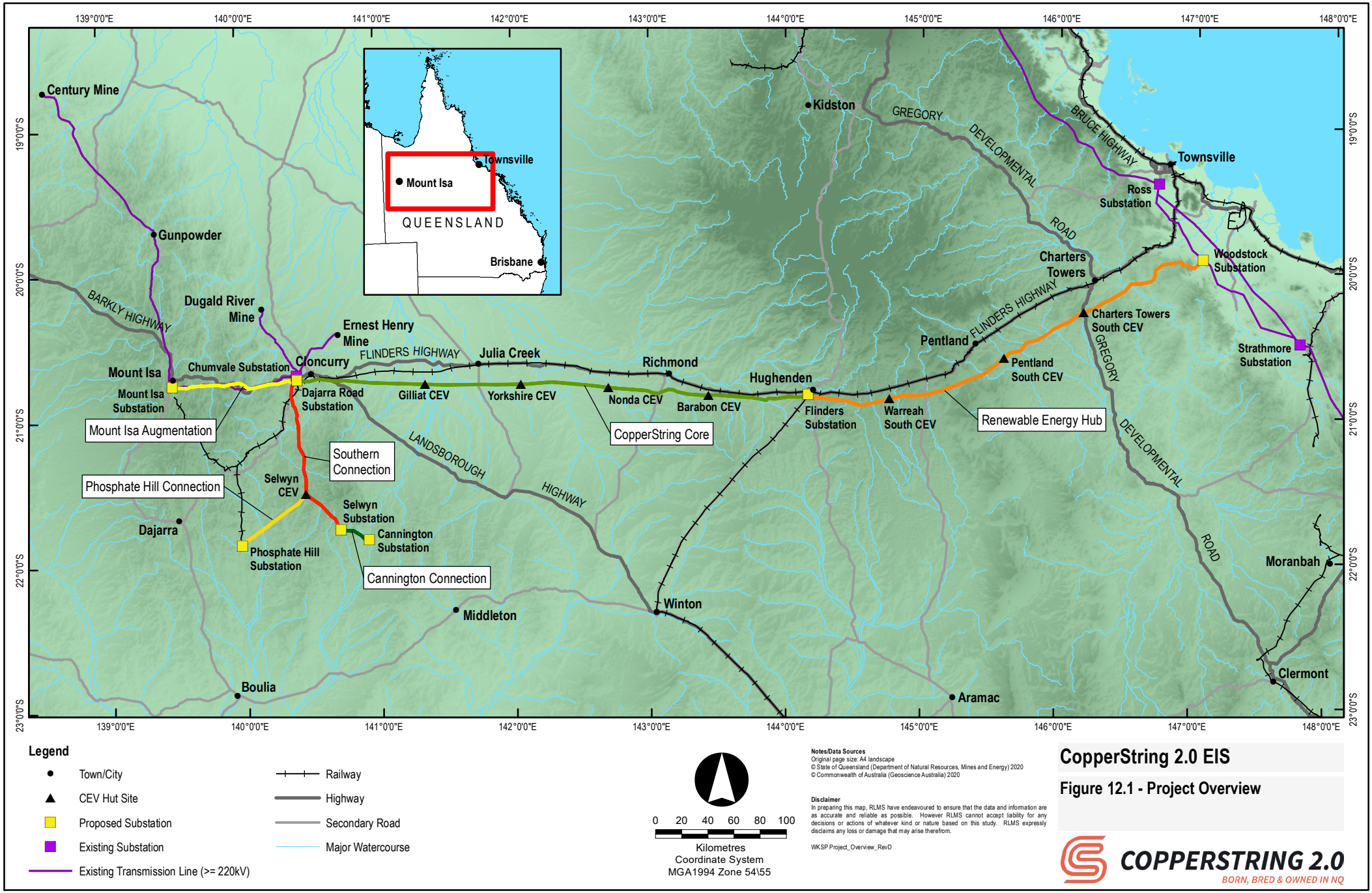
The following are a list of defined terms utilised throughout this chapter.

Corridor selection: The baseline investigation corridor being a nominal 1,000 km long corridor transmission line alignment including a 120 m wide easement for the 330 kV transmission line from Woodstock to Dajarra Road, and 60 m wide for the 220 kV transmission lines from Dajarra Road to Mount Isa, Dajarra Road to Chumvale Substation, Dajarra Road to Selwyn, and Selwyn to Phosphate Hill and Cannington.

Study area: As defined by individual technical studies in the methodology section or by default the 5 km wide study corridor defined in the Initial Advice Statement and referred to in the EIS ToR.

Project area: The 120 m or 60 m wide easement and associated infrastructure (including laydown areas, substations, CEV huts, access tracks, brake and winch sites and construction camps) and works referred to in the EIS ToR (these include off-easement components).





Legend

- Town/City
- CEV Hut Site
- Proposed Substation
- Existing Substation
- Existing Transmission Line (>= 220kV)
- Railway
- Highway
- Secondary Road
- Major Watercourse

0 20 40 60 80 100

Kilometres

Coordinate System
MGA1994 Zone 54\55

Notes/Data Sources
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WKSP Project_Overview_RevD

CopperString 2.0 EIS

Figure 12.1 - Project Overview

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12.2 Methodology

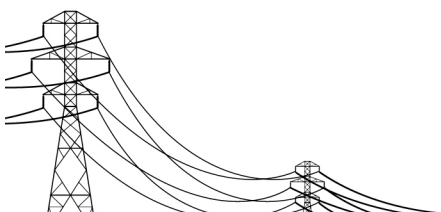
12.2.1 Study area

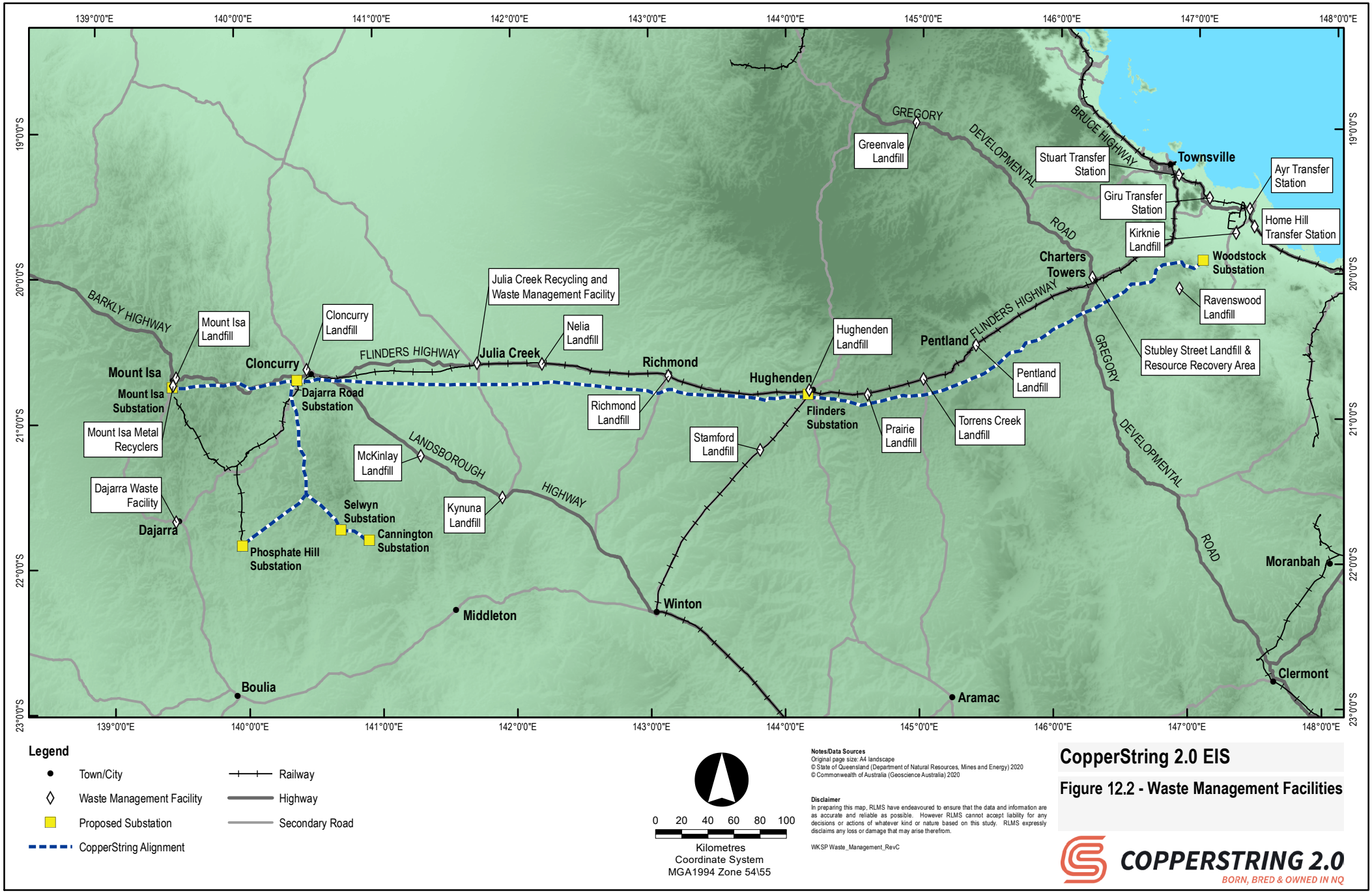
For the purpose of this waste management chapter, the study area includes the Project area as well as the seven local government areas (LGAs) through which the corridor selection traverses, with the addition of Townsville City Council via which major deliveries and staging would occur (refer Figure 12-2).

