Powerlink QUEENSLAND | COPPERSTRING 2032

UGL CPB CONTRACTORS
UGL CPB Joint Venture

WASTE MANAGEMENT PLAN

COPPERSTRING 2032

Approvals and Reviews

Waste Management Plan	
Project	CopperString 2032
Client	CETC Pty Ltd
Document Number	0643-JV-PLN-WRD-0017

Revision History

Rev No.	Description of Revision	By	Checked	Approved	Date
A	Draft Submission	Emma McCaughey	Jeff Hayes	Adrian Terry	9 Mar 2021
B	Silver	Emma McCaughey	Jeff Hayes	Adrian Terry	25 Jun 2021
C	Gold	Emma McCaughey	Jeff Hayes	Adrian Terry	26 Aug 2021
D	FINAL ECI Submission	Emma McCaughey	Rashelle Rayner	Adrian Terry	30 Nov 2022
E	Updated with branding, CopperString 2032 and CETC only	Rashelle Rayner	Adrian Terry	Adrian Terry	14 Jul 2023
F	Revised to support MID Application – Draft or Client Review	Veronica Cavanough	Duane Esson Tom Graham	Daniel Ellul	12/09/2023
G	Final – admin changes only	Veronica Cavanough	Tom Graham	Daniel Ellul	20/09/2023

Contents

Appendices

Abbreviations, Acronyms and Definitions

The following table lists the acronyms used in this plan, including their definitions.

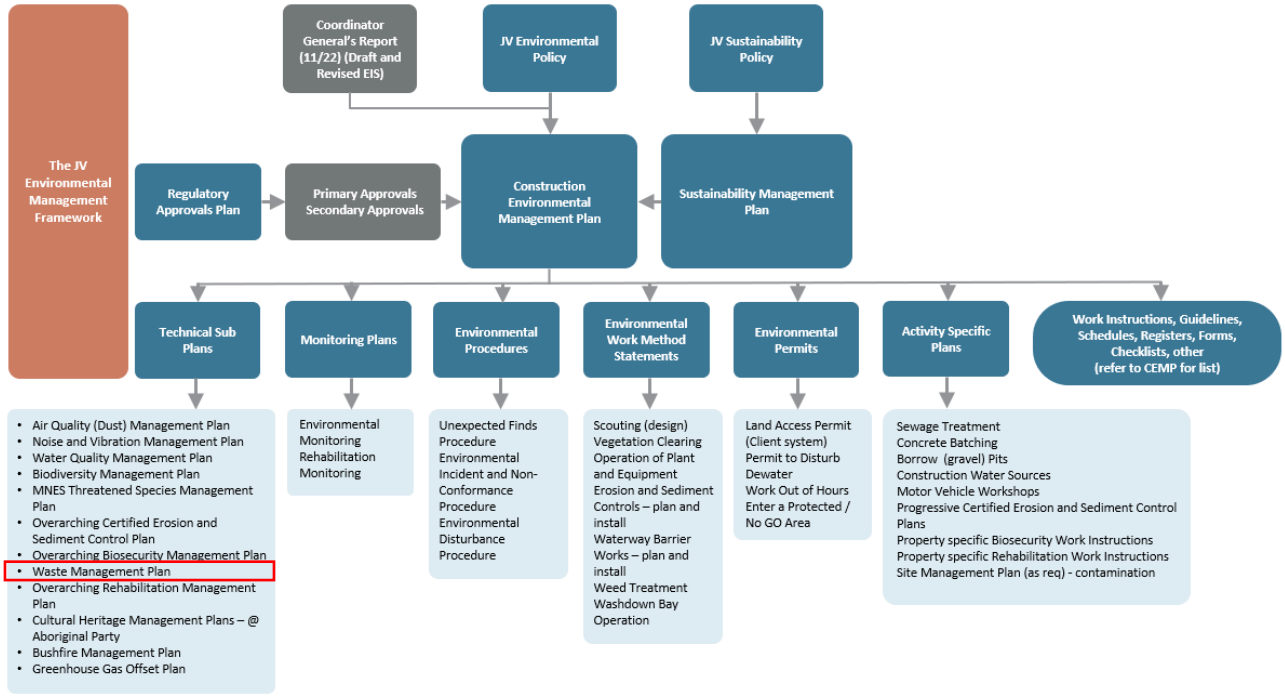
Table 1: Abbreviations, Acronyms & Definitions

Term	Definition
CEMP	The JV's Construction Environmental Management Plan.
CETC	Client (Copperstring Electricity Transmission Corporation Pty Ltd).
Contaminated Land	Contaminated Land means land or matter in or on the land that is affected by a hazardous substance so that it is, or causes other land, water and air to be a hazard to human health or to the environment. Matter is interpreted to include: • Surface waters • Groundwater • Soil gases. Contaminated land may include contaminated soil or waters impacted by the project as a result of spills, for example.
Council	Local Government Authorities in the JV project area.
EIS	Environmental Impact Statement.
EMF	The JV's Environmental Management Framework.
EP Act	*Environmental Protection Act 1994.*
Generator	A generator is often a commercial or industrial organisation which produces or stores trackable regulated waste and arranges for this waste to be sent for storage, recycling, treatment or disposal at another location via an authorised transporter.
JV Project area	Extends from Townsville to Mt Isa across Local Government areas
MID	Ministerial Infrastructure Designation.
NEM	National Electricity Market.
NQCEH	North Queensland Clean Energy Hub.
NWMP	North West Minerals Provence.
NWPS	North West Power System
Regulated Waste	Defined in s42 of the EP Regulation and is commercial or industrial waste, whether or not it has been immobilised or treated; and is of a type, or contains a constituent of a type, mentioned in Schedule 9 part 1 of the regulation and includes for an element—any chemical compound containing the element; and anything that contains residues of the waste.
the JV	UGL CPB JV.
the Project	CopperString 2032.
Trackable waste	A regulated waste of a type mentioned in Schedule 11 of the EP Regulation to which the waste tracking provisions of the regulation apply.
WMP	This Waste Management Plan.
WRRA	*Waste Reduction and Recycling Act 2011*

1. Plan Interface

This Waste and Refuse Disposal Management Plan, hereafter referred to the Waste Management Plan (WMP) is a technical Sub Plan of the project's Construction Environmental Management Plan (CEMP) identified in the below Environmental Management Framework (EMF).

Figure 1: CopperString 2032 JV EMF – WMP Interface



2. Introduction

The purpose of the CopperString 2032 project is to connect the North-West Minerals Provence (NWMP) of Queensland to the National Electricity Grid. This will not only allow existing loads in the Mt Isa and Cloncurry areas to be fed from the National Electricity Market NEM, but also provide access to new mining loads and opportunity for connection of renewable generation.

2.1 Project Scope

The CopperString 2032 Project is an extra high voltage transmission system intended to connect the North-West Power System (NWPS) near Cloncurry and Mount Isa to the Powerlink network and National Electricity Market (NEM) at Woodstock. Figure 2 provides an overview of the Project.

Figure 22: CopperString 2032 proposed transmission lines and substations

The CopperString 2032 Project will reduce the cost of power supply and facilitate the large-scale development of the Hughenden wind resource and solar resources within the North Queensland Clean Energy Hub (NQCEH).

The scope of work, traversing east to west, consists of the following sections:

- Mulgrave Substation and 275kV line augmentation as the CopperString 275kV connection point to the NEM
- Woodstock Substation as the CopperString 500kV connection point to the Queensland SuperGrid
- Pentland 500kV Substation to support the NQCEH expansion and as the core for future load connections in the area
- Flinders 500/300kV Substation (Hughenden) as the core for the NQCEH
- Dajarra Road 330/220kV Substation (Cloncurry) as the core for distributions to larger load centres
- The primary CopperString transmission backbone, comprising approximately 940km of cabling, 1600 tower pads, up to 1500km access track, public road upgrades, and numerous waterway and railway crossings
- Termination via the Mount Isa augmentation 220/132kV.

The project scope, from a waste perspective includes:

- Waste generation from procurement, design and construction methodology
- Waste storage at transit and temporary hubs
- Waste handling in accordance with end use arrangements and legal requirements
- Waste measuring and reporting.

2.2 Plan Purpose

This version of the WMP has been prepared to provide details on how waste requirements will be met during the project's construction phase, including identifying any secondary impacts that may warrant further assessment and opportunities to achieve higher order waste hierarchy solutions for individual waste streams.

In order to achieve this purpose, this WMP:

- Estimates waste streams (types and volumes) associated with key construction stages and tracks the lifecycle of the waste based on an feasible end use.

- Prescribes the process for the management of waste during procurement, delivery and demobilisation, including the waste storages, partnering with local businesses for waste transport and reuse/disposal and facilitating beneficial reuse over landfilling.
- Summarises the comprehensive reporting process on alignment with waste objectives and estimates to confirm ongoing feasibility of proposed end uses as the project progresses, and build in adaptive management decision making in response to new risks and opportunities.

This WMP has been updated to inform the application for a Ministerial Infrastructure Designation (MID) approval to authorise the project scope, address known conditions and commitments to date and refine the waste management approach provided to date.

2.3 Plan Scope

This WMP addresses planned wastes generated during construction and considers previous information provided in the project's Environmental Impact Statement (EIS), and waste requirements in the projects:

- JV draft Construction Environmental Management Plan (0643-JV-PLN-CEM-0003) (CEMP), prepared by the Joint Venture in response to the:
  - Coordinator General's Report on the EIS (date September 2022)
  - EIS Volume 2 – Chapter 12 – Waste Management, inclusive of previous versions of this WMP.

This WMP version represents the latest information for the project and refines the JV's approach to waste management. This WMP does not prescribe any requirement that is inconsistent with the known requirements to date.

Table 2: Waste requirements

Source	Requirement	Cross Reference
Construction Environmental Management Plan – Revision F, Section 18.10	Update the Update the Waste and Refuse Disposal Management Plan (prepared as part of the EIS), otherwise known as the Waste Management Plan (WMP) to identify, in consultation with local waste service providers, the following:	This WMP
	• Waste types	Section 4.1 Appendix A
	• Waste volume estimates for each waste type (having regard to accommodation hub waste assessments)	Section 4.1 Appendix A
	• Waste storage requirements insitu	Section 4.1 Appendix A
	• Waste management requirements as per the waste management hierarchy	Section 4.1 Appendix A
	• Waste disposal coordination plan to identify locally available disposal and recycling options for various wastes for each Local Government Area (including stakeholder consultation with landholders, community groups, Councils and local waste service providers)	Section 4.1 Appendix A
	• Waste transport requirements	Section 4.4
	• Waste procedure for the management of waste (including any health and safety requirements for hazardous materials)	Section 4.4 Appendix C
	• Waste records and reporting.	Section 4.6
Coordinator General's (CoG) Report Appendix 2 Part A	Recommendation 4: Any MID requests(s) must include a report on outcomes of consultation with relevant local government councils. This report should detail: • preferred worker accommodation arrangements with each council, including:	Section 4.1 End uses for waste streams identified in this WMP

	• location of accommodation, and whether this requires construction of a new facility or upgrade/use existing facility. • appropriate servicing arrangements for the facility/facilities • detail induction arrangements for each location to address potential impacts on local communities • waste disposal arrangements where use of council waste facilities has been agreed.	requires ongoing consultation
Coordinator General's (CoG) Report Appendix 2 Part B	Condition 33viii: Prior to the commencement of works, prepare and submit a Construction Environmental Management Plan (CEMP) to DSDILGP (infrastructuredesignation@dsdmip.qld.gov.au). The CEMP must be consistent with management measures detailed in the project EIS and, and must include/address the following: ….. a waste management plan detailing: • preference of waste management in the following order – avoid or reduce, reuse, recycle, recover, treat and dispose • how each waste stream is to be stored, transported and disposed of • estimated quantities of waste from each waste stream • details of waste transport companies to be utilised and copies of any relevant licenses • reporting on consultation with relevant councils regarding disposal at existing council facilities • details of waste disposal facilities to be utilised and copies of any relevant licenses and waste acceptance criteria	This WMP will form part of this CEMP, revised during detailed design. Stakeholder consultation with Councils regarding disposal at preferred locations to be undertaken during MID submission and ongoing during detailed design
CoG Report Appendix 2 Part B	Condition 33viii: Prior to the commencement of works, prepare and submit a Construction Environmental Management Plan (CEMP) to DSDILGP (infrastructuredesignation@dsdmip.qld.gov.au). The CEMP must be consistent with management measures detailed in the project EIS and, and must include/address the following: …. a Hazard, Health and Safety Management Plan detailing disposal and management of hazardous materials and regulated waste, including removal by a suitably licenced contractor where deemed necessary.	Section 4.4 Appendix C
CoG Report Appendix 4 Commitment 66	A Waste management procedure will be prepared as part of the CEMP. These will detail the location and specifications for disposal and removal of waste from the construction site. Responsible waste management practices (e.g. not leaving out food waste and not feeding wildlife) will be implemented and followed by all construction personnel. All waste will be stored in secure temporary holding containers and transported offsite.	Section 4.4 Appendix C Section 5
CoG Report Appendix 4 Commitment 96	Waste generation will primarily be mitigated and managed by reducing (avoiding), recycling and reusing. All waste is expected to be transported to external licensed waste management facilities, these will be determined during the MID process.	Section 4.2
CoG Report Appendix 4 Commitment 153a	As part of the Project, various overarching management plans will be developed and implemented in relation to the broader environmental aspects for the Project • … • Waste and Refuse Disposal Management Plan	This WMP, to be revised as part of the CEMP submission

	• …	
CoG Report Appendix 4 – Commitment 156b	As part of the Construction Environmental Management Plan, various sub-plans will be developed and implemented in relation to the environmental aspects for the Project • …. • Waste Management • …	This WMP, to be revised as part of the CEMP submission
CoG Report Appendix 4 Commitment 158	CuString is committed to ensuring that: • Environmental harm and pollution is minimised through the active identification and management of environmental risks; • Ensuring the efficient use of resources, recycling of materials and reduction of waste; • Compliance is maintained with relevant environmental legislation, regulation and standards as well as project approval conditions; • An environmental management system is implemented that is developed in accordance with AS/NZS ISO 14001; and • Regular review and analysis of environmental performance is undertaken to identify and implement continual improvement.	Refer to JV draft CEMP and this WMP

2.3.1 Superseded Versions

Previous versions of this WMP have been superseded as follows.

- Revision D included as part of the publicly available Revised Draft EIS upon which the CoG Report on the EIS was developed and conditions identified in Appendices 1-5 therein.
- Revision E developed as part of the JV tender processes in response to CoG conditions of approval.

2.3.2 Exclusions

This WMP does not address the following.

- Contaminated land management, to be addressed in an activity specific plan if required, dependent on the findings of the baseline contamination sampling at sites listed on the Queensland's Environmental Management Register/Contaminated Land Register (EMR/CLR) during early works.
- Asbestos, addressed through safety legislation (note, disposal of hazardous substances will be managed as a regulated waste as defined herein).
- Unexpected finds in relation to contamination.

2.3.3 Limitations

This WMP has been updated without:

- Waste service provider procurement processes completed although early consultation with key waste providers in the region has informed the waste strategies currently feasible.
- Formal consultation with recycling end users to ensure capacity and logistic opportunities including onsite recycling initiatives.
- Full consultation with relevant Stakeholders, which is part of this MID process and planned during detailed design with Local Government authorities and the relevant community.

2.4 Objectives

UGL CPB JV's (the JV) waste management objectives include:

- Minimising the total amount of waste sent to landfill by adopting higher order/more preferable solutions, refer to Section 3 on the waste and resource recovery hierarchy adopted, and
- Compliance with all legal obligations pertaining to waste management and disposal.

2.4.1 Legal Obligations

This WMP has been developed having regard to legal obligations identified in the below regulatory framework.

- *Environmental Protection Act 1994* (EP Act)
- *Environmental Protection Regulation 2019* (EP Regulation)
- *Waste Reduction and Recycling Act 2011* (WRRA)
- *Queensland Waste and Resource Recovery Strategy* (the Strategy)
- *Queensland Plastic Pollution Reduction Plan* (the Plastics Plan)
- *Queensland Organics Strategy 2022-2032* (the Organics Strategy).

Legal requirements considered in the preparation of this WMP include:

- Environmental authority licensing requirements for waste transport pursuant to the EP Act
- Regulated waste and waste that is not regulated waste in Schedule 9 of the EP Regulation
- Trackable waste and waste codes in Schedule 11 of the EP Regulation
- Prescribed information for waste tracking in Schedule 12 of the EP Regulation
- Solid Concrete Washout (ENEW07602819) End of Waste Code (EOWC), pursuant to the WRRA, where excess concrete is managed by the concrete manufacturer
- Illegal dumping of waste provision (Section 104 of the WRRA), where excess concrete is managed by the Principal Contractor which states:

"(1) A person must not illegally dump waste at a place.

Maximum penalty— (a) if the offence involves depositing a volume of less than 2,500L of waste—400 penalty units; or (b) if the offence involves depositing a volume of 2,500L or more of waste—whichever is the greater of the following amounts— (i) 1,000 penalty units; (ii) a fine that is twice the waste levy amount that would have been payable, when the waste was dumped, by the operator of a levyable waste disposal site if the waste had been delivered to the site

(2) For subsection (1), a person illegally dumps waste at a place if the person deposits at the place an amount of waste that is 200L or more in volume.

(3) However, a person who deposits at a place an amount of waste of 200L or more in volume (the relevant waste) does not illegally dump the relevant waste if— (a) the person is an occupier of the place; or (b) the person deposits the relevant waste with the consent of an occupier of the place; or (c) the person deposits the waste by placing it in a bin or other container provided by an occupier of the place, or by another person with the agreement of an occupier, for the purpose of depositing the relevant waste".

2.5 Revising this Plan

This WMP will be revised as follows.

- During detailed design when waste streams or volumes are significantly changed, or end uses are deemed unfeasible, to ensure currency in the waste assessment process prior to construction.
- Post stakeholder consultation where expectations and agreements on waste are different to the planned approach.
- In response to regulatory approvals that identify specific requirements for the management of waste.
- During construction as logistics and risks are more understood and specific mitigation measures are required in order to achieve the objectives of this Plan.

3. Waste Management Hierarchy

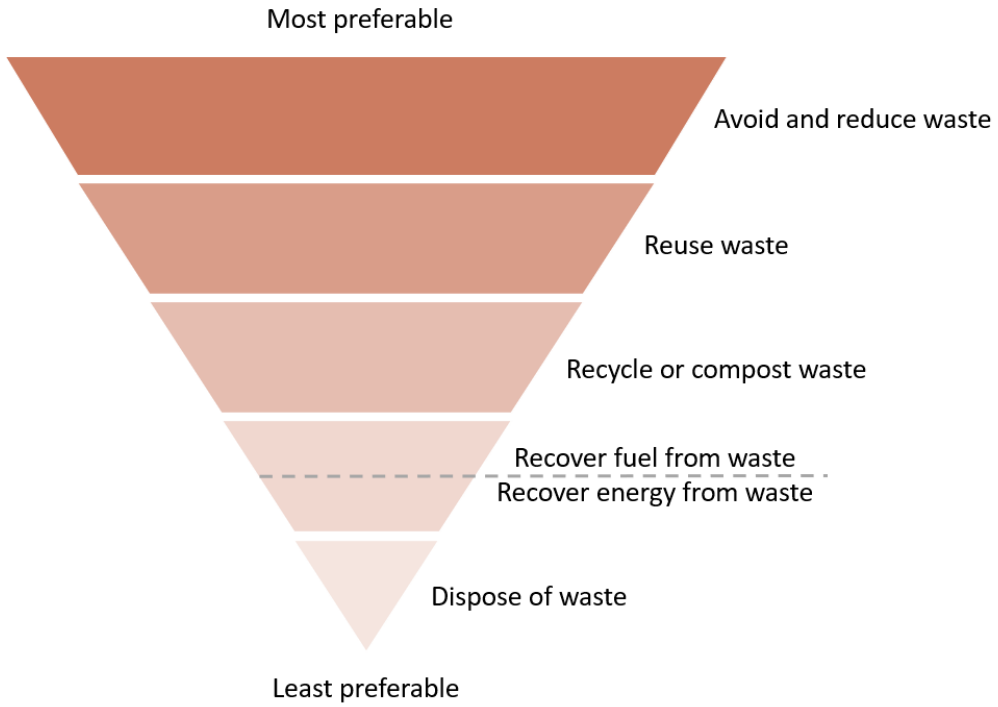
This WMP adopts the Waste and Resource Management (refer to Figure 2) underpinning the States waste management strategy: *Waste Management and Resource Recovery Strategy for Queensland* (the Strategy). This commitment has been documented in the project's Sustainability Management Plan (0643-JV-PLN-

SMP-0023) reflective of the Client being a Government entity. The waste hierarchy focuses on waste reduction and recycling as more preferable to waste disposal.

Waste, for purposes of this Plan, is defined in accordance with Section 13(1) of the EP Act as "*anything that is:*

- *Left over, or an unwanted by-product, from an industrial, commercial, domestic or other activity;*
- *Surplus to the industrial, commercial, domestic or other activity generating the waste".*

Figure 3: CopperString 2032 Adopted Waste and Resource Management Hierarchy



3.1 Evaluation of Waste Impacts

Waste impacts associated with construction of this project have been assessed as either direct or indirect as follows in order to support the implementation of the waste management hierarchy. Direct waste impacts can result from (including but not limited to):

- Poor planning and stakeholder engagement
- Littering
- Incorrect classification of wastes
- Unlawful handling of wastes
- Non-segregation/mixing of wastes
- Excess procurement and materials packaging
- Lower order waste hierarchy solutions based on cost savings as the key decision criteria
- Non-balanced earthworks
- Lack of quality control during materials storage
- Lack of awareness
- Waste generating behaviours/culture and unplanned trends not identified early for intervention
- Low waste goal setting
- Inefficient construction methods.

Waste generation leads to secondary impacts from transport and disposal including:

- Spillage during transport

- Land consumption
- Landfill leachate.

Indirect impacts may include (but not limited to):

- Increased Scope 1 greenhouse gas emissions (requiring offset by the project)
- Reduction in local waste services (eg. sewage treatment plant and landfill capacity issues)
- Increased traffic.

Indirect impacts may also be positive such as:

- Increased community awareness
- Waste facilities improvements through project spend
- Leading by example by supporting commercial recycling opportunities to expand regionally.

4. Plan Implementation Approach

In order to implement the requirements of The Strategy and meet legal obligations, this WMP details:

- Initial waste volumes based on the nature, scale and intensity of the project per construction stage
- Identifies preferred end use outcomes for all waste streams as part of the initial assessment, subject to:
  - Proposed Stakeholder consultation
  - Partnering arrangements with the local business community and
  - Feasibility assessments during detailed design.
- Planning protocol in place to avoid/minimise waste generation inclusive of:
  - Procurement strategies
  - Environment in Design processes
  - Construction strategies to reduce excess waste and
  - Feasibility assessment criteria for deviating from the Plan.
- Requirements for on-site storage area and design, including management controls.
- Approach to subcontractor management for the onboarding and ongoing use of a waste service provider(s).
- Waste tracking/measuring and reporting processes.

4.1 Initial Waste Assessment

An initial waste assessment has been developed that identifies the following.

- Waste streams per construction stage or activity type (either early work, access, camp construction, office uses, camp occupation, sewage treatment, water treatment, civil works, road works, motor vehicle workshop, concrete batching, fuel storage, tower foundations, tower assembly and erection, stringing, substations, rehabilitation and de-mobilisation).
- Waste category (either regulated or non-regulated waste for purpose of legal compliance planning).
- Sources of each waste stream.
- Whether the waste is solid or liquid.
- The location of the waste source generation (either use of existing infrastructure, alignment, substations or accommodation hubs).
- Estimate of volume, in either weight or volume units or as a waste type to be converted to a weight based on weight factors and a conversion calculator).
- Calculation assumptions.
- Proposed end use based on the adopted waste hierarchy (either reuse, recycle, recover, dispose, or leave *insitu*), refer to Section 4.3 with the avoid/reduce measures addressed in the Waste Planning Protocol (refer to section 4.4).

- Storage requirements.
- Onsite treatment (applicable for where reuse is the preferred end use).
- End use location, based on known opportunities and constraints.

Refer to Appendix 1 for the initial waste stream assessment in full.

The initial waste assessment identifies higher order end uses for the majority of waste streams generated by the project as summarised in Table 4 below.

Table 4: Initial Waste Assessment summary of management strategies

Waste Streams	Management Strategy	
Non-Regulated Waste		
General waste (putrescible) – inclusive of organic material or non-recyclable materials	Dispose	Avoid/minimise – Implement Waste Planning Protocol. Temporary storage onsite at dedicated waste storage area at accommodation hubs and substations. Transit holding locations will be required to collect and transport general waste from the transmission line. Disposal at landfill.
Organic waste	Recycle	Segregate where feasible. Pulp to a slurry then temporarily store in a holding tank for vacuum truck collection offsite/mixing onsite. Subject to: • Proposed Stakeholder consultation • Partnering arrangements with the local business community, and • Feasibility assessments during detailed design.
Co-mingle recycling (remote locations only where segregation is not feasible)	Recycle	Implemented at remote locations only, principally associated with satellite offices. Includes mixed plastics, cardboard and paper. Recycling facilities.
Bottles Plastics (packaging soft) Cardboard Paper All steel materials (includes reo cages, steel drums etc..) ESC material – coir logs Ark Planet Recycling Box options Hard plastic Coreflute Safety fencing/netting	Avoid or recycle	Avoid/minimise – Implement Waste Planning Protocol. Segregated containers. Temporary storage onsite at dedicated waste storage area at accommodation hubs and substations. Recycling facilities. May include option to bail/compress cardboard/plastics to reduce transport requirements. Recyclable bottles will be collected for local charity donations.
Timber (pallets, pegs, posts, excess formwork etc.)	Reuse	Avoid/minimise – Implement Waste Planning Protocol. Timber repurposing area for reuse as dunnage. Subject to: • Proposed Stakeholder consultation • Partnering arrangements with the local business community, and • Feasibility assessments during detailed design.
ESC materials – sediment fencing, geofabric, other Plastic strapping	Dispose	Disposal at landfill.
Excess Concrete Excess timber not reusable Hessian bags Office/donga fitout furniture	To be finalised	Avoid/minimise – Implement Waste Planning Protocol. Concrete washout facilities on easement. Subject to:

Waste Streams	Management Strategy	
Safety materials		• Proposed Stakeholder consultation • Partnering arrangements with the local business community, and • Feasibility assessments during detailed design.
Slurry (from pot holing/piling) Drilling fluids (non contaminated)	Reuse	May require dewatering/drying dependent on liquid waste facilities available.
Vegetation matter Used rock	Reuse	Stockpile/much on site. Leave *insitu*. Land maintenance/operational tracks (preferred outcome to disposal or washing for recycling offsite due to biosecurity risk).
Restricted matter (weeds)	Treat or Dispose	Pre-treat to kill weed matter prior to clearing. Or Segregate and bury on site. Or Dispose at landfill.
Concrete washwater Stormwater collections	Reuse	As per stormwater drainage strategy/evaporation in holding ponds. Reuse in concrete manufacturing. Reuse in dust suppression, subject to contamination testing.
Excess subsoil Excess pavement materials Unused aggregates/	Avoid	Implement Waste Planning Protocol.
Formwork reusable assets eg. Dongas, buildings, tanks, washdown bays, shipping containers, batch plants etc..	Reuse	Implement Waste Planning Protocol.
Recovered aggregates during rehabilitation Spent HDPE (conduit/plastics/pipe)	Leave *initu* or recycle	Subject to: • Proposed Stakeholder consultation • Partnering arrangements with the local business community, and • Feasibility assessments during detailed design.
Regulated Waste		
Septic (sludge) Clinical Empty chemical containers Water treatment plant spent media	Dispose	Disposal at landfill.
Sewage (effluent)	Treat (onsite) and dispose	Temporary storage at satellite offices using bulky bins, or on easement using portaloos, pumped and transferred to the nearest accommodation hub for treatment. Treat via onsite treatment plant prior to land based disposal where not connected to mains.
Treated/bypass effluent (wastewater) not meeting spec for land release Washdown bay sludge	Treat (offsite) and dispose	Where not connected to mains. Offsite disposal by licensed operator to the nearest licenced (council operated) Sewage Treatment Plant, where capacity exists, or either: • Townsville (for eastern portion from Hughenden) • Mt Isa (for western portion from Hughenden)
Non-treated construction wastewater (eg. from - Concrete washout - (pile) Drilling fluids - Slurry from non-destructive drilling (contaminated) - Stormwater management - Dewatering excavations/other	Treat (offsite) and dispose	Sampling to confirm contamination level. Reuse if deemed clean. Partner with local vacuum truck companies. Dispose at Sewage Treatment Plant/landfill, subject to acceptance criteria. May require dewatering onsite/offsite for landfilling. Drying beds will be designed and used accordingly at an appropriate location with environmental controls.

Waste Streams	Management Strategy	
Paints, resins and solvents other hazardous waste Paint tins and spray paint cans Oily rags/air filters/hoses Drums Oil Filters Used tyres and batteries Condensate Grease trap tanks Plumbing works	Dispose	Temporary segregated storage onsite at dedicated waste storage area at accommodation hubs and substations. Offsite disposal and waste tracking licensed sub-contractor to a licensed facility.
Used oils	Recover	Offsite licenced transport to the Northern Oil Refinery.
Oily water/wash water Refueling bay cleanouts	Treat (onsite) and dispose	Oily water separator at motor vehicle workshops. Offsite disposal by licensed operator to the nearest licenced (council operated) Sewage Treatment Plant, where capacity exists. Subject to design of the accommodation hub operated sewage treatment plants and ability to treat to a certain concentration of hydrocarbons.
Unexpected contamination (visual triggered)	Dispose	Engage a Suitably Qualified Person. Soil sampling in accordance with guidelines. Offsite disposal by licensed operator to a licensed facility based on acceptance criteria.
Hydrocarbon contaminated soils generated by project spills	Dispose	Offsite disposal by licensed operator to a licensed facility based on acceptance criteria.
Known contamination	Dispose	Management in accordance with the site-specific Contaminated Land Management Plan, developed by a Suitably Qualified Person, including sampling in accordance with guidelines. Disposal as a regulated waste (if on land not listed on the EMR/CLR). Disposal under a spoil disposal permit (if on land listed on the EMR/CLR), refer to the project's Regulatory Approvals Plan. Disposal at landfill.
Ad blue tanks Fuel tanks DG containers Water tanks	Reuse or Recycle	Implement Waste Planning Protocol.
Grease	Recycle	Grease trap onsite storage. Partner with local landscaping supplies/other end user.

The initial waste assessment findings include:

- Facilities at Townsville and Mt Isa provide higher order waste hierarchal solutions and have been selected as the preferred locations for end uses.
- A need to focus on material packaging during procurement in order to reduce timber and plastics generation due to limited solutions regionally.
- Reliance on the operation of the Material Recovery Facility (MRF) at Mt Isa to divert/keep recyclable waste in the west as well as diverting recycled materials to the east in Townsville.
- Strong awareness campaigns to celebrate behaviours to reduce wastewater generation, excessive waste off-cutting and plant and equipment maintenance.
- Streamlined operation of ancillary activities will be required, particularly in relation to concrete batching and washdown bays.
- Accommodation hub design elements and logistics planning will be critical to lawful waste management.
- Stakeholder consultation, partnering agreements and adaptive management will be integral to achieving preferred end use outcomes during detailed design and construction (refer below).

Waste calculations have been based on:

- Similar recent transmission project experiences in project waste quantities and collection frequency, and lessons learnt regarding waste touchpoints in procurement and design
- Queensland publicly available waste data in relation to household waste generation per person
- Scale and intensity of the project including consideration of:
    - Accommodation hubs co-located with ancillary infrastructure.
    - Multiple work fronts and simultaneous operations.
    - Nominal schedule of a 2 year duration of any particular construction activity occurring over.

Waste end uses have been identified as part of the initial waste assessment in consultation with local waste service providers to map expected waste streams and the current end use strategies available. Council operated waste disposal locations have been identified along the alignment and listed in Appendix B however other than use of nominated regional sewage treatment facilities where capacity exists, no council landfills other than Mt Isa (servicing west of Hughenden) and Townsville and potentially Charters Towers (servicing east of Hughenden) locations are proposed to be utilised at this time in order to minimise direct impacts within small communities.

This has resulted in a waste strategy based on an east and west solution as follows.

- East Solution encompasses waste handling from Hughenden (including 330 and 500 KV substations) eastwards including Pentland, Charters Towers and Woodstock/Mulgrave.
- West Solution encompassing waste handling west of Hughenden including Richmond, Julia Creek, Cloncurry and Mt Isa.

4.1.1 Stakeholder Consultation

This initial waste assessment has identified additional stakeholder consultation is required to develop specific higher end waste solutions:

- In the Western end of the project for:
    - Timber.
    - Concrete.
    - All plastics (including containers).

    on the premise the Mt Isa Material Recovery Facility (MRF) will be operational for paper and cardboard from project commencement.
- In the Eastern end of the project for:
    - Timber.
    - Paper.
    - Plastic containers.

The following consultation is proposed to be undertaken to revise this WMP during detailed design prior to construction commencement.

- Engagement with Local Government Authorities on waste partnering opportunities including timber and concrete recycling at Mt Isa (under construction) MRF.
- Engagement with key suppliers on sustainability opportunities for packaging (as committed to in the Sustainability Management Plan (0643-JV-PLN-SMP-0023)) in accordance with the Environmental Procurement Plan (refer to the below protocol)
- Engagement with Businesses and Landholders on local needs for the purpose of maximising local beneficial reuse.

4.1.2 Partnering Arrangements

In order to facilitate preferred end use outcomes, partnering arrangements will be required to be developed for:

- Recycling steel materials, with steel recyclers.
- Reusing organics, with landscape/other users including onsite options.
- Suppliers using timber pallets underpinned by a return to sender using a back loading (truck) strategy.

- Landholders, for beneficial use of excess concrete and timber, where expressions of interest have been identified.

4.1.3 Adaptive Management

To verify proposed waste strategies are feasible as detailed design progresses and following construction commencement, it will be integral to continually monitor and evaluate actual waste quantities generated and what end uses are readily available or can be created, and to rapidly respond to these changing circumstances.

An ongoing planning approach (inclusive of stakeholder consultation) and monitoring program will support adaptive waste management onsite. Triggers for action will be imbedded in project performance reporting and will include:

- Excessive upward trending of wastes that is unplanned.
- Greater than 10% change in actual waste quantities compared to predicted waste estimates for a specific construction phase.
- New waste streams emerging.
- New regional business recycling ventures.
- Design option-engineering outcomes that form part of the Waste Planning Protocol.

4.2 Waste Planning Protocol

A Waste Planning Protocol will be implemented to achieve objectives of this WMP during detailed design (including all procurement and engineering) and early in construction phase (includes site establishment and work commencing on easement and at substations), which constitute environmental touchpoints where synergies can maximise environmental outcomes.

This protocol mandates the following requirements which is the responsibility of all project personnel to comply with, endorsed by the Project Director.

- Stakeholder consultation will be undertaken in accordance with Section 4.1.1 as early as possible to enter into agreements for preferred end waste solutions. To inform this consultation, the JV will investigate:
  - Opportunity for onsite composting of organic materials in accordance with the Organics Strategy.
  - Bulk temporary waste storages or compaction equipment to reduce collection frequency whilst not resulting in adverse environmental impacts from odour, spills, littering, vermin and visual amenity.
  - The option for a live auction to be run during construction and at project completion to sell/gift reusable waste materials in preference to offsite transport (where loads are not logistically feasible and not inconsistent with any reuse commercial agreements).
  - Known contaminated land based on listed properties to verify contamination potential through risk assessment processes and develop site specific control measures.
- An Environmental Procurement Plan will be developed and implemented in order to:
  - Ensure the project's waste requirements and any targets are detailed in tender documents and relevant executed contracts.
  - Short list suppliers with packaging initiatives.
  - Preference suppliers and subcontractors during the procurement evaluation process offering waste solutions consistent with this WMP.
  - Ensure quality of materials prior to site delivery and any packaging does not deteriorate during transport and storage resulting in waste.
  - Concrete suppliers comply with the concrete EOWC for maximum beneficial use.
- (Subject to consultation) Investigate the opportunity to enter into a commercial arrangement with Mt Isa Council in order to augment the MRF capability to include timber and concrete recycling to avoid transference of this waste in the west to either landfill or long haulage solutions to eastern recycling solutions.
- Develop a landholder agreement template for the beneficial reuse of waste to meet requirements of Section 104 of the WRRA for reusable waste materials by interested landholders. Prior to civil works on

any particular property, a written agreement with the relevant third party / agent for any beneficial use of waste materials will be obtained.

- Tender and enter into commercial agreements with local waste service providers that will support the project's waste solutions or improve the hierarchy of the proposed outcomes through established local knowledge and buying power.
- Design temporary accommodation hubs with suitable bunded areas for waste storage (nominally 80 x 40m, with collection sump for pump outs) with turnaround access to cater for the predicted quantities of waste (without a high collection frequency) and level of segregation required.

  It is noted that while hubs will be managed as the central storage area for the works area being serviced (i.e. max 90min travelling time away), transit storages will be created at working fronts or temporary works areas that will be internally shipped to central storages for recovery.
- Design temporary accommodation hubs with a separable timber repurposing area (nominally 50 x 50m) with turnaround access to facilitate the conversion of timber into reusable products on site, including:
  - Dunnage used for support and protection of products from potential damage as they are stored in laydown areas or on easement/at substations.
  - Outdoor seating.
  - Raised garden beds associated with landscaping/shade screening.
  - Other as deemed useful to construction or to meet a need of third party users.
- Design temporary accommodation hubs with:
  - A Sewage Treatment Plant (STP) with Class A+ effluent treatment train to maximise reuse of wastewater for beneficial use including:
    - Motor vehicle workshop cleaning.
    - Washdown bay operations.
    - Dual reticulation for toilets and laundry facilities, where mains connections are not available. Where available, additional potable water supply will be required at these locations.
  - Automatic/closed system washdown bays that also treat (eg. sand filter and sump with tank arrangement) and reuse water between washes.
  - Stormwater drainage system that captures potentially contaminated water for treatment and diverts and captures clean stormwater for reuse in dust suppression activities.
  - An oily water system at the Motor vehicle workshops to capture and treat washwater.
- Design temporary and permanent infrastructure/disturbance areas to minimise:
  - Vegetation clearing.
  - Excess spoil.
  - Offsite supply of quarry material to avoid excesses during rehabilitation (when project won material could be used to rehabilitate borrow pit ground depressions when no longer required),unless designed to be retained *insitu* during operation and maintenance periods.
- Operate temporary accommodation hubs with:
  - Provision of reusable lunch containers, coffee cups, lunch bags and water eskies for all workers to avoid single use plastics in accordance with the Plastics Plan
  - Mandated local buy and bulk buy requirements where feasible.
- Prepare a Demobilisation Strategy as part of procurement stage to ensure all reusable formwork is the responsibility of the supplier/owner operator to demobilise and reuse.
- The project's logistics plan will adopt a back loading strategy to ensure:
  - Waste is returned to the supplier where feasible (for overseas suppliers, the Environmental Procurement Plan will target alternative packaging options).
  - General waste is transported to end users where located on the return journey.
  - Dedicated (non-regulated) waste recycling remains cost competitive by stockpiling and transporting full loads.
- The project's construction strategies will include:
  - Inspection and Test Plans that specify quality controls to ensure:

        - Concrete complies with the relevant specification during manufacturing processes, transport and seasonal constraints (eg. high temperatures) to avoid excess concrete disposal and washouts.
        - Materials storage and handling preservation specifications are complied with to avoid replacement buying.
    - Design of temporary works areas that minimise footprints by innovative staging and plant solutions.
    - Bills of Quantities and a Tower Bundles List that duly reflects the design and verified by quality assurance processes to inform procurement.
    - Works supervision during delivery that minimises the percentage of waste in the installation of steel formwork, and when executing electrical and concrete scopes at towers and substations.
- Environmental controls are installed *insitu* for:
    - Respreading of piling spoil on tower pads to avoid slurry waste disposal.
    - The reuse of vegetative matter (for erosion and sediment control, habitat replacement and rehabilitation).
    - Vehicle cleanliness in respect of biosecurity matter.
    - Waste stream segregation to facilitate end uses, and any direct impacts from waste storage areas.
- The feasibility assessment to be used to determine waste disposal over waste recycling solutions must consider:
    - Environmental economics.
    - Project and internal sustainability drivers and policy.
    - Compliance with EIS commitments and conditions of approval.
    - Stakeholder expectations and agreements.
- Establish and continually run an education campaign to support good waste behaviour to:
    - Reduce water usage including timed showering and vehicle washes, particularly having regard to the El Nino watch.
    - Reduce unplanned wastes including:
        - Sewage spills (Macerator failures/portaloo overflows).
        - Refuelling/other hazardous waste spills and spent spill kit materials.
        - Excessive pavement materials during road works.
    - Reduce food and packaging wastes.
    - Maximise the use of products for plant and equipment maintenance (eg. no overfilling, spray cans are exhausted etc..).
    - Avoid cross contamination.
    - Avoid littering.

4.3 On Site Storage and Transportation

4.3.1 On Site Storage

All waste generated will be assessed and classified to ensure appropriate onsite storage for the selected waste strategy to be followed. Waste categorisation has been generally described in the initial waste assessment (Appendix A). Regulated waste will be identified as either category 1 or 2 dependent on risk and this will define the waste levy if disposed of at landfill.

All waste will be:

- Stored in:
    - Lidded bins for putrescible waste (nominally wheelie and skip bins), noting these may be located across the project area but waste for collection will be centralised at designated waste storage areas.
    - A bunded area under cover or in integrity checked bins for regulated wastes.
    - Dedicated cloth covered bins (nominally hook bins) for recyclable wastes with potential to be wind blown (eg. cardboard and plastics, if not using dedicated skip bins).

    - Designated hook bins/storage area for steel.
    - Concrete washouts on easement, subject to permit to disturb process, for excess concrete management.
    - Designated timber repurposing area for reusable timber.
    - Stockpiled for loose non-organic materials (eg. aggregates) with erosion and sediment controls in place.
- Collected on a suitable frequency to prevent excess storage resulting in overtopping or storage outside designated areas from both accommodation hubs and substations (latter based on volume assessments).
- Transported in accordance with legal requirements for regulated waste and heavy vehicle national laws for all waste loads (dependent on the logistics planning for material and waste movement).

Waste management procedure for the correct transport of categorised waste is provided in Appendix C.

The storage and collection of segregated waste to ensure end use strategies are used, will be colour coded (for bins) and appropriately signed in consultation with our waste service provider supplying the waste containers.

The JV will have a dedicated environmental labouring team responsible for:

- Internal movement of bins and portaloos to areas of demand known as transit locations which may be on easement, at ancillary infrastructure locations or substations.
- Assessment of volume of waste storage at any particular time to determine changes in collection frequency, or ad hoc collection requirements. For any change in collection frequencies the assessment will include whether additional containers are required to streamline the future collection program.
- Collection and consolidation of wastes from transit locations to temporary waste storage areas at hubs or substations, dependent on waste collection arrangements with the preferred supplier and environmental controls in place.
- Identification of any waste with no classification for environmental action.
- Identification of cross contamination of waste streams for management action.
- Tracking waste documentation for regulated waste and managing docket/record databases. Refer to the waste monitoring program below.

4.4 Subcontractor Management

The JV will tender and engage a waste service provider(s) to support compliance with this WMP.

The waste service provider(s) will:

- Be licenced for Regulated Waste Transport pursuant to the EP Act for regulated wastes, and preferentially offer an online tracking system for trackable wastes that can be relied upon during works to satisfy generator reporting. This means the waste transporter will be required to provide vehicles that satisfy the Code of Environmental Compliance for regulated waste transport and provide evidence of a current Environmental Authority during the procurement stage.
- Utilise/create partnerships with local operators to achieve and where feasible, improve, waste end use strategies that are both compliant and cost effective, leaving a lasting legacy in the region.
- Provide integrity tested, colour coded and appropriate sized and signed waste containers to meet project demand and align with educational programs.
- Provide a collection service to meet demand, including any changes to the program needed to avoid waste hazards or incidents.
- Support with evidences/records, the waste monitoring program.

The JV will:

- Assure the waste service provider contract to ensure compliance with including retaining copies of all licences (available via Search for environmental authorities | Queensland Government (des.qld.gov.au)).
- Randomly inspect offsite transport of wastes to ensure end use solutions are being met/maximised and there is no unlawful waste disposal. Refer to the assurance program below.

All waste generated by subcontractors for the project, and not serviced by the JV waste service provider contract including use of site located bins, will also meet the requirements of this WMP, mandated through procurement and contract processes.

For all suppliers/subcontractors involved in the back loading strategy for the efficient transport of waste, monitoring and assurance programs of this WMP will also apply.

4.5 Waste Assurance Program

This WMP implementation will be supported by an assurance program comprising:

- Waste monitoring to confirm waste classifications where required
- Waste inspections, on a:
  - Daily basis, to verify:
    - No waste container overtopping/available volume
    - No overfilling, for transport purposes
    - Integrity of containers
    - No littering
    - Waste segregation
    - No pest presence or odour emissions.
  - Post rainfall at every dedicated waste storage area to verify bund capacity and pump out requirements.
  - Weekly basis, at every dedicated waste storage area, to verify:
    - Adequate waste storage and collection frequency
    - Waste storage area bunding integrity.
    - Incorrect waste disposal.
  - Monthly basis, as part of waste reporting, to verify transport of regulated waste in accordance with third party licencing.
  - 6 monthly basis, to verify offsite end use locations are consistent with the waste strategy herein for random waste stream and no unlawful disposal.
- Wastewater release and reuse monitoring and inspections as per approval conditions.

All environmental monitoring (sampling and testing) of wastes will be undertaken in accordance with the JV's Environmental Monitoring Plan, refer to the project's EMF in Section 1. This will include:

- Verification monitoring for waste/hazardous classification, including oily water separator, refuelling bay, water treatment plant and washdown bay generated waste.
- Stormwater quality.
- Treated effluent disposal to land.

4.5.1 Corrective Action

Waste issues on site will be managed in accordance with the JV's Environmental Incident and Non-Conformance Procedure. Refer to the project's EMF in Section 1.

4.6 Waste Records Program

Waste generated and its fate will be tracked per load through a docket system and reported monthly.

It is the responsibility of the Waste Transporter to complete Waste Tracking Certificates providing the prescribed information to the Regulator on the origin and fate of trackable waste.

Accordingly, the JV will utilise the waste service providers and any haulage (delivery) company's recording system to capture the following information.

- Date transported.
- Haulage contractor.
- Waste type.

- Waste classification (where trackable).
- Quantity (volume estimated and confirmed at end use location via either weigh bridges or other form of assessment, including agreed standard weights and conversion calculator).
- End use location.
- Truck registration.
- Docket numbers (haulage, receival, weighbridge, other)
- Waste tracking certificates (numbers only) for trackable wastes. Any paper based certificate copies will be retained on site and issued externally as required under law.

All suppliers/subcontractors will be required to report on a monthly basis waste generation and fate in accordance with the JV's HSEQ Subcontractor Requirements Handbook. To support the tracking of this waste by suppliers and subcontractors who do not have established tracking record systems, dedicated waste tracking registers will be developed for their use. The JV proposes to use a document control system to automatically trigger this requirement for data from third parties coinciding with payment of invoices.

For project records not managed by a third party, the JV will keep a dedicated register. This is expected to apply to:

- Vegetation reuse
- Timber reuse
- Captured clean or treated stormwater reuse
- Wastewater reuse
- Wastewater disposal to land
- Beneficial reuse of waste under landholder or other commercial agreements.

The same standard for waste recording for suppliers/subcontractors will be adopted by the JV.

Based on waste records provided monthly by either waste service providers/delivery companies/suppliers/subcontractors and JV specific records, waste data will be consolidated in order to evaluate:

- The quantity of each type of waste sent to landfill
- The quantity of each type of waste reused
- The quantity of each type of waste recycled
- The quantity of each type of hazardous/regulated waste
- Trends in actual data against predicted volumes (using standard conversion calculations).

As a CIMIC Group requirement, waste yields will be recorded in Synergy as part of quarterly sustainability reporting.

4.6.1 Monthly Environment Report

All relevant information from waste records and evaluation, and assurance will be included in the Project Environmental Monthly Report. This report is prepared for internal performance reporting, Client reporting and available on request by third parties.

5. Management Controls

Waste management to ensure compliance and to reduce risk to the lowest acceptable rating achievable are planned before any relevant works commence.

A summary of waste controls applicable, identified in this WMP are provided in Table 5.

Table 5: Waste management controls

Waste Management Controls	
Environment Objectives	• To implement the waste hierarchy. • Wastes to be disposed of in a lawful manner which does not harm the environment.
Performance Criteria	• Re-use and recycle waste whenever practical. • Records of all waste movements to be maintained. • Full compliance with Commonwealth and State legislation, guidelines and strategies. • No contamination of land or water as a result of project waste management. • No adverse impact on visual amenity or complaints regarding waste management.
Legislation	• *Environmental Protection Act 1994* • *Environmental Protection Regulation 2019* • *Waste Reduction and Recycling Act 2011* • Queensland Waste and Resource Recovery Strategy • Queensland Plastic Pollution Reduction Plan • Queensland Organics Strategy 2022-2032
Approvals	• Refer to the JV's Regulatory Approvals Plan.
Monitoring	• Refer to Section 4.5 of this WMP.
Reporting	• Refer to Section 4.6 of this WMP.

Mitigation Measure	Responsibility
Sustainable procurement will be undertaken in accordance with a project **Environmental Procurement Plan**. Incorporate any waste procurement requirements of the Waste Planning Protocol in this Plan.	The JV Procurement Manager The JV Contracts Manager Project Engineers
The **Waste Planning Protocol** to avoid/minimise planned waste generation in the design and delivery project stages will be implemented.	The JV Design Manager The JV Construction Manager
For specific activities that generate hazardous waste quantities, activity specific plans will be developed including, but not limited to: • Concrete Batching • Sewage Treatment Plant • Water Treatment Plant • Motor Vehicle Workshop.	The Environmental Manger in partnership with Subcontractor
The waste service provider/end user will supply bins (with no integrity issues and all clearly labelled and colour-coded where agreed) in line with waste segregation requirements to achieve the end use outcomes of this WMP. Waste segregation will include, but not be limited to, depending on final stakeholder consultation, partnership agreements and adaptive management: • General waste • Organic wastes • Packaging (cardboard and plastics separate) • Steel	The JV Contracts Manager

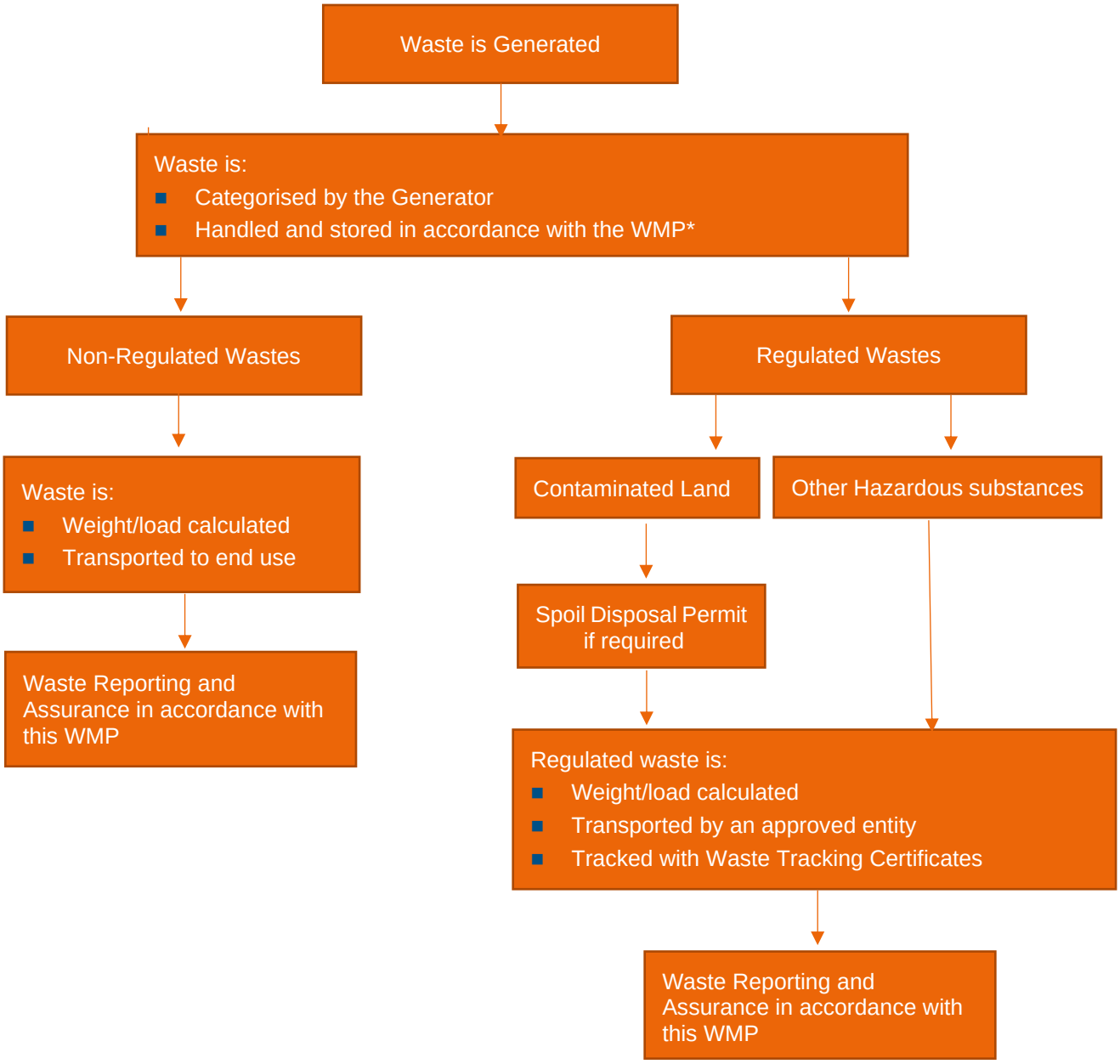
• Concrete • Timber • Regulated wastes. A contract with the waste service provider(s)/agreements with third parties will also detail the collection frequency, based on waste predictions, and provide reliable records for reporting purposes.	
Waste containers will be emptied from the worksite regularly to prevent vermin and pest infestations, overflows and to minimise odours emanating from such areas.	The JV Logistics Manager
Excess concrete and concrete washout will not to be discharged to land or stormwater. A concrete washout facility must always be used. Concrete washout facility locations will be pre-determined and managed as a hazardous storage and will be lined with stormwater controls and maintained to prevent overflow.	The JV Supervisor
Portaloos will be transported around the sites/work fronts without spillage and will be inspected daily to ensure adequate capacity for users. Once capacity is reached, maximum 80%, the portaloo will be changed out and emptied at the nearest project Sewage Treatment Plant. Bulky tanks will operate with high level alarms.	The JV Supervisor
Rubbish burning is not permitted. There are to be no fires. Smoking will be permitted at accommodation hubs in designated areas, but not at work locations.	The JV Supervisor

Appendix A Initial Waste Assessment

Appendix B Council Landfill Facilities

Council	Facility	Waste Accepted	Opening Days	Opening Hours	Comments	For Use by Project
Townsville City Council	Stuart Waste Facility	General waste Regulated waste	7 days	6.30am to 5.45pm	Paints, solvents, chemical wastes and liquid wastes are not accepted by this facility.	Yes
Burdekin Shire Council	Kirknie Landfill	General waste Limited regulated waste	Monday to Friday Saturday	8.00am to 4.30pm 8.00am to 12.00pm	Currently known to receive 8000t/pa and has capacity to take project waste paints, chemicals, oily rags, liquid waste. Any other reg waste not specified above is not able to be accepted by this facility.	No
Charters Towers Regional Council	Stubley Street Landfill & Resource Recovery Area	General waste Limited regulated waste	7 days	8.00am to 5.00pm	Currently known to receive around 13,000t/pa and has capacity to take project waste	Potential
Flinders Shire Council	Hughenden Landfill	General waste Regulated waste	Monday to Friday Saturday to Sunday	8.00am to 11.00am 3.00pm to 6.00pm 8.00am to 11.00am 2.00pm to 6.00pm	Small capacity - can take regulated waste but only up to 10% of total waste received.	Yes
Richmond Shire Council	Richmond Waste Disposal Facility	General waste Regulated waste	7 days	6.00am to 6.00pm		No
McKinlay Shire Council	Julia Creek Recycling and Waste Management Facility	General waste Limited regulated waste	Monday to Friday	7.00am to 3.30pm		No
Cloncurry Shire Council	Cloncurry Landfill	General waste Regulated waste	7 days	8.00am to 12.00pm 1.00pm to 6.00pm	No regulated waste accepted.	No
Cloncurry Shire Council	Cloncurry Regulated Waste Facility	General waste Regulated waste			Cannot accept chemicals, chemical containers, hydrocarbons (including oily rags/ filters), tyres, batteries, paints, liquid waste.	No
Mount Isa City Council	Mount Isa General and Regulated Waste Disposal Facility	General waste Regulated waste	7 days	7.30am to 4.45pm	No liquid waste accepted. MRF under construction.	Yes

Appendix C Waste Management Procedure



*Requirements for the safe handling of hazardous substances will be identified in this Plan in the next revision once safety risk assessments are undertaken.

Initial Waste Assessment

Stage	Waste Category	Waste Stream	Source Activity	Solid/Liquid	Location	Current Estimate	Units	Calc Assumptions	Waste Hierarchy	Storage	Onsite Treatment	End Use Location
Early Works	Regulated waste	Washdown bay sludge	Biosecurity hygiene	Solid	AVDATA Truckwashes/portable washdown bay	1440	m3	Assume 10% solid content of washdown bay water	Dispose	Truckwash - NA, offsite facility	Portable - IBC/other container (if washdown bay onsite)	Truck wash set up with individual detention basins Sludge created by onsite washdowns captured in dewatering pillows and disposed of at landfill as regulated waste (weed contaminated)
Early Works	Non-regulated waste	Washdown bay water	Biosecurity hygiene	Liquid	AVDATA Truckwashes/portable washdown bay	144000	L	30L (calc on site) per minute, x 60 min daily x 8 work days across 8 shifts. Note AVDATA does not provide volume but timed minutes invoicing only	Avoid/Reduce	Truckwash - NA, offsite facility	Portable - treat via dewatering pillow	Release to ground
Early Works	Regulated waste	Septic	Staff Hygiene = 25 persons	Liquid	Alignment	1350	L	Full per shift - 9 shifts x 3 on site; 50L per person per shift	Dispose	Self-contained portaloo	NA	Sewage Treatment Facility - Supplier managed Council public dump points
Early Works	Non-regulated waste	Spoil (slurry)	Borehole drilling	Solid (some moisture)	Alignment	4500	KG	Per borehole (300) x 15kg excess	Dispose	IBC if required to be disposed offsite	Leave insitu, spread at borehole	Onsite treatment preferred Excess slurry disposed of at landfill (not preferred, unlikely)
Early Works	Non-regulated waste	Putrescible/general waste	Staff Hygiene = 25 persons	Solid	Alignment	540	KG	1.5kg/p/week (15 av persons) - 24 weeks	Dispose	Accommodation facilities (temporary containers infield)	Waste containers in vehicles	Municipal arrangements as existing
Early Works	Non-regulated waste	Comingled recycling	Staff Hygiene = 25 persons	Solid	Alignment	180	KG	0.5g/p/week (15 av persons) - 24 weeks	Recycle	Accommodation facilities (temporary containers infield)	Waste containers in vehicles	Municipal arrangements as existing
Early Works	Regulated waste	Hazardous contaminated materials (eg. Soil, spill kit materials, hoses) from diesel, coolant, grease, other	Drilling Operation of a vehicle	Solid	Alignment	Not estimated	NA	Not calculated as unplanned	Dispose	Secondary containment on vehicles	NA	Landfill
Set up	Non-regulated waste	Timber	Satellite Offices - construct and fit out	Solid	Alignment	100	pallets	10 satellite offices, 10 pallets per office	Reuse	Dedicated reuse area for repurposing	NA	Dunnage
Set up	Non-regulated waste	Comingled recycling - packaging	Satellite Offices - construct and fit out	Solid	Alignment	30	m3	10 satellite offices, 1 3m3 bin per fit out	Recycle	Plastics and Cardboard hook bins	NA	Mt Isa/Townsville recycling
Access	Non-regulated waste	Property timber fence posts	Intersect with fences, replace with gates	Solid	Alignment	Not estimated	Posts	Unknown quantity	Reuse	Waste storage area	NA	Landholder beneficial reuse (alternative: timber recycling)
Access	Non-regulated waste	Property fence wiring	Intersect with fences, replace with gates	Solid	Alignment	Not estimated	m	Unknown quantity	Reuse	Waste storage area	NA	Landholder beneficial reuse (alternative: steel recycling)
Access	Non-regulated waste	Clean spoil (wet/dry)	WWBW box out	Solid(some moisture potential)	Alignment	1350	m3	450 crossings - average 3m3 per crossing	Reuse	Stockpiled	ESC	Rehabilitation
Access/clearing	Regulated waste	Empty aerosol cans	Surveying Motor Vehicle Workshop	Solid	Alignment and substations	1000	cans	100 per 100km	Recycle	Waste storage area	NA	Mt Isa/Townsville recycling
Access/ESC	Non-regulated waste	IBCs used (from stonewall)	CESCP activities	Solid	Alignment and substations	200	IBCs	Assume 1 IBC per 5km/substation + reapplication	Reuse	Waste storage area	Washout	Return to Supplier/Dedicated Recycling Facility
Access/ESC	Non-regulated waste	Timber pegs	CESCP activities	Solid	Alignment and substations	3000	Pegs	Combination of 600-900mm stakes, delivered on a pallet with 20 bundles of 25 per pallet	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Access/ESC	Non-regulated waste	Sediment fencing/Geofabric	CESCP activities	Solid	Alignment and substations	120	km	1km per 10km on easement 200m per substation x 6 1km per camp	Dispose	Waste storage area	NA	Landfill
Access/ESC	Non-regulated waste	Coir Logs	CESCP activities	Solid	Alignment and substations	Not estimated	NA	Not estimated, retained insitu	Leave insitu			
Camp construction	Non-regulated waste	Putrescible/general waste	Construction crew occupation	Solid	Accommodation Hubs	6750	KG	No commerical kitchen - 2.5kg/p/day (50% of general waste estimate based on 1/3 recyclable) - crew of 30 (5 per site), 3 months construction	Dispose	Waste storage area	NA	Landfill
Camp construction	Non-regulated waste	Timber	Manufactured offsite dongas, installation and fit out	Solid	Accommodation Hubs	480	pallets	20 pallets per week fitout - 1 month	Reuse	Waste storage area	NA	Return to Supplier
Camp construction	Non-regulated waste	Cardboard	Manufactured offsite dongas, installation and fit out	Solid	Accommodation Hubs	1440	m3	2 x 10m3 hook bins , weekly collection - 3 months construction per camp	Recycle	Waste storage area	NA	Bailed. End use as per waste service provider recycling contract.
Camp construction	Non-regulated waste	Steel	Manufactured offsite dongas, installation and fit out	Solid	Accommodation Hubs	180	m3	1 x 10m3 hook bin monthly x 3 month construction per camp	Recycle	Waste storage area	NA	Steel recycling facility - Townsville Steel recycling facility - Mt Isa
Camp construction	Non-regulated waste	Plastics and strapping/co mingled recycling	Manufactured offsite dongas, installation and fit out	Solid	Accommodation Hubs	240	m3	1 x 10m3 hook bins , weekly collection - 3 months construction per camp	Recycle	Waste storage area	NA	Townsville recycling facility
Camp construction	Non-regulated waste	Concrete	Manufactured offsite dongas, installation and fit out	Solid	Accommodation Hubs			Unplanned quantities, managed as general waste	Dispose	Waste storage area	Reuse in road base on internal roads?	Landfill
Camp construction	Regulated waste	Septic	Mobile bulk facility	Liquid	Accommodation Hubs	2016000	L	Crew - 10 per site (6 sites) x 16 weeks, assume 300/L/day	Dispose	Bulky tanks	NA	Sewage Treatment Plant
Camp construction	Regulated waste	Clinical waste	Construction crew hygiene	Solid	Accommodation Hubs	1200	L	1 x 50L bin per location per month	Dispose	Self-contained bins	NA	Landfill
Camp construction	Non-regulated waste	Slurry	Potholing for services	Liquid	Accommodation Hubs	210000	L	7 days per camp, 1 load per day, 5000L tanker, uincontaminated sites	Dispose	Dewatering offsite	NA	Landfill
All offices - occupied	Non-regulated waste	Paper and cardboard	Office waste	Solid	Accommodation Hubs	133120	KG	1.6kg/p/week based on average workforce of 400 FTE over the duration of the project (4 years)	Reuse	Cardboard skip bin Paper skip bin	Compost	Bailed End use as per waste service provider recycling contract Townsville location. May use Mt Isa MRF when available
All offices - occupied	Non-regulated waste	Electronics	Office waste	Solid	Accommodation Hubs	960	KG	0.3kg/p/year, 1600 pax, 2 years	Recycle	Ark Planet Recycling Box	NA	Townsville recycling facility
All offices - occupied	Regulated waste	Batteries	Office waste	Solid	Accommodation Hubs	240	Batteries	10 batters per week, 24 months	Recycle	Planet Ark Battery Recycling Bins	NA	To be determined
Camp operation - Cloncurry - 230 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	575000	KG	Average aus 1.5T/year (greenpeace) vs 514kg/pp/yr (Qld Gov 2020 SOE report vs 540kg/pp/year). Average 5kg/p/day, (based on 10/4 roster, assume 250 days) Assume peak for 2 years	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Cloncurry - 230 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	287500	KG	2.5kg/p/day (50% of general waste estimate based on 1/3 recyclable)	Recycle	Waste storage area	NA	Recycling - Mt Isa facility (dependent on MRF start date) Recycling - Townsville facility

Camp operation - Cloncurry - 230 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1248	m3	2 x 3m3 skips emptied twice weekly	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Cloncurry - 230 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1040	pallets	delivery twice week - 10 pallets	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation - Julia Creek - 210 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	525000	KG	as per above assumption	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Julia Creek - 210 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	262500	KG	as per above assumption	Recycle	Waste storage area	NA	Recycling - Mt Isa facility (dependent on MRF start date). Recycling - Townsville facility.
Camp operation - Julia Creek - 210 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1248	m3	as per above assumption	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Julia Creek - 210 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1040	pallets	as per above assumption	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation - Richmond - 210 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	525000	KG	as per above assumption	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Richmond - 210 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	262500	KG	as per above assumption	Recycle	Waste storage area	NA	Recycling - Mt Isa facility (dependent on MRF start date). Recycling - Townsville facility.
Camp operation - Richmond - 210 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1248	m3	as per above assumption	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Richmond - 210 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1040	pallets	as per above assumption	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation - Hughenden - 410 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1025000	KG	as per above assumption	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Hughenden - 410 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	512500	KG	as per above assumption	Recycle	Waste storage area	NA	Recycling - Townsville facility.
Camp operation - Hughenden - 410 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	2496	m3	4 x 3m3 skips emptied twice weekly	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Hughenden - 410 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	2080	pallets	delivery twice week - 20 pallets	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation - Pentland - 300 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	750000	KG	as per above assumption	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Pentland - 300 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	375000	KG	as per above assumption	Recycle	Waste storage area	NA	Recycling - Townsville facility.
Camp operation - Pentland - 300 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1872	m3	3 x 3m3 skips emptied twice weekly	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Pentland - 300 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1560	pallets	Delivery twice week - 15 pallets	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation - Charters Towers - 210 pax	Non-regulated waste	Putrescible/general waste	Kitchen/accommodation occupation	Solid	Accommodation Hubs	525000	KG	as per above assumption	Dispose	Waste storage area	assume 50% organic waste recycled, if organic initiative progressed	Landfill
Camp operation - Charters Towers - 210 pax	Non-regulated waste	Comingled recycling	Kitchen/accommodation occupation	Solid	Accommodation Hubs	262500	KG	as per above assumption	Recycle	Waste storage area	NA	Recycling - Townsville facility.
Camp operation - Charters Towers - 210 pax	Non-regulated waste	Cardboard	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1248	m3	as per above assumption	Recycle	Waste storage area	May be partially used for any composting facility onsite	Bailed End use as per waste service provider recycling contract
Camp operation - Charters Towers - 210 pax	Non-regulated waste	Timber Pallets	Kitchen/accommodation occupation	Solid	Accommodation Hubs	1040	pallets	as per above assumption	Dispose	Timber repurposing area	Reuse on site where possible	Landfill Return to Supplier if possible Auction/Beneficial reuse
Camp operation	Regulated waste	Grease	Kitchen/cooking - greast trap	Liquid	Accommodation Hubs	93600	KG	Assume 150kg grease trap per camp per week	Recycle	Grease trap containment	May be partially used to add liquid to any organic composting facility onsite	Composting
Sewage treatment plant - operation	Regulated waste	Biosolids sludge	Sewage Treatment Plant	Liquid	Accommodation Hubs	24960	m3	40m3 per week, collection monthly	Dispose	Containment	NA	Sewage Treatment Plant
Sewage treatment plant - operation	Regulated waste	Non-spec sewage	Ad hoc pump outs	Liquid	Accommodation Hubs	Not estimated		Not estimated, unplanned	Dispose	Containment	NA	Sewage Treatment Plant
Sewage treatment plant - operation	Regulated waste	Chemical containers	Sewage Treatment Plant	Solid	Accommodation Hubs	600	Plastic containers	100 x 20L containers per camp	Recycle	Waste storage area	Washed out, at motor vehicle workshop	To be determined
Water treatment operation	Regulated waste	Clarified Solids	Water Treatment Plant	Solid	Accommodation Hubs	144	m3	1m3 per month, assume 24 months	Dispose	Containment	NA	Sewage Treatment Plant
Water treatment operation	Regulated waste	Chemical containers - 1000L IBCs	Chemical storage	Solid	Accommodation Hubs	144	IBCs	1 IBC per month x 24 months	Reuse	Waste storage area	Washout	Return to Supplier/Dedicated Recycling Facility
Washdown bay - operation	Regulated waste	Contaminated soil (solids/sand filter)	Washdown bay	Solid	Washdown bays x 16	4608	m3	Washout monthly, 1m3 sumps, 6 camps + 10 alignment, water filtered and recycled in tanks/onsite detention basin (24 months average operation), slight moisture content	Dispose	Washdown facilities built in (tanks/detention basin)	Water recycled, topped up as required	Landfill
Civil works	Non-regulated waste	Vegetation/timber	Clearing	Solid	Easement	Not estimated	NA	Not estimated, retained onsite	Reuse	Spread	Mulched	ESC, gorundcover, rehabilitation
Civil works	Non-regulated waste	Vegetation/timber	Clearing	Solid	Substation	Not estimated	NA	Not estimated, retained onsite	Reuse	Stockpiled/Mulched	NA	Stockpiled for rehabilitation
Civil works	Regulated waste	Contaminated Soil (as per EMR proven sites)	Temporary disturbance	Solid	Alignment	Not estimated	NA	Subject to soil analysis and bulk earthworks design	Dispose	Stockpiled	Geofabric covered	Landfill

Civil works	Regulated waste	Weeds	Clearing	Solid	Weed survey sites	Not estimated	NA	Not estimated, retained onsite	Dispose	Stockpiled	Segrated Buried	Disposed of onsite
Civil works	Non-regulated waste	Topsoil	Temporary disturbance	Solid	Alignment	Not estimated	NA	Not estimated, assume balanced onsite	Leave insitu			
Civil works	Non-regulated waste	Subsoil	Temporary disturbance	Solid	Alignment	Not estimated	NA	Not estimated, assume balanced onsite	Leave insitu			
Road works	Non-regulated waste	Bitumen	Road upgrade construction	Solid	Public Roads	Not estimated	NA	Not estimated, asssume no excess	Leave insitu			
Road works	Non-regulated waste	Linemarking paint residue	Road upgrade construction	Liquid	Public Roads	Not estimated	NA	Not estimated, asssume no excess	Leave insitu			
Motor Vehicle Workshops	Non-regulated waste	Adblue tanks	Vehicle operation	Solid	Accommodation Hubs	624	IBCs	2 IBCs per camp per week	Reuse	Waste storage area	Washout	Return to Supplier/Dedicated Recycling Facility
Motor Vehicle Workshops	Regulated waste	Oily water	Vehicle operation	Liquid	Accommodation Hubs	6240000	L	10000L per week	Dispose	Containment sump	Oily water separator	Sewage treatment plant
Motor Vehicle Workshops	Regulated waste	Used oils	Vehicle operation	Liquid	Accommodation Hubs	144000	L	1000L per month	Recycle	Containment sump	Oily water separator	Northern Oil Refinery
Motor Vehicle Workshops	Regulated waste	(oily/greasy) Rags	Vehicle operation	Solid	Accommodation Hubs	174720	L	280L wheelie bin per week	Dispose	Waste storage area	NA	Landfill
Motor Vehicle Workshops	Regulated waste	Drums	Vehicle operation	Solid	Accommodation Hubs	624	Drums	6 drums per week	Dispose	Waste storage area	NA	Landfill
Motor Vehicle Workshops	Regulated waste	hydraulic hoses	Vehicle operation	Solid	Accommodation Hubs	216	m3	1.5m skip every month per camp	Dispose	Waste storage area	NA	Landfill
Motor Vehicle Workshops	Regulated waste	Oil filters	Vehicle operation	Solid	Accommodation Hubs	216	m3	1.5m skip every month per camp	Dispose	Waste storage area	NA	Landfill
Motor Vehicle Workshops	Regulated waste	Tyres	Vehicle operation	Solid	Accommodation Hubs	6240	Tyres	10 tyres per week per hub	Recycle	Waste storage area	NA	To be determined
Motor Vehicle Workshops	Regulated waste	Batteries	Vehicle operation	Solid	Accommodation Hubs	1040	Batteries	10 batters per week	Recycle	Waste storage area	NA	To be determined
Concrete Batching Plant	Non-regulated waste	Washwater	Concrete batching	Liquid	Accommodation Hubs	312000	L	10000L per week	Recycle	Stormwater management	Detention Basin	Sewage Treatment Plant
Concrete Batching Plant	Non-regulated waste	Aggregates	Concrete products	Solid	Accommodation Hubs	Not estimated	NA	Not estimated, assume no excess	Leave insitu			
Fuel Storage	Regulated waste	Hydrocarbon impacted soils	Spills		Accommodation Hubs	Not estimated	NA	Not estimated, unplanned	Dispose	Waste storage area	NA	Landfill
Fuel Storage	Regulated waste	Spent spill kit materials	Spills		Accommodation Hubs	Not estimated	NA	Not estimated, unplanned	Dispose	Waste storage area	NA	Landfill
Fuel Storage	Regulated waste	Spills/hydrocarbon contaminated stormwater	Chemical storage	Liquid	Accommodation Hubs	192000	L	1 pump out monthly, assume 24000L over wet season of 4 months for 2 years	Dispose	Containment	NA	Landfill
Foundations	Non-regulated waste	Excess concrete	Washout of agi-shutes after concrete pouring	Solid	Tower pads	1600	m3	1 pit = 1m3 per tower (tower pads = 1600)	Recycle	Concrete washout facilities	Evaporation	Landfill Beneficial reuse to be investigated
Foundations	Non-regulated waste	Timber pallets	From spacer wheels used on foundation reo cage installation	Solid	Tower pads	1600	pallets	1 pallet per tower (tower pads = 1600)	Dispose	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Foundations	Non-regulated waste	Plastic	Spacer wheels used on foundation reo cage installation	Solid	Tower pads	3200	KG	Plasic per timber pallet, 2kg/timber pallet	Dispose	Waste storage area	NA	To be determined
Foundations	Non-regulated waste	Steel	Offcuts from reo-steel cages	Solid	Tower pads	1600	m3	includes reo straight bars and rings, tire wire, assume 1m3 per tower	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Assembly and erection	Non-regulated waste	Hard Plastic	Supply of bolts, washers, nuts and packers	Solid	Tower pads	3200	Pallets	2 pallets per tower	Recycle	Waste storage area	NA	To be determined
Assembly and erection	Non-regulated waste	Hessian bags	Supply of bolts, washers, nuts and packers	Solid	Tower pads	125000	bags	12500 bags per 160 towers at Macintyre, 1600 CUS towers	Reuse	Storage area	NA	Rehabilitation
Assembly and erection	Non-regulated waste	Plastic bags	Supply of bolts, washers, nuts and packers	Solid	Tower pads	125000	bags	12500 bags per 160 towers at Macintyre, 1600 CUS towers	Dispose	Waste storage area	NA	Landfill Plastic recycling options to be investigated
Assembly and erection	Non-regulated waste	Steel strapping	Tower steel bundling	Solid	Tower pads	240000	m	5m per steel bundle, 30 bundels per tower	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Assembly and erection	Non-regulated waste	Steel	Non-spec steel (offcuts)	Solid	Tower pads	1600	m3	1m3 per tower	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Assembly and erection	Non-regulated waste	Timber	Wooden dunnage - from supplier for delivery	Solid	Laydown	Not estimated	NA	Subject to detailed procurement strategy	Reuse	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Assembly and erection	Non-regulated waste	Timber	Wooden dunnage - during works	Solid	Tower pads	80000	blocks	80 (100x100x300mm) wooden blocks per tower due to some being reused per tower, reduce to 50 based on 8000 used at Macintyre per 160 towers	Reuse	Timber repurposing area	Timber reuse	Recycled and moved with towers within biosecurity zones End use to be determined for excess timber
Assembly and erection	Non-regulated waste	Paint cans	Steel surfacing	Solid	Tower pads	1600	Cans	1 per tower - need to convert to tonnage	Recycle	Waste storage area	NA	To be determined
Assembly and erection	Non-regulated waste	Spray paint cans	Steel surfacing	Solid	Tower pads	1600	cans	1 per tower - need to convert to tonnage	Recycle	Waste storage area	NA	To be determined
Stringing	Non-regulated waste	Timber	Client supplied - palleted and boxed insulators	Solid	Tower pads	444.4444444	Pallets	90 insulators per pallet, used 4000 at Macintyre	Dispose	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Stringing	Non-regulated waste	Cardboard	Client supplied - palleted and boxed insulators	Solid	Tower pads	22222.22222	KG	90 insulators per pallet, used 4000 at Macintyre, 5kg cardbard per pallet	Recycle	Waste storage area	NA	Townsville
Stringing	Non-regulated waste	Steel	Empty condutor drums	Solid	Tower pads	38000	conductor drums	approx 380 at Macintyre - refer to BOQ	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Stringing	Non-regulated waste	Cardboard	Packaging of conductor drums	Solid	Tower pads	190000	KG	approx 380 drums at Macintyre - refer to BOQ, 5kg per drum	Recycle	Waste storage area		Bailed End use as per waste service provider recycling contract
Stringing	Non-regulated waste	Coreflute	Packaging of conductor drums	Solid	Tower pads	76000	KG	approx 380 at Macintyre - refer to BOQ, 2kg per drum	Recycle	Waste storage area		End use as per waste service provider recycling content
Stringing	Non-regulated waste	Timber	Packaging of conductor drums - wooden outer protection layer	Solid	Tower pads	2280000	KG	approx 380 at Macintyre - refer to BOQ, 60kg per drum	Dispose	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Stringing	Non-regulated waste	Steel	OPGW fibre empty steel drums	Solid	Tower pads	4500	steel drums	approx 45 at Macintyre - refer to BOQ	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Stringing	Non-regulated waste	Cardboard	Packaging of OPGW fibre steel drums	Solid	Tower pads	13500	KG	approx 45 at Macintyre - refer to BOQ. 3kg per drum	Recycle	Waste storage area		Bailed End use as per waste service provider recycling contract
Stringing	Non-regulated waste	Coreflute	Packaging of OPGW fibre steel drums	Solid	Tower pads	4500	KG	approx 45 at Macintyre - refer to BOQ, 1 kg/drum	Recycle	Waste storage area		End use as per waste service provider recycling content
Stringing	Non-regulated waste	Timber	Packaging of OPGW fibre steel drums	Solid	Tower pads	135000	KG	approx 45 at Macintyre - refer to BOQ, 30kg per drum	Dispose	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Rehabiltation	Non-regulated waste	Survey pegs	Surveying	Solid	Alignment	47300	pegs	13 pegs per tower outline/legs/centre and offset, + 20 pegs per km easement demarcation - need to convert to tonnage	Dispose	Timber repurposing area	Timber reuse	Landfill Return to Supplier if possible Auction/Beneficial reuse
Rehabiltation	Non-regulated waste	Orange HDPE (plastic conduit)	Surveying	Solid	Alignment in high density vegetation	4000	2m pipes	assumed 20% of the easement length - need to convert to tonnage	Recycle	Temporary	NA	
Rehabilitation	Non-regulated waste	Access track - gravel	Rehabilitation - gravel	Solid	Temporary construction access track - 3m wide	NA	NA	Retained onsite / permanent tracks - 3m in width only	Leave insitu			Note: Retained for operations (reduced scope) unless directed otherwise by Client
Rehabilitation	Non-regulated waste	Access track - gravel	Rehabilitation - gravel	Solid	Temporary construction access track - 1.5m wide pass bays	9000	m3	1.5m passbay 40m in width every 1km, 150mm depth gravel	Dispose	NA	NA	To be determined Investigate options for leave insitu
Rehabilitation	Non-regulated waste	Access track - gravel/bituem	Rehabilitation - turnins/outs and B-double decoupling bays	Solid	Road reserve and intersecting tracks	245520	m3	Refer to disturbance data (alignment)	Dispose	NA	NA	To be determined Investigate options for leave insitu (note design constraint)
Rehabilitation	Non-regulated waste	Road upgrades - Camps	Rehabilitation - bitumen	Solid	Road upgrades at all camps	147900	m3	Refer to disturbance data, pavement depth 150mm	Dispose	NA	NA	To be determined Investigate options for leave insitu Auction/Beneficial reuse
Rehabiltation	Non-regulated waste	Rock	Waterway crossing demob from temp construction track	Solid	Alignment - waterway/watercourse crossings	NA	NA	Not estimated, retained insitu for maintenance	Leave insitu	NA	NA	Retain for operations, to be confirmed

Rehabiltation	Non-regulated waste	Geofabric	Waterway crossing demob from temp construction track	Solid	Alignment - waterway/watercourse crossings	NA	NA	Not estimated, retained insitu for maintenance	Leave insitu	NA	NA	Retain for operations, to be confirmed
Rehabiltation	Non-regulated waste	DMAX pipe	Waterway crossing demob from temp construction track	Solid	Alignment - waterway/watercourse crossings	NA	NA	Not estimated, retained insitu for maintenance	Leave insitu	NA	NA	Retain for operations, to be confirmed
Rehabiltation	Non-regulated waste	Soil	Railway crossing	Solid	Railway crossings	NA	NA	Assume 50 crossings, subject to detailed design	Leave insitu	NA	NA	Retain for operations, to be confirmed
Rehabiltation	Non-regulated waste	Pipe	Railway crossing	Solid	Railway crossings	NA	NA	Assume 50 crossings, subject to detailed design	Leave insitu	NA	NA	Retain for operations, to be confirmed
Rehabiltation	Non-regulated waste	Gravel	Railway crossing	Solid	Railway crossings	NA	NA	Assume 50 crossings, subject to detailed design	Leave insitu	NA	NA	Retain for operations, to be confirmed
Demobilisation	Non-regulated waste	Furniture	Camps	Solid	Accommodation Hubs	75000	KG	50kg per room, nominal 1500	Recycle	NA	NA	Auction/Beneficial Reuse
Demobilisation	Non-regulated waste	Mattresses	Dongas	Solid	Accommodation Hubs	1600	mattresses	Single mattresses, aligns with camp occupation with 10% replacement.	Dispose	NA	NA	Landfill
Demobilisation	Non-regulated waste	Linen	Dongas	Solid	Accommodation Hubs	8000	KG	5kg per 1600 beds	Reuse	NA	NA	Return to Supplier (eg. Sheridan recycling program)
Demobilisation	Non-regulated waste	Steel	Formwork (extenal and internal)	Solid	Accommodation Hubs	Not estimated	NA	Subject to detailed design, procurement strateg	Recycle	NA	NA	Townsville/Mt Isa steel recycling
Demobilisation	Non-regulated waste	Timber	Modular walkways, decking, stairs, other	Solid	Accommodation Hubs	300	m3	50m3 per camp	Dispose	Waste storage area	NA	Auction
Demobilisation	Non-regulated waste	Road base	Trafficked areas	Solid	Accommodation Hubs	10500	m3	As per stormwater design, nominally 60% of ~12ha	Dispose	NA	NA	Landfill Investigate options to leave insitu
Demobilisation	Non-regulated waste	Concrete	Undercover facilities, MVW, waste storage, other	Solid	Accommodation Hubs	4500	m3	1.5ha per camp, 300mm depth	Dispose		NA	Landfill Invetigate options for beneficial reuse/Auction
Demobilisation	Non-regulated waste	Dongas	Staffing	Solid	Accommodation Hubs	400	Dongas	Not estimated, onhire/contract	Reuse	NA		Offhire/Auction
Demobilisation	Non-regulated waste	White goods	Kitchens	Solid	Accommodation Hubs	60	fridge/freezers	10 fridge/freezers per camp	Recycle	NA	NA	Auction
Demobilisation	Regulated waste	Grease trap tanks	Kitchens	Solid	Accommodation Hubs	6	tanks	5000L tanks	Dispose	NA	NA	Landfill
Demobilisation	Regulated waste	Macerators		Solid	Accommodation Hubs	400	Macerators	1 macerator per 4 containers, assume 400 conta	Dispose	NA	NA	Landfill
Demobilisation	Non-regulated waste	HDPE pipe	Water, electrical, sewer, other	Solid	Accommodation Hubs	TBD	TBD	Not estimated, subject to plumbing and drainage design	Dispose	NA	Buried	Landfill
Demobilisation	Non-regulated waste	Water treatment plant	Water treatment plant operation	Solid	Accommodation Hubs	NA	NA	Formwork/modular facilities, recoverable	Reuse	NA	NA	Offhire/Auction
Demobilisation	Non-regulated waste	Sewage treatment plant	Sewage treatment plant operation	Solid	Accommodation Hubs	NA	NA	Formwork/modular facilities, recoverable	Reuse	NA	NA	Offhire/Auction
Demobilisation	Regulated waste	Irrigation Pipe	Effluent irrigation at camps	Solid	Accommodation Hubs	50	km	50mm pipe Assume 1km over nominal 2.5 ha	Dispose	NA	NA	Landfill
Demobilisation	Regulated waste	Sprinklers - steel	Effluent irrigation at camps	Solid	Accommodation Hubs	300	sprinklers	1m high wrought iron pipe, Assume 50 sprinklers	Recycle	NA	NA	Townsville/Mt Isa steel recycling
Demobilisation	Non-regulated waste	Standpipes	Water sources	Solid	Water supply points	50	standpipe	25 (1/4 of proposed locations, as these will relocate with the fronts), with some residual for maintenance and piling	Recycle	NA		Townsville/Mt Isa steel recycling
Demobilisation	Non-regulated waste	HDPE pipe	Water sources	Solid	Water supply points	150	m2	Assume 20m per standpipe, of 150mm pipe	Reuse	NA	NA	Landholder beneficial reuse
Demobilisation	Non-regulated waste	Bulk soil	Water sourcs - turkey nests	Solid	Water supply points	NA	NA	Not calculated as balanced earthworks onsite	Reuse	NA	Fill in, respread on site, if not retained for the landholder	Land management
Demobilisation	Non-regulated waste	HDPE Liner	Water sourcs - turkey nests Concrete washouts	Solid	Water supply points Concrete washouts	17000	m2	assume 20m2 per dam, x 50 dams 1 concrete pit per tower, 10m2	Dispose	NA	NA	Landfill Investigate options for beneficial reuse
Demobilisation	Regulated waste	Polyehthlene plastic bunding	Chemical storage	Solid	Accommodation Hubs	300	pallets	Preferably use DG containers within internal bunding; external bunding for ad hoc chemical storage, 50per camp	Recycle	Waste storage area	Washed for reuse at Motor Vehicle Workshop	Landholder beneficial reuse
Demobilisation	Non-regulated waste	Formwork	Washdown bay	Solid	Camps and alignment	16	Washdown bays	Crompise tanks, pumps	Recycle	NA	NA	Auction
Demobilisation	Regulated waste	Steel	Refuelling tank	Solid	Accommodation Hubs	12	Refuelling tanks	2 x 25000L tanks/containers at each camp	Recycle	NA	NA	On hire, returned to supplier
Demobilisation	Regulated waste	Washdown bay - contaminated soil (post removal)	Biosecurity	Solid	Camps and alignment	5520	m3	6 permanent sites, 40 rolling sites assuming each bay moves 4 times, assume 20x20m, remove 300mm depth	Dispose	NA	NA	Landfill
Demobilisation	Regulated waste	Refuelling bay - contaminated soil (post removal)	Refuelling	Solid	Accommodation Hubs	2880	m3	6 permanent sites, 1600m2 each assume 2 tanks at 20m2 each, remove 300mm depth	Dispose	NA	NA	Landfill
Demobilisation	Regulated waste	Contamianted soil	Motor Vehicle Workshop	Solid	Accommodation Hubs	2880	m3	1600m2 each, 300mm depth	Dispose	NA	NA	Landfill
Demobilisation	Regulated waste	Concrete	Motor Vehicle Workshop	Solid	Accommodation Hubs	2880	m3	1600m2 each, 300mm depth	Dispose	NA	NA	Landfill
Demobilisation	Non-regulated waste	HDPE fabric	Motor Vehicle Workshop Shade structure (dome/igloo)	Solid	Accommodation Hubs	6	domes	9m width, 5m high (Container mounted)	Recycle	NA	NA	Return to supplier
Demobilisation	Non-regulated waste	Formwork	Motor Vehicle Workshop Shade structure (dome/igloo)	Solid	Accommodation Hubs	6	domes	9m width, 5m high (Container mounted)	Recycle	NA	NA	Townsville/Mt Isa steel recycling
Demobilisation	Regulated waste	Formwork	Motor Vehicle Workshop - Oily water separator	Solid	Accommodation Hubs	6	Oily water separators		Recycle	NA	NA	Return to Supplier
Demobilisation	Non-regulated waste	Shipping Containers - Storage	Laydown	Solid	Accommodation Hubs	36	Shipping containers	Assume 6 per camp, offhire/auction	Reuse	NA	NA	Offhire/Auction
Demobilisation	Regulated waste	Shipping Containers - DG	Laydown	Solid	Accommodation Hubs	12	Shipping containers	2 per camp	Reuse	NA	NA	Offhire/Auction
Demobilisation	Non-regulated waste	Formwork	Concrete Batching Plant	Solid	Accommodation Hubs	6	Concrete batching plants	Concrete batching plant and equipment, offhire	Reuse	NA	NA	Offhire, return to Supplier
Demobilisation	Non-regulated waste	Coreflute	Signage	Solid	All	3220	Signs	1600 tower signs, 250 turn ins potential, 940km signage, camp signage x 180, environmental signage x 250	Recycle	Waste storage area	NA	To be determined Steel signage to be recyclced
Demobilisation	Non-regulated waste	Star pickets	Sigange, barricading	Solid	All	2610	Star pickets	50% singage support + 1000 ad hoc	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling Auction/Landholder beneficial use
Demobilisation	Non-regulated waste	Firefighting equipment	Alignment and substations	Solid	All	To be determined		Water tanks, fire fighting equipment: trailers/extinguishers	Recycle	Waste storage area	NA	End use as per waste service provider recycling contract
Demobilisation	Non-regulated waste	Steel fence materials	Fencing	Solid	Accommodation Hubs	12	KM	1.8m high fencing, 2km per camp	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Substations	Non-regulated waste	Steel offcuts	Structures, fencing, reo-cages, mesh, cabling, other	Solid	Substations	10% excess of BOQ		Subject to detailed design	Recycle	Waste storage area	NA	Townsville/Mt Isa steel recycling
Substations	Non-regulated waste	Concrete	Concrete Washout	Solid	Substations	10% every 1m3		Subject to detailed design	Dispose	Concrete washout facilities	Evaporation	Landfill Beneficial reuse to be investigated
Substations	Non-regulated waste	Timber pallets	Packaging	Solid	Substations	3600	m3	Pers comm Kevin Beer, Mt Fox example 600m3	Dispose	Waste storage area	NA	
Substations	Non-regulated waste	Carboard	Packaging	Solid	Substations	780	m3	6m3 change out weekly per substation x 6	Recycle	Waste storage area	NA	Bailed End use as per waste service provider recycling contract
Substations	Non-regulated waste	Plastics and strapping/co mingled recycling	Packaging	Solid	Substations	5616	m3	6m3 change out weekly per substation x 6	Recycle	Waste storage area	NA	To be determined
Substations	Non-regulated waste	Electrical conduits offcuts	Electrical	Solid	Substations	5% excess of BOQ		Subject to detailed design	Dispose	Waste storage area	NA	
Substations	Non-regulated waste	Excess spoil	Civil/foundations	Solid	Substations	Equal to foundation earthworks		Subject to detailed design	Dispose	Stockpiles		
Substations	Regulated waste	Septic	Staffing	Liquid	Substations	NA	NA	Calculated as part of accommodation hubs effluent rates. Separate locations require internal movement	Dispose	Bulky Tanks	NA	Sewage Treatment Plant insitu

Substations	Non-regulated waste	Safety fencing/netting	Safety requirements	Solid		1000	M	assume 1000m total, convert to weight	Dispose	Waste storage area	NA	Landfill Beneficial reuse to be investigated