

REPORT

# Non-Mineral Waste Management Plan for Vitrinite Pty Ltd

20/12/2024



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# 1 INTRODUCTION

The Vulcan South Coal Mine (the Project) is a small-scale coal mine operated by Vitrinite Pty Ltd (Vitrinite). Vitrinite has a statutory obligation to manage waste risks on the mining lease. This Non-Mineral Waste Management Program (NMWMP) has been developed to assist with managing these risks.

## 1.1 Context

The Project operates on mining lease (ML) 700073 and under Environmental Authority (EA) number P-EA-100265081. Queensland Coking Coal Pty Ltd and QLD Coal Aust No. 1 Pty Ltd are the joint holders of this EA, and both companies are owned by Vitrinite.

The Project is a small-scale mining operation which includes a predominantly open cut mining area in the south of the ML and a smaller highwall mining trial area to the north. The Project is located north of Dysart and approximately 45 km south of Moranbah in Queensland's Bowen Basin. The Project lies to the immediate west of several established mining operations, including BHP's Peak Downs and Saraji mines, and south of Vitrinite's Vulcan Coal Mine. The site layout for Project is shown on **Figure 1** below.

## 1.2 Purpose

This NMWMP describes the objectives, management measures and monitoring program in place to manage non-mining waste on ML 700073 during the construction and operation of the Project.

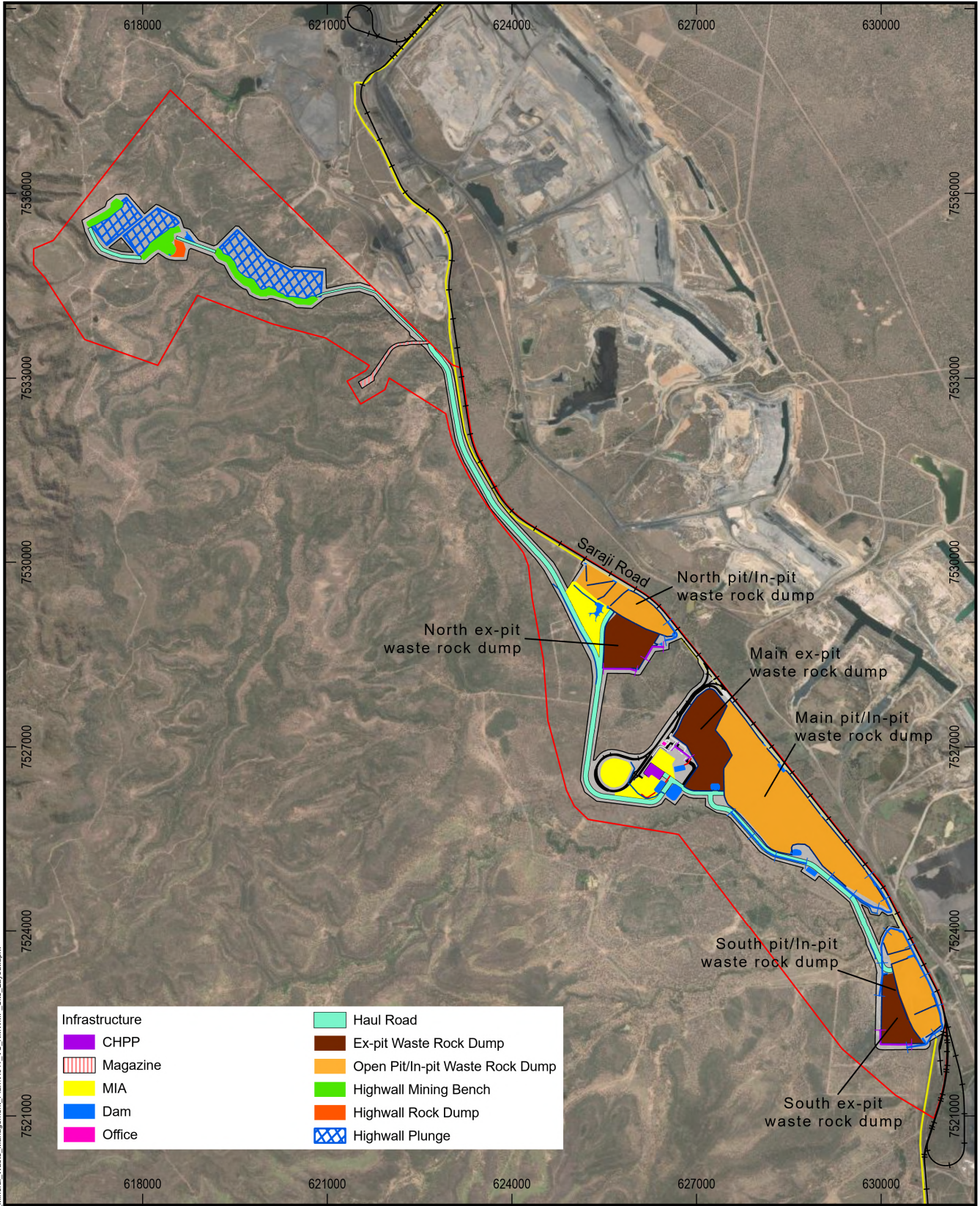
## 1.3 Performance Outcomes

The performance outcomes for waste are:

- Waste generated, transported or received is managed in accordance with the waste and resource management hierarchy under the Waste Reduction and Recycling Act 2011;
- Waste disposal is managed in accordance with the conditions of the EA, and
- If waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values.

The monitoring of achieving the waste performance criteria will be conducted weekly or monthly depending upon the type of monitoring.



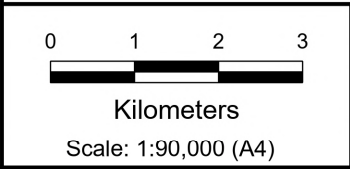


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Legend	
	Railway
	Road
	Rail Loop and Mine Roads
	Mine Access Road
	Flood Levee
	Diversion Bund
	Diversion Drain
	Mine Water Drain
	Surface Water Drain
	Project Area (ML700073)
	Disturbance Footprint

Source: QLD roads and tracks - State of Queensland (Department of Resources) 2021; Rail network - QLD - State of Queensland (Department of Resources) 2024; Watercourse lines - QLD - State of Queensland (Department of Resources) 2024; Infrastructure - Vitrinite, WRM and METSERVE 2022-2024; Imagery - Earthstar Geographics, Maxar.

## Vulcan South Site Layout



17/12/2024

Datum: GDA2020  
Projection: MGA55

**FIGURE 1**

**VITRINITE**  
BRIGHTER COAL

**METSERVE**  
Mining & Energy Technical Services Pty Ltd

## 2 Regulatory Environment

Statutory obligations pertaining to waste management are contained within the EA conditions, as well as within the *Waste Reduction and Recycling Act 2011*. These are summarised below.

### 2.1 EA Requirements

EA Section C outlines the requirements for waste management for Vulcan South.

The EA contains a condition (C7) that requires the preparation of a Non-Mineral Waste Management Program (NMWMP). Condition C8 describes the information to be contained within this program (Table 2-1). Vitrinite is bound by the *Environment Protection Act 1994* to adhere to all conditions of its EA.

**Table 2-1 Conditions of the EA pertaining to waste management**

Condition number	Condition	Section addressed in this NMWMP
C1	The environmental authority holder must plan and conduct activities on site to prevent any potential or actual release of a hazardous contaminant.	Throughout
C2	Waste must not be released directly or indirectly to waters.	Throughout
C3	Only coal mined from ML700073 can be washed on ML700073.	This is described within the Mineral waste Management Plan (RGS, 2024)
C4	Unless otherwise authorised by the conditions of this environmental authority, all waste generated in carrying out the activity must be lawfully reused, recycled or removed to a facility that can lawfully accept the waste.	Throughout and Section 1.3
C5	Unless otherwise authorised by the conditions of this environmental authority, non-mineral waste, except scrap tyres and green waste, must not be disposed of within ML700073.	Throughout and Section 1.3
C6	Unless otherwise permitted by the conditions of this environmental authority, waste must not be burnt.	Section 5.2.6
C7	<b>Non-mineral waste management program</b> The holder of this environmental authority must develop, document and implement a non-mineral waste management program for all authorised activities.	Throughout
C7	The program required under condition C7 must include: (a) a description of each waste stream generated by the authorised activity	Appendix A Waste Stream assessment
C8	(b) a description of the authorised activity that may generate waste; and	Section 3.1
	(c) waste management control strategies, including: (i) recording of the types and amounts of wastes generated by the authorised activity; (ii) segregation of the wastes; (iii) storage of the wastes; (iv) transport of the wastes; (v) disposal of waste including leachate management; and (vi) monitoring and reporting matters concerning the wastes;	Section 5.2

	(d) <i>the hazard characteristics of the wastes generated including disposal procedures for regulated wastes; and;</i>	<b>Appendix A Waste Stream assessment</b>
	(e) <i>a program for reusing, recycling or disposing of all wastes; and</i>	<b>Section 5.2</b>
	(f) <i>how the waste will be dealt with in accordance with the waste and resource management hierarchy, including a description of the types and amounts of waste that will be dealt with under each of the waste management practices in the waste management hierarchy (i.e. avoidance, reuse, recycling, energy recovery, disposal); and</i>	<b>Appendix A Waste Stream assessment</b>
	(g) <i>how the waste will be stored, handled and transferred in a proper and effective manner; and</i>	<b>Section 5.2</b>
	(h) <i>procedures for identifying and implementing opportunities to minimise the amount of waste generated, promote efficiency in the use of resources and improve the waste management practices employed; and</i>	<b>Section 5.6 Improvement Opportunities</b>
	(i) <i>procedures for dealing with accidents, spills, and other incidents that may impact on waste management; and</i>	<b>Section 5.2.11</b>
	(j) <i>details of any accredited management system employed, or planned to be employed, to deal with the waste; and</i>	<b>Section 5.7</b>
	(k) <i>how often the performance of the waste management practices will be assessed; and</i>	<b>Table 5-1</b>
	(l) <i>indicators or other criteria on which the performance of the waste management practices will be assessed; and</i>	<b>Section 5.5</b>
	(m) <i>staff training and induction to the waste management program; and</i>	<b>Section 5.3</b>
	(n) <i>a system for regular review.</i>	<b>Section 7 and Section 5.5</b>
<b>C9</b>	<i>The program required under condition C7 must be regularly reviewed and updated at intervals of no greater than <b>five (5) years</b></i>	<b>Section 7</b>
<b>C10</b>	<b>Storage and disposal of tyres</b> <i>Tyres must be stored and disposed of in accordance with the latest version of the Operational policy - Disposal and storage of scrap tyres at mine sites ESR/2016/2380.</i>	<b>Section 5.2.7 and Appendix A</b>

## 2.2 Waste Reduction and Recycling Act 2011

The *Waste Reduction and Recycling Act 