12.2.2 Data sources

The following data sources were used as part of this assessment:

- Transfer Stations and Landfills - Townsville City Council (2020)
- Waste Management Facilities - Burdekin Shire Council (2020)
- Waste Disposal Facilities - Charters Towers Regional Council (2020)
- Waste Management - Flinders Shire Council (2020)
- Refuse Management - Richmond Shire Council, 2020
- Waste - McKinlay Shire Council (2020)
- Waste Facility - Cloncurry Shire Council (2020)
- Refuse Tip - Mount Isa City Council (2020)
- Public waste and recycling facilities in Queensland - Queensland Government (2020a)
- Environmental authorities register - Queensland Government (2020b)
- RLMS, 2010. CopperString Draft Environmental Impact Statement, Volume 1 – Introduction
- RLMS, 2010. CopperString Draft Environmental Impact Statement, Volume 2 Chapter 10 – Waste.





Notes/Data Sources
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Figure 12.2 - Waste Management Facilities

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12.2.3 Legislative context and standards

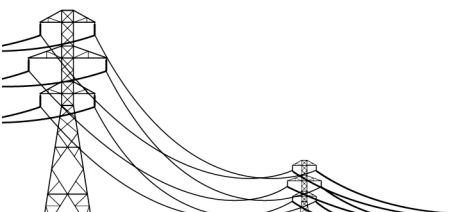
The following legislation is relevant to undertaking waste management throughout all Project phases and underpins the waste avoidance, reduce, reuse and recycling measures to be implemented:

- Waste Management and Resource Recovery Strategy (the Waste Strategy): Queensland's new Waste Strategy is supported by the introduction of a waste disposal levy and provides the strategic framework for Queensland to become a zero-waste society through avoidance, reduction and reuse/recycling (Queensland Government 2020c).
- Queensland Waste Levy (the Waste Levy): In addition to the Waste Strategy goals, the waste levy aims to provide a source of funding to enable better resource recovery practices, provide certainty and security of feedstocks for advanced technology, and facilitate industry investment in resource recovery infrastructure (Queensland Government 2020d). The waste levy is paid to the Queensland Government by landfill operators (local councils and private businesses) based on the amount of waste disposed to landfill. The levy can then be passed through to landfill operator customers. Within the study area, the waste levy applies to the LGAs of Burdekin Shire Council, Townsville City Council and Mount Isa City Council.
- *Waste Reduction and Recycling Act 2011* (Waste Act) and *Waste Reduction and Recycling Regulation 2011* (Waste Regulation): Queensland's legal framework that contains a suite of measures to reduce waste generation and landfill disposal and encourage recycling. The legislation provisions the Waste Strategy and Waste Levy along with other measures such as local government waste management planning, and littering and illegal dumping offences.
- *Environmental Protection Act 1994* (EP Act) and *Environmental Protection Regulation 2019* (EP Regulation) - Queensland's legal framework which provisions:
  - Risk-based regulated waste classifications including Category 1 regulated waste (highest risk), Category 2 regulated waste (moderate risk) and not-regulated waste/general waste (lowest risk).
  - Schedule of waste-related Environmentally Relevant Activities (ERAs) including ERA 53 Organic material processing, ERA 54 Mechanical waste reprocessing, ERA 55 Other waste reprocessing or treatment, ERA 57 Regulated waste transport, ERA 60 Waste disposal, ERA 61 Thermal waste reprocessing and treatment and ERA 62 Resource recovery and transfer facility operation.
  - Trackable waste obligations (i.e. generator, handler and receiver) and associated waste codes.

12.2.4 Assessment method

A desktop assessment was undertaken in order to define existing waste facilities and corridor selection related waste estimates and categories. Following this, an impact assessment was undertaken in order to inform waste management measures in a way that protects all environmental values and local government waste infrastructure.

Waste quantities and compositions are based on information provided by CuString and its proposed execution methodologies. Where specific data was not available for the assessment, generic information of similar activities from other relevant projects has been used to complete the evaluation. It has been noted where this approach has been applied.



12.3 Existing environment

12.3.1 Overview of existing waste management facilities

The corridor selection traverses seven LGAs, each with their own waste management facilities (refer Figure 12-2). Waste generated throughout all phases of the project may be managed using a combination of these existing council waste facilities and private enterprises (e.g. metal recyclers, construction and demolition recyclers, organic processors, battery recyclers, tyre recyclers, paint recyclers and large waste treatment and management companies such as Veolia, JJ Richards and Cleanaway).

For the purpose of this assessment, consideration has not been given to waste facilities receiving domestic waste only. Domestic waste is generally defined as waste resulting from ordinary use of a domestic premise taken by the occupant or collected by or on behalf of a council, and such facilities may require proof of residency. Commercial waste is generally defined as waste produced by business and commerce, and comprises a range of waste types including, but not limited to, regulated waste, mixed waste and general waste which includes all other waste that is not regulated.

The following provides an overview of all existing local government waste management facilities within the relevant LGAs, with the addition of Townsville City Council, through which major deliveries and staging would occur. Information was obtained through review of publicly available information including council websites and Environmental Authorities with consideration to waste classifications under the EP Regulation.

Townsville City Council

Waste management facilities open for commercial waste are summarised in Table 12-1.

Table 12-1 Townsville waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Stuart Waste Facility 24 Vantassel Street, Stuart	General waste Regulated waste	100,000 to 200,000	7 days	6:30 am to 5:45 pm

The Stuart Waste Facility is a Townsville City Council (TCC) waste management facility. It is located approximately 67 km from KP20. The landfill and transfer station accepts general and regulated waste types including:

- Construction and demolition mixed waste (metals, timber, concrete)
- Commercial and industrial mixed waste
- Batteries
- Tyres

Paints, solvents and chemical waste are not accepted by this facility. The licenced local operator for recycling of these wastes is Cleanaway.

Burdekin Shire Council

Waste management facilities open for commercial waste are summarised in Table 12-2.

Table 12-2 Burdekin waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Ayr Transfer Station Railway Street, Ayr	General waste Regulated waste	-	7 days	9:00 am to 5:00 pm
Home Hill Transfer Station Bojack Road, Home Hill	General waste Regulated waste	-	7 days	10:00 am to 5:00 pm
Giru Transfer Station Cromarty Creek Landing Road, Giru	General waste Limited regulated waste	50 to 2000	Friday to Sunday	3:00 pm to 6:00 pm
Kirknie Landfill 1608 Kirknie Road, Home Hill	General waste Limited regulated waste	20,000 to 50,000	Monday to Friday Saturday	8:00 am to 4:30 pm 8:00 am to 12:00 pm

Kirknie Landfill is a Burdekin Shire Council (BSC) waste management facility. It is located approximately 46 km from KP00. The landfill accepts general waste and regulated waste types including:

- Construction waste (scrap metal, concrete, asphalt)
- Tyres

- Asbestos

During consultation with BSC, it was indicted that the Kirknie Landfill currently receives 8,000 tonnes of waste annually and would have sufficient capacity to receive waste from the Project.

Charters Towers Regional Council

Waste management facilities open for commercial waste are summarised in Table 12-3.

Table 12-3 Charters Towers waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Stubley Street Landfill & Resource Recovery Area 1 Stubley Street, Toll	General waste Limited regulated waste	10,000 to 20,000	7 days	8:00 am to 5:00 pm

Stubley Street Landfill is a Charters Towers Regional Council Shire Council (CTRC) waste management facility. It is located approximately 23 km from KP100. The landfill accepts general waste and limited regulated wastes including:

- Solid inert waste
- Construction and demolition waste
- Industrial waste
- Batteries
- Tyres (commercial tyres must be shredded, tyres accepted up to and including truck tyres excludes bobcat, forklift, tractor grader, loader, dump truck tyres)
- Batteries are stored onsite and must be recycled.

During consultation with CTRC, it was indicted that the Stubley Street Landfill currently receives 13,000 tonnes of waste annually and would have sufficient capacity to receive waste from the Project.

Flinders Shire Council

Waste management facilities open for commercial waste are summarised in Table 12-4.

Table 12-4 Flinders waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Hughenden Landfill McLaren Street, Hughenden	General waste Regulated waste	<50,000	Monday to Friday Saturday to Sunday	8:00 am to 11:00 am 3:00 pm to 6:00 pm 8:00 am to 11:00 am 2:00 pm to 6:00 pm

Hughenden Landfill is the Flinders Shire Council (FSC) waste management facility. It is located approximately 1 km from KP77 and 4 km from KP342. The landfill accepts general waste and limited regulated waste types including:

- Construction and demolition waste
- Industrial waste
- Solid inert waste
- Sludge and residue form water and sewage treatment plants
- Tyres

Recycling of waste from the facility by third parties includes:

- Scrap metal
- Batteries
- Green waste
- Mineral oil

During consultation no advice was provided by FSC on current capacity to receive waste from the Project. The appointed Construction Contractor(s) will need to confirm capacity with FSC to accept Project waste, during the pre-construction phase.

Richmond Shire Council

Waste management facilities open for commercial waste are summarised in Table 12-5.

Table 12-5 Richmond waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Richmond Waste Disposal Facility Saleyard Road, Richmond	General waste Regulated waste	<50,000	7 days	6 am to 6 pm

During consultation no advice was provided by Richmond Shire Council on current capacity to receive waste from the Project. The appointed Construction Contractor(s) will need to confirm capacity with FSC to accept Project waste, during the pre-construction phase.

McKinlay Shire Council

Waste management facilities open for commercial waste are summarised in Table 12-6. Facilities within McKinlay Shire Council are only able to accept small volumes of waste no further consideration was given to utilisation of the waste management facilities in Table 12-6.

Table 12-6 McKinlay waste management facilities

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Julia Creek Recycling and Waste Management Facility Old Normanton Road, Julia Creek	General waste Limited regulated waste	50 to 2,000	Monday to Friday	7:00 am to 3:30 pm

Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Kynuna Landfill Landsborough Highway, Kynuna	General waste Limited regulated waste	50 to 2,000	Monday to Friday	7:00 am to 3:30 pm
McKinlay Landfill Landsborough Highway, McKinlay	General waste Limited regulated waste	50 to 2,000	Monday to Friday	7:00 am to 3:30 pm
Nelia Landfill Bunda Road, Nelia	General waste Limited regulated waste	50 to 2,000	Monday to Friday	7:00 am to 3:30 pm

Cloncurry Shire Council

Waste management facilities open for commercial waste are summarised in Table 12-7.

Table 12-7 Cloncurry waste management facilities

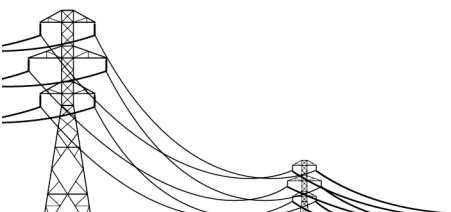
Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Cloncurry Landfill Burke Developmental Road, Cloncurry	General waste Regulated waste	2,000 to 5,000	7 days	8:00 am to 12:00 pm 1:00 pm to 6:00 pm
Cloncurry Regulated Waste Facility Zingari Road, Cloncurry	General waste Regulated waste	<50,000		

Cloncurry Landfill and Cloncurry Regulated Waste Facility are the Cloncurry Shire Council (CSC) waste management facilities. They are located approximately 9 km from KP726. The landfill accepts general waste including:

- Green waste
- Metal
- Construction and demolition waste

No liquid waste can be accepted at the CSC waste facility.

During consultation no advice was provided by CSC on current capacity to receive waste from the Project. The appointed Construction Contractor(s) will need to confirm capacity with CSC to accept Project waste, during the pre-construction phase.



Mount Isa City Council

Waste management facilities open for commercial waste are summarised in Table 12-8.

Table 12-8 Mount Isa waste management facilities

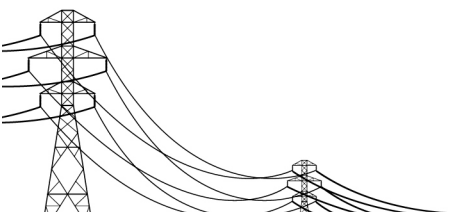
Facility & Address	Waste Accepted	Facility Capacity (EA allowance) (tonnes/year)	Opening Days	Opening Hours
Mount Isa General and Regulated Waste Disposal Facility Jessop Drive, Mount Isa	General waste Regulated waste	<50,000 100,000 to 200,000	7 days	7.30 am to 4.45 pm

Mount Isa General and Regulated Waste Disposal Facility is the Mount Isa City Council (MICC) waste management facility. It is located approximately 9 km from KP98.599DM. The landfill accepts general and regulated waste for disposal and various waste for recycling including:

- Batteries – wet or dry
- E-waste
- Metal – all types (ferrous and non-ferrous)

No liquid waste can be accepted at the MICC waste facility. Licenced local operators for recycling of liquid wastes include JJ Richards and Cleanaway.

During consultation no advice was provided by MICC on current capacity to receive waste from the Project. The appointed Construction Contractor(s) will need to confirm capacity with MICC to accept Project waste, during the pre-construction phase.



12.4 Project generated waste

12.4.1 Description of waste generating activities

The following section reviews and describes the different waste generating activities and the expected waste associated with construction, operation and decommissioning of the Project.

Design and pre-construction

The pre-construction activities (i.e. planning and design) would be similar to other infrastructure projects essential for progression of the Project to construction phase. Waste would comprise primarily of commercial office waste from design activities, which would include paper, plastic and packaging. Waste at this phase is expected to be minimised through current best practice commercial office operations (i.e. digital reporting and design, recycling and shredding and disposal where confidential).

The majority of the specialised equipment for the Project would be sourced from overseas suppliers, most of whom are represented either in Queensland or elsewhere in Australia. Vendors would be expected to comply with local regulations, policies and practices, which can differ at overseas manufacturing locations to those in force in Queensland and in Australia. The approach to managing environmental impacts at this phase is through procurement policies and practices, whereby there would be an expectation of best practice waste management. These normally require the supplier and/or manufacturer to provide waste management documentation and certification to Australian or International standards (e.g. AS/NZS ISO 14001:2004 – Environmental management systems). The selection process then includes careful consideration of the Project Environmental Management Plan (EMP) standards and certifications, as well as a review of the environmental performance record of the vendor (appropriately weighted with preference going to those with superior environmental management credentials). Auditing during manufacture and/or supply assures satisfactory compliance.

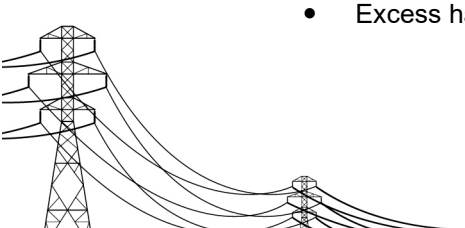
Construction

Waste generating activities associated with construction activities is likely to include:

- Clearing of the corridor selection (as required), access roads, laydown areas, camp sites (if required), concrete batch plants, substation sites and CEV hut sites
- Earthworks from site preparation
- Installation of foundations, transmission towers and lines
- Construction of substations and CEV huts
- Erection and dismantling of camp sites and associated facilities
- Establishment and decommissioning of laydown/delivery, storage and associated facilities
- Rehabilitation of camps sites, concrete batch plant sites, laydown/delivery compounds and construction sites

The above activities are expected to produce wastes such as:

- Green waste
- Soil and rock spoils from foundations
- Explosives (if required for use or encountered in UXO areas)
- Excess hardstand, gravel, crushed rock, gabion-style rock



- Reinforcing steel off-cuts
- Waste concrete
- Broken porcelain or glass insulators
- Used or rejected welding rods and welding waste
- Excess of faulty fixing materials and hardware
- Waste from disused paints and protective coatings
- Fire retardants and discarded extinguishers
- Fencing materials
- Faulty or broken electrical and electronic equipment
- Conductor and cable waste
- Copper or aluminium cables
- Spillage of fuels, lubricants, paints, solvents, cleaning agents and other similar materials
- Possible leakage of insulating oil
- Herbicides, pesticides and biocides
- Packaging material (timber, metal straps and plastic)
- Waste materials from operating and maintaining the fleet of construction vehicles, plant and equipment
- Miscellaneous waste including packaging, safety equipment and other personal effects.

The earthworks are assumed to be balanced cut to fill, except in areas where natural soils are unfit for this purpose. In areas of high mineralisation of sulfide ores, there is potential for acid sulfate soils or soils in contact with acids to be prevalent. If such soil types are encountered it is assumed that the corridor selection would avoid construction and installation of towers and associated facilities in these areas.

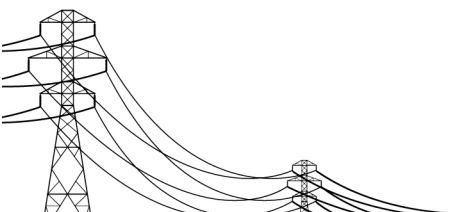
During construction, there are several specific waste generating activities which are further described below. These include operation of all associated camp facilities, construction laydown/delivery facilities and concrete batch plants.

Construction camp facilities

Construction camps are required for most construction zones and would comprise of demountable structures. The demountable structures would be able to be disassembled and reassembled as the corridor selection infrastructure develops. This would provide sleeping, kitchen, dining (mess), laundry and ablution facilities for workers. Camps would include onsite backup diesel-based power generators.

Where required a single power generator may be used for both camp facilities and storage sites by placing the power generator plant between these sites. This would reduce the number of power generators and fuel storage facilities required, reducing the number of potential spill sites and facilitate efficient management of waste produced at these facilities.

Camp facilities would likely include administration offices as well as small store and workshop facilities. These facilities would help support the maintenance of the camp. However, if the camp is located adjacent to laydown/delivery and storage compounds a single common workshop may be used for maintenance for both types of facilities.



Waste generated from the operation and maintenance of workforce accommodation camps include:

- Food and kitchen waste
- Commercial office waste
- Washroom waste
- Grease trap and oil interceptor waste
- Packaging material
- Lubricants, solvents and cleaning materials
- Damaged components, furnishings and fittings
- Batteries
- Organic solvents and paint materials
- Herbicides, pesticides and biocides
- Surfactants and general cleaning materials
- Fire retardants and extinguishers, primarily dry chemical or CO_2
- General workshop waste
- Waste from general maintenance of camp facilities including fixing materials such as timber, wall and floor, linings and coverings, as well as plumbing and electrical fittings, fixtures and hardware material.
- Miscellaneous waste such as clothing, safety equipment and other personal effects.

Laydown/delivery areas and stores

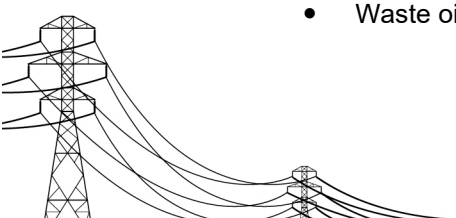
All equipment and materials, such as foundation reinforcing steel, components and sub-assemblies of transmission tower lattice and drums of power cables and conductors would be delivered by truck and stored in secure laydown/delivery areas. Laydown/delivery sites would be associated with the construction zones and substation sites. Minor vehicle workshops would also be incorporated into laydown/delivery areas for the maintenance of machinery and the vehicle fleet.

Secure store facilities would be included in the laydown/delivery areas to keep smaller and vulnerable components, including spacers and insulators. Stores would also be utilised to hold other construction and fixing equipment and materials, such as small construction equipment and hand tools, as well as touch-paint and other protective coatings.

Fuel depots and refuelling stations are expected to be established within the laydown/delivery and storage areas for security and management reasons. All fuel storage areas would comply with relevant codes and standards for flammable materials. Fuel dispensing areas would be designed to facilitate spill management and clean up.

Waste generated at the laydown/delivery areas includes:

- Packaging materials
- Metal offcuts
- Used fuel and lubricant containers
- Spillage and clean up materials
- Waste oils, coolants, hydraulic fluids and cleaning fluids



- Paints and solvents
- Faulty parts (batteries and possibly tyres)
- Oily rags
- Fire retardants and extinguishers primarily dry chemical or CO_2
- General workshop waste
- Miscellaneous waste such as clothing, safety equipment and other personal effects.

Construction facilities

Construction facilities would be located along with the laydown/delivery areas and would include onsite workshops, construction offices, mess rooms and ablutions. These facilities would be in demountable huts that would be able to be moved along the construction route as the construction phase advances.

Refuelling of mobile plant and equipment would occur at these sites. Generally, fuel is expected to be delivered by truck, however some would be delivered in 200 L drums and stored appropriately in these areas.

Waste generated from construction facilities includes:

- Commercial refuse (offices)
- Lubricants
- Used fuels and lubricant containers
- Used parts and unserviceable tools
- Oily rags
- Spillage and clean-up materials
- Packaging materials
- Miscellaneous cleaning agents
- Miscellaneous waste such as clothing, safety equipment and other personal effects.

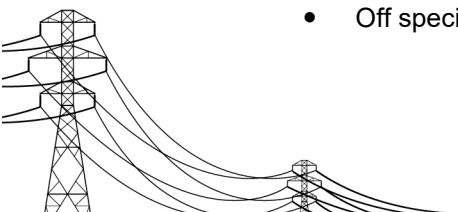
Concrete batching plants

Concrete batch facilities would include the plant equipment, workshops, administration offices and facilities for cleaning waste collection, delivery and storage of raw materials. The primary waste source, being material collected from cleaning the plant and equipment, is recyclable. The material can be collected and recycled unless there are unacceptable levels of contamination. Any contaminated waste would be stored separately and disposed in appropriate landfills.

The concrete batch contractor would be required to prepare an EMP that would include its proposed policies and procedures prior to commencing operation of the concrete batch plant. The management plans would be reviewed by CuString to ensure its compliance with the Project's EMP.

Waste generated by operation of the concrete batch plants includes:

- Commercial refuse (offices)
- Unused concrete materials collected from cleaning equipment (conveyors and concrete mixers)
- Off specification materials



- Spillage and cleaning materials (raw material or wet concrete)
- Miscellaneous cleaning agents
- Workshop waste from maintaining the batch plant and delivery vehicles
- Miscellaneous waste such as clothing, safety equipment and other personal effects.

Decommissioning of construction facilities

Once construction is completed, all temporary facilities associated with construction, such as camps, laydown/delivery areas and any other onsite works would be dismantled, removed and disposed. Construction Contractor(s) constructing and operating the temporary construction camps would be responsible for decommissioning the facilities, subject to contractual requirements.

All sites utilised for temporary facilities would be returned to their former land use, in accordance with the agreed terms and conditions with the landholder, and with the Project EMP. Landscaping may be required to return the sites to their original condition (refer to Volume 3 Appendix T Concept Rehabilitation Plan).

Where possible, waste generated from decommissioning would be reused (sold or donated) or recycled at licensed recycling facilities and would only be disposed of in a suitable licenced landfill as a last resort.

Commissioning

The commissioning of the Project infrastructure would include the energisation and testing of the transmission network and components, thus shall not generate any waste. Dielectric sulphur hexafluoride (SF_6) gas is required to fill high voltage circuit breakers during initial commission. Large transformers are typically transported after the oil has been partly or full drained, the unit sealed and pressurised with dry air or nitrogen gas that would be vented after installed so the unit can be filled with mineral oil.

If waste is produced, it would likely be from faulty or broken components discovered during testing. These components would be removed and replaced, and would be returned to the supplier/manufacturer, recycled or disposed at suitable licensed facilities.

Operation and maintenance

CuString aims to optimise maintenance costs, reliability and public safety. CuString would achieve this aim by engaging industry best practice. This includes waste minimisation and effective waste management to ensure cost effective maintenance and operation of the transmission network.

Operational activities are not generally required onsite of the corridor selections or at substations and CEV huts, but would be controlled via data and communication links with a network control centre. It is expected that the network control centre would house approximately 15 personnel and would generate only small amounts of commercial office waste.

The transmission network would require ongoing maintenance throughout its operation. Maintenance would be carried out when required. Regular inspections of the corridor selection and access tracks would be conducted via 4WD vehicles as well as aerial inspections via helicopter.

The major maintenance activities that would take place includes access track and vegetation management, as well as maintenance and replacement of transmission, substation or communications components. Replacement would be required when component faults occur or

when components reached their anticipated design life. Disused components would be recycled or disposed at suitable licensed facilities.

Catastrophic events such as failure of a transmission tower (such events typically include a number of adjacent towers) or other major components that require construction activities to be replaced. If such an event were to occur, the above waste generation from construction can be referred to.

Waste generated by the operation and maintenance of the Project includes:

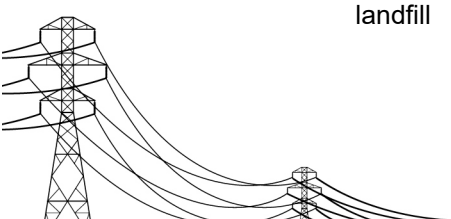
- Green waste
- Excess hardstand, gravel, crushed rock and other erosion controls
- Broken porcelain or glass insulators
- Faulty or broken components
- Faulty or unserviceable electronic control equipment
- Used or rejected welding rods and welding waste
- Excess or faulty fixing materials and hardware
- Waste from disused paints and coatings
- Fire retardants and discarded extinguishers
- Fencing materials
- Conductor and cable waste
- Spillage of fuels, lubricants, paints, solvents, cleaning agents and other materials
- Possible leakage of oil from transformers or replacement of contaminated oil
- Possible leakage of gas from SF6 insulated equipment or replacement of contaminated gas
- Herbicides, pesticide and biocides
- Packaging materials
- Miscellaneous waste including safety equipment and other personal effects.

Decommissioning the facility

At the conclusion of the Project's life, all infrastructure is required to be decommissioned. Demolition of the Project would generate large amounts of waste. Decommissioning would include the removal of the transmission network infrastructure in accordance with relevant standards and applicable legislation. If no further transmission lines were planned for the corridor selection, then the corridor selection would be surrendered and returned in an acceptable condition with regard to the existing land use in the area. However, due to the expected extended life of the Project, actions associated with the Project decommission are not addressed in detail. These actions would be addressed prior to the commencement of the decommissioning phase in line with the contemporary regulatory framework.

The decommissioning would typically be completed in reverse as follows:

- Conductors and earth wire would be lowered and wound into drums for recycling
- Towers would be broken down into suitably sized sections and transported for recycling at a licensed contractor
- Footings would be cut below ground level, rubble removed and disposed of at suitable landfill



- Electrical components that contain insulation media, such as oil or SF6 gas, would have the media extracted, contained and recycled or disposed of at a suitably licenced regulated waste facility
- Transformers, reactors and capacitor banks containing copper windings or plates would be recycled or disposed of at recycling facilities.

12.4.2 Description of waste types and characteristics

Waste types are based on the Volume 1 Chapter 2 Project Description and classifications listed under the EP Regulation. The EP Regulation defines waste as either regulated or non-regulated (general). Regulated wastes are of high (Category 1) or moderate (Category 2) risk and non-regulated waste are low risk materials. Trackable wastes are types of regulated wastes which are required to be tracked. The summary of waste classifications and characteristics expected to be generated by the Project are found in Table 12-9.

The power transformers and shunt reactors in the substations would utilise electrical insulating oils that do not contain polychlorinated biphenyls (PCBs). PCBs can have serious impacts on the environment and agriculture as they can bioaccumulate in the fatty tissues of animals.

The Project would use hazardous materials that are commonly associated with industrial and construction applications. The use and storage of these materials would be in accordance with relevant legislation and safety data sheets (SDS). A summary of the hazardous materials likely to be utilised by the Project, including environmental considerations are summarised in Volume 2 Chapter 17 Hazards, Health and Safety.

The construction camps would not contain asbestos or any other respirable fibres that may be regulated under *Workplace Health and Safety Act 2011*.

Table 12-9 Classification of waste types, codes and characteristics

Description	Waste Type	Waste Code	Waste Characteristics
Green waste	General	N/A	Non-hazardous, solid
Bottles and cans	General	N/A	Non-hazardous, solid
Conductor and cable waste	General	N/A	Non-hazardous, solid
Electronic components	General	N/A	Non-hazardous, solid
Food waste	General	N/A	Non-hazardous, solid & liquid
Foundation spoil	General	N/A	Non-hazardous, solid
Hardstand gravel/crushed rick	General	N/A	Non-hazardous, solid
Miscellaneous waste	General	N/A	Non-hazardous, solid
Non-plastic packaging materials	General	N/A	Non-hazardous, solid
Paper and non-plastic office materials	General	N/A	Non-hazardous, solid
Porcelain or glass insulators	General	N/A	Non-hazardous, solid
Steel	General	N/A	Non-hazardous, solid
Drums	Regulated	N/A	Non-hazardous / Combustible (depends on contents), solid, liquid residue remaining internally
Explosives	Regulated (Category 1)	E120	Explosive, liquid
Hydrocarbons (including emulsions)	Regulated (Category 2*)	J120	Flammable, liquid

Description	Waste Type	Waste Code	Waste Characteristics
Oil waste	Regulated (Category 2*)	N/A	Combustible, solid & liquid
SF6 gas	Regulated (Category 1*)	N/A	Stable, non-flammable, explodes on contact with disilane, reacts with sodium, gas
Contaminated soils	Trackable / Regulated	Subject to contaminant(s) and associated classification	
Fire debris and fire washwaters	Regulated (Category 1*)	N140	-, solid & liquid
Grease trap waste	Trackable (Category 2*)	K110	Putrescible, solid & liquid
Lead acid batteries	Trackable (Category 2*)	D220	Corrosive, solid & liquid
Mineral oil (including Transformer oil)	Trackable (Category 2*)	J100	Combustible, liquid
Oil interceptor waste	Trackable (Category 2*)	J120	Combustible, liquid
Organic solvents and paint materials	Trackable (Organic solvents Category 1*) (paints Category 2*)	G110	Flammable, liquid
Surfactants	Trackable (Category 2*)	M250	Non-hazardous, liquid
Tyres	Trackable (Category 2*)	T140	Combustible, solid

** default regulated waste category. Category 1 = highest risk, Category 2 = moderate risk.*

12.4.3 Waste quantities

Waste quantity estimates were calculated for the Project using information from the Volume 1, Chapter 2 Project Description, anticipated work force size and calculations from other relevant construction projects. Where data was unavailable for calculation of waste volumes, the CopperString 1.0 Project EIS waste volume is presented (refer Table 12-10).

Waste estimate quantities are generally expressed as average quantities and nominal amounts. The likelihood of significant change to the composition and nature of the waste streams is low and can be considered reasonably representative. Unless a specific waste stream has the potential to create severe impacts by either its nature or quantity, a sensitivity and impact analysis is not necessary. In such cases, an assessment would consider the plausible upper bound in both quantity and likelihood of this occurring. No such waste streams have been identified at any phase throughout the Project.

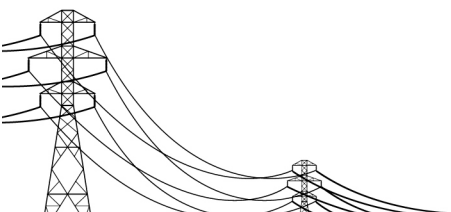
Table 12-10 Waste estimates

Waste Description	Returned, reused or recycled	Landfill
Construction and Operation		
Cleared vegetation (m^3)*	90,000	-
Excess spoil (m^3)	5,600	-
Waste concrete (m^3)	5,250	-

Waste Description	Returned, reused or recycled	Landfill
Wood materials, pallets, earth wires drums, insulator packaging, boxes (m^3)	600#	-
Plastic bags and packaging (m^3)	-	75#
Paper, cardboard packing and boxes (m^3)	-	250#
Steel conductor drums (items)	3000	-
Scrap conductors (m^3)	550	-
Excess steel (including tower pieces, off cuts, nuts, bolts, etc) (tonne)	1660	-
Food (m^3)	-	1,500
Glass, steel, PET and aluminium containers (m^3)	300	-
Hydrocarbon waste (regulated) (kL)	6	-
Detergent (regulated) (kL)	-	2#
Tyres (limit regulated) (tonnes)	166	-
Paints and solvents (regulated) (m^3)	-	5#
Batteries (regulated) (kg)	900	-
Contaminated soil from oil spills (regulated)(m^3)	-	10
Contaminated soil (regulated) (m^3)	-	20,000#
Oil & grease drums (regulated) (m^3)	2#	-
Fuel drums (regulated) (items)	60	
Vehicle filters (air filters, fuel filters, oil filters), brake pads (tonne)	14	
Grease trap waste (regulated)	Included in food waste#	Included in food waste#
Herbicides and pesticides (regulated) (L)	-	200#
Miscellaneous construction and camp waste (t)	350	550
Decommissioning		
Waste concrete (m^3)	11,300#	-
Wood materials, pallets, boxes (m^3)	-	600#
Scraped substation equipment (t)	2,000#	-
Recovered SF6 gas (kg)	1,500	-
Control rooms and associated furniture/fittings (m^3)	-	150#
Transformer oil (m^3)	1,080#	-
Steel conductor drums (m^3)	17,000#	-
Scrap conductors (km)	12,700	-
Steel (m^3)	80,000	-
Glass, steel, PET and aluminium containers (m^3)	50#	-
Hydrocarbon waste (regulated) (kL)	20#	-
Tyres (limit regulated) (m^3)	0.5#	-
Batteries (regulated) (m^3)	0.2#	-
Contaminated soil from oil spills (regulated) (m^3)	-	50#
Oil and grease drums (regulated) (m^3)	2#	-
Miscellaneous waste (regulated) (t)	100#	50#

** conservative estimate assuming clearing for corridor selection, towers, CEV huts, substations, brake/winch areas, laydown and construction camps*

 # value calculated for CopperString 1.0 Project EIS

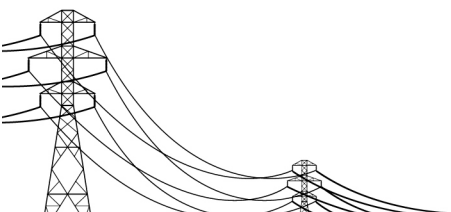


12.4.4 Recommendations

The approach to managing Project waste would centre on the principles of the following waste management hierarchy:

- Avoid waste generation
- Reduce
- Reuse
- Recycle
- Reprocess and reclaim
- Treatment
- Disposal.

The construction phase is expected to produce the highest quantity of waste, which can impact the surrounding environment if not managed appropriately and be a burden to local waste management facilities whereby land area or other resources may be consumed disproportionately by the Project. The main management measure is the preparation and implementation of a Waste Management Plan, which would include specific measures for storing, transporting and disposing of wastes developed in consultation with operators of local waste management facilities. This would be important in understanding the types of waste that may be accommodated within existing facilities or where alternative arrangement may be required. Notwithstanding, appropriate design and procurement policies shall also be implemented so as to minimise construction, operation and decommissioning waste generation as far as reasonably practicable.



12.5 Impact assessment and mitigation measures

12.5.1 Design response

CuString adopts industry best practice, which includes waste minimisation and effective waste management. Consequently, the recommended waste management hierarchy would be adopted throughout the Project.

The most effective methods for waste management are to follow the waste management hierarchy. Waste disposal would only be considered after all other waste management strategies are exhausted.

To avoid/minimise waste generation during the procurement of equipment, machinery and material for the Project, the following would be considered when selecting manufacturers and suppliers:

- Overall cleaner production of materials
- Total reduction of packaging or recyclable packaging materials
- Extended maintenance intervals (lifecycle costing)
- Manufacturers/suppliers with effective waste management plans already in place
- Past environmental performance.
- Design parameters to avoid/minimise waste generation associated with the Project would focus on:
  - Construction camps located in or near existing towns to minimise the area disturbance and use of construction camp materials.
  - Towers would be designed and placed to adhere to the natural ground profile, where practicable, to reduce the volume of spoil from earthworks.

Waste storage

Waste segregation bins would be located at key construction areas of the Project, including construction camps, laydown areas, depot areas and construction yards. Bins would also be located at key operation areas, such as, substations. Colour-coded waste segregation bins in accordance with AS 4123.7-2006 (R2017) would be provided (refer Table 12-11). The Construction Contractor(s) will be responsible for storing, handling and transportation of waste in accordance with the *Environmental Protection Regulation 2019* and Volume 3 Appendix Q Framework Environmental Management Plan. This will be monitored and reviewed throughout construction activities in accordance with the Volume 3 Appendix Q Framework Environmental Management Plan.

Licenced waste transporters will be utilised to transport waste from the Project area to licenced waste facilities.

Table 12-11 Colour-coding scheme

Waste Type	Colour
General waste	Green
Contaminated waste	Yellow
Paper	Blue
Metal	Grey
Hydrocarbons	Brown
Plastic	White

12.5.1 Pre-construction

There would be minimal waste generation during the pre-construction phase of the Project. During the detailed design phase geotechnical studies would be undertaken, including the drilling of bores and soil pits along the corridor selection. This may produce soil waste, including potentially contaminated soils which could negatively impact the environment if not disposed of correctly. The overall area of the geotechnical survey would be small, though could take several months to complete. Small amounts of plastic, paper and packaging waste, including food and drink packaging produced on site or in offices by Project personnel is required to follow the waste management hierarchy. A summary of the identified impacts from each waste stream is summarised in Table 12-12.

12.5.2 Construction

The construction phase is expected to produce the majority of Project waste that could impact the surrounding environment if not managed appropriately. The primary impacts associated with the construction phases are issues resulting from increased waste generation in the study area and improper disposal. A summary of the identified impacts from each waste stream is summarised in Table 12-12.

12.5.3 Operation and maintenance

The amounts of waste generated during the operational and maintenance phase of the Project are expected to be minimal. The main impacts with this phase are wastes being disposed of improperly. Improper disposal includes leaving waste in the environment and not applying the waste management hierarchy. A summary of the identified impacts from each waste stream is summarised in Table 12-12.

Table 12-12 Potential impacts

Waste Type#	Potential impact	Unmitigated Risk rating	Mitigated Risk rating
Green waste	Fire hazard	Low	Low
	Emissions of greenhouse gases as vegetation rots	Low	Low
	Loss of soil nutrients (if vegetation removed from site and not composted back	Low	Low
	Erosion near water crossings	Moderate	Low
	Spread of pest and weed species	Moderate	Low
	Visual impact	Low	Low
Food waste	May attract pest species / fauna into camps	Moderate	Low
	Odour	Low	Low
	Spread of disease (human health risk)	Low	Low
Soil and rock spoils	Erosion and sedimentation risk near water crossings	Moderate	Low
	Loss of soil nutrients (if topsoil removed and not replaced)	Low	Low
	Introduction or spread of pest and weeds	Moderate	Low
	Visual impact	Low	Low
Contaminated soils	Release of contaminants to land, surface water and groundwater	Moderate	Low
	Toxicity to fauna and flora	Low	Low

Waste Type#	Potential impact	Unmitigated Risk rating	Mitigated Risk rating
	Human health risk	Low	Low
	Degradation of water sources	Low	Low
Explosives	Fire hazard	Moderate	Low
	Human health risk (injury)	Moderate	Low
	Fauna health risk (injury)	Moderate	Low
	Release of contaminants to land, surface water and groundwater	Moderate	Low
Rubbish and debris	Localised soil contamination	Moderate	Low
	Human health risk (tetnus)	Low	Low
	Visual impact	Moderate	Low
Waste concrete	Localised increase in pH in soil and / or water source	Low	Low
	Visual impact	Low	Low
Waste metal	Localised soil contamination	Low	Low
	Human health risk (tetnus)	Low	Low
	Visual impact	Moderate	Low
Waste timber	Localised soil contamination	Low	Low
	Fire hazard	Low	Low
	Visual impact	Low	Low
Waste glass	Localised soil contamination (solid waste)	Low	Low
	Human health and fauna injury	Low	Low
	Visual impact	Low	Low
Waste plastic	Localised soil contamination (solid waste & trace contaminants on plastic packaging)	Moderate	Low
	Fauna injury due to becoming stuck or indigestion of plastic waste	Moderate	Low
	Visual impact	Low	Low
Waste cardboard / paper and clean packing paper	Fire hazard	Low	Low
	Visual impact	Low	Low
E-waste	Localised soil contamination	Low	Low
	Human health risk (tetnus)	Low	Low
	Fauna injury due to becoming stuck or indigestion of plastic components	Moderate	Low
	Visual impact	Low	Low
Waste rags / absorbent materials	Release of contaminants to land, surface water and groundwater	Moderate	Low
	Visual impact	Low	Low
Maintenance fluids	Contamination of soils, surface water and groundwater	Moderate	Low
	Toxicity to flora and fauna	Low	Low
	Degradation of water sources	Low	Low
	Visual impact	Low	Low
Batteries	Release of acidic and / or metallic contaminants to land, surface water and groundwater	Low	Low
	Toxicity to fauna and flora	Low	Low
	Degradation of water sources	Low	Low

Waste Type#	Potential impact	Unmitigated Risk rating	Mitigated Risk rating
	Inhibition of native plant growth	Low	Low
Tyres	Fire hazard	Low	Low
	Toxic smoke if fire occurs	Low	Low
	Visual impact	Low	Low
Liquid waste	Contamination of soils, surface water and groundwater	Moderate	Low
	Toxicity to flora and fauna	Low	Low
	Degradation of water sources	Low	Low
Herbicides and pesticides	Contamination of soils, surface water and groundwater	Low	Low
	Toxicity to flora and fauna	Low	Low
	Degradation of water sources	Low	Low

#*Waste types listed are colour coded in accordance with AS 4123.7-2006 (R2017).*

12.5.4 Summary of potential mitigation and management measures

Based on the potential impacts identified in Table 12-12, Table 12-13 identifies the potential mitigation and management measures.

Waste generation would primarily be mitigated and managed by implementation of the waste and resource management hierarchy:

- **Avoid** unnecessary resource consumption
  - Development of a Procurement Plan, including measures to avoid ordering surplus goods, services and materials (ordering to size), avoid packaging waste (ordering in bulk) and identification of suppliers with product stewardship arrangement.
  - Establishment of temporary infrastructure in areas that were previously cleared, degraded or have naturally lower above ground biomass.
  - Substitution of emissions-intensive plant, equipment, fuel and power, in-line with cleaner production principles.
- **Reduce** waste generation and disposal
  - Demarcation of areas to be cleared.
  - Only clear required width in selection corridor.
  - Implementation of procedures at construction camps and offices to reduce waste.
  - Maintenance of plant and equipment to maximise their efficiency.
- **Re-use** waste resources without further manufacturing
  - Assessment of waste for reuse, including beneficial re-use under the *Waste Reduction and Recycling Act 2011*, prior to collection.
  - Segregate types of waste to maximise re-use potential and use of colour-coded bins to promote compliance.
- **Recycle** waste resources to make the same or different products
  - Use of authorised contractors to collect waste.
  - Recycling of waste as compost, either onsite or offsite (where safe to do so).
  - Investigation into market demand for recyclable waste.
- **Recover** waste resources, including the recovery of energy

  - Investigation of waste management options for recovery of energy from waste through use of authorised contractors for waste recycling.
  - Product stewardship arrangements with suppliers that include recovery of resources or energy from waste.
- **Treat** waste before disposal, including reducing the hazardous nature of waste
  - Treatment of waste materials, such as water or topsoil to maximise re-use and minimise hazard to environmental values.
- **Dispose** of waste if there is no viable alternative

If waste requires disposal it would be disposed of to a licensed waste management facility. Waste types listed are colour coded in accordance with AS 4123.7-2006 (R2017).

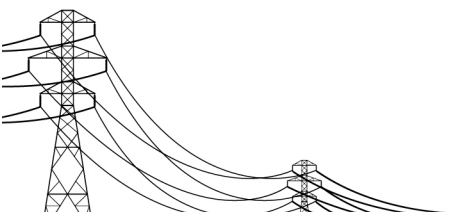


Table 12-13 Summary of mitigation and management measures for Project associated waste types

Timing	Waste Type	Hierarchy Options	Mitigation and Management Measures
Construction and operation	Green waste	Avoid	Placement of temporary infrastructure in areas that have been previously cleared, degraded or have naturally lower above ground biomass.
		Reduce	Areas to be cleared would be demarcated to avoid incidental clearing.
		Reuse	As far as practicable, cleared material would be chipped, mulched and stockpiled for reuse during rehabilitation. Materials with special habitat value, such as hollow bearing logs or trees would be selectively removed for reuse during rehabilitation, or placed in nearby bushland.
		Dispose	Declared invasive plants would be disposed in accordance with the Volume 3 Appendix U Concept Biosecurity Plan. Temporary clean down sites shall be decommissioned at the end of the Project, with contaminated materials disposed of at a licensed disposal facility and the site rehabilitated.
All phases	Food waste	Avoid	Procurement of food supplies would be based on the number of construction workers to avoid food surplus.
		Reduce	Food procurement and preparation practices at construction camps will reduce food waste.
		Recycle	Options to recycle food waste by worm farming for reuse as compost would be encouraged, where practicable.
		Dispose	Putrescible waste would be stored at allocated bins at each construction camp, for collection by an authorised contractor, and disposed offsite.
Construction	Soil and rock spoils	Reduce	The corridor selection would be designed to adhere to the natural ground profile, where practicable, in order to reduce earthworks.
		Reuse	A cut and fill balance would be maintained wherever possible to maximise reuse of cut material as fill. Surplus cut material, including imported material, would be reused for other construction activities, such as backfill, building pads and access tracks.
		Recycle	Surplus material that cannot be reused would be stockpiled on site. CuString would explore options to recycle spoil, wherever possible. For example, by providing this material to local governments for daily cover material of their landfill sites or to other construction projects in the region.

Timing	Waste Type	Hierarchy Options	Mitigation and Management Measures
		Dispose	Surplus material that cannot be reused would be stockpiled for later disposal. Spoil agreements may be sought with landholders. All stockpiles would be sited away from waterways and managed to minimise erosion and sedimentation. Excess spoil material is to be disposed of by a licensed waste contractor, if unable to be reused.
Pre-construction (geotechnical surveys) and Construction	Contaminated soils	Avoid	Corridor selection to avoid known CLR/EMR listed properties. Consultation with landholders to determine the location of potential land contaminating activities. Installation, operation and maintenance of appropriate safeguards for sites where hydrocarbons and hazardous chemicals are stored and handled. Installation, operation and maintenance of package STP (where used).
		Dispose	Waste would be transported by licensed regulated waste transporters and disposed of at a licensed regulated waste disposal facility or appropriately licensed landfills.
Construction	Explosives	Avoid	Explosive requirement would be calculated and ordered in batches to avoid surplus.
		Reuse	Surplus explosives would be stored appropriately and would be used in other construction activities, when safe to do so.
		Dispose	Where reuse is not considered feasible (safe), the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
All phases	Rubbish and debris	Recycle	Rubbish and debris includes any unexpected waste encountered during clearing and excavating, and may include scrap metal, plastic and wood. Such wastes would be stored for collection by an authorised contractor for offsite recycling.
		Dispose	Where rubbish and debris is not recyclable, the waste would be removed to a storage location for collection by an authorised contractor for offsite disposal.
Construction	Waste concrete	Avoid	Concrete requirement would be calculated and ordered by batch to avoid surplus of concrete ingredients.
		Recycle	Waste concrete would be crushed and recycled.
		Dispose	Waste concrete that cannot be recycled would be collected and stored in designated storage areas for crushing and offsite disposal by an authorised contractor.
Construction	Waste metal	Avoid	Metal requirement would be calculated and ordered by batch to avoid surplus.
		Reduce	Limit offcuts by ordering metal to required size.
		Reuse	Steel conductor and cable drums can be returned to the supplier for reuse.

Timing	Waste Type	Hierarchy Options	Mitigation and Management Measures
		Recycle	Suitable offcuts or scrap metal (including metal bands from packaging of construction materials and hot waste from welding) would be stored for collection by an authorised contractor and recycled offsite. Market demand for this recyclable waste would also be considered.
Construction	Waste timber	Avoid	Timber requirement would be calculated and ordered by batch to avoid surplus.
		Reuse	Waste timber would be stored on site for reuse.
		Recycle	Waste timber that cannot be reused on site would be collected in designated recycling containers for offsite recycling by an authorised contractor. Market demand for this recyclable waste would also be considered.
Construction	Waste glass	Avoid	Glass requirement would be calculated and ordered by batch to avoid surplus. Market demand for this recyclable waste would also be considered.
		Recycle	Waste glass would be stored at recycling bins at each construction camp, for collection by an authorised contractor and recycled offsite.
		Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
All phases	Waste plastic	Avoid	Generation of food packaging would be avoided through supply/encouraged usage of reusable lunch boxes, drink bottles and cutlery to construction workers. There would be a large quantity of plastics used in packaging of construction materials associated with substations and CEV huts.
		Recycle	Waste plastic would be stored at recycling bins at each construction camp, for collection by an authorised contractor and recycled offsite.
		Treat	Plastic containers would be rinsed prior to disposal to prevent regulated waste liquids entering recycling bins.
		Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
All phases	Waste cardboard / paper and clean packing paper	Avoid	Use of suppliers that use minimal amounts packaging, where possible. Encourage paperless options for office and administrative tasks.
		Reduce	Wastepaper in office and administration facilities to be minimised by enabling ‘secure print’ feature on all printers and by encouraging double-sided printing.

Timing	Waste Type	Hierarchy Options	Mitigation and Management Measures
		Recycle	Cardboard and paper would be collected and stored until taken to appropriate local recycling facilities.
		Dispose	Where recycling is not considered feasible, the waste will be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Construction	E-waste	Avoid	Appliances and components requirements would be calculated and ordered by batch to avoid surplus.
		Reuse	Product stewardship arrangements would be sought, with a view to some electrical appliances being reused under return to supplier arrangements.
		Recycle	Electrical waste would be stored at recycling bins at each construction camp, for collection by an authorised contractor, and recycled offsite, where feasible. Market demand for this recyclable waste would also be considered.
		Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Construction	Waste rags	Avoid	Encourage construction personnel to use the least amount of rags or absorbent materials as practicable when cleaning small areas.
		Reuse	Rags and absorbent materials generated in laydown/delivery areas would be reused in other construction activities, as far as practicable.
		Dispose	Where reuse is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Construction and operation	Maintenance fluids	Avoid	Maintenance fluids, such as lubricants, oils and fuels, would be stored in accordance with the AS 1940-2017, to avoid generation of waste from spills.
		Recycle	Used engine oil or fuel filters would be stored for collection by an authorised contractor and would be taken offsite for recycling.
		Treat	Hydrocarbon and water mixtures or emulsions, including oil and water mixtures or emulsions, will be treated by removal of solids, oil separation, disinfection, filtration or chlorine dosing.
		Dispose	Waste maintenance fluids would be collected and stored in designated waste storage areas for collection by an authorised contractor and disposed offsite. Waste maintenance fluids would be stored in the same manner as unused maintenance fluids.
	Batteries	Avoid	Battery requirement would be calculated and ordered in batches to avoid surplus.

Timing	Waste Type	Hierarchy Options	Mitigation and Management Measures
Construction and operation			Lead acid vehicle batteries would be stored in appropriate weatherproof battery storage containers, to avoid the generation of waste from leaks.
		Recycle	Used batteries would be stored for collection by an authorised contractor and would be taken offsite for recycling.
All phases (site visits)	Tyres	Avoid	Procurement of surplus tyres will be avoided by adhering to a Procurement Plan.
		Reduce	Plant and equipment will be operated efficiently, to reduce the frequency of tyre replacement
		Recycle	Collected and transported to licensed regulated waste storage or tyre recycling facility by licensed regulated waste transporters. When stored on Project site tyres shall be either covered or have holes punch through to ensure they are not retaining water. Shredding of tyres will be required for acceptance at the waste facilities.
		Dispose	If options for reuse or recycling are not practicable, waste tyres will be stockpiled on site, for collection by an authorised contractor and disposed offsite.
All phases	Liquid waste	Avoid	Ensure minimal amounts of liquids are used for cleaning purpose.
		Dispose	Would be collected and transported to regulated waste disposal facilities by licensed regulated waste transporters.
Construction and operation	Herbicides and pesticides	Avoid	Herbicides and pesticides would only be used by licensed contractors and amount required would be calculated to ensure excess is not produced.
		Dispose	Disposed to licensed and secure landfills.

12.5.5 Conclusion

The Project traverses a large linear area that includes seven regional councils, each with their own waste management facilities. Several of these facilities have indicated sufficient capacity to assist with the waste management of the Project and the remainder require capacity to be confirmed. Capacity at local waste facilities should be reaffirmed in the pre-construction project planning phase.

The construction phase would be the primary source of waste generation throughout the life of the Project addressed in this Chapter. Decommission would also generate are large amount of waste however, management actions would need to be further developed at time of decommissioning concurrent with contemporary waste management practices. Waste would be dealt with following the waste management hierarchy, where avoidance of waste generation is the most desirable course of action and disposal of waste is the least desirable course of action. Many types of waste are able to be reused or recycled and disposal shall only be undertaken once all other avenues are exhausted.

Large increases in waste generation and improper disposal methods are the primary impacts associated with waste during the Project. Cumulative impacts associated with Project waste generation may occur as the result of multiple Projects in the region requiring waste disposal facilities.

However, these impacts can be mitigated by early engagement with local Councils, following the waste management hierarchy and ensure wastes are reduced, reused or recycled before disposal is considered.

Commitments identified in this Chapter for the management of wastes generated as part of the Project include:

- Implement a Volume 3 Appendix U Concept Biosecurity Plan
- Develop and implement a Procurement Plan in accordance with best practice waste management
- Implement Volume 3 Appendix Q Framework Environmental Management Plan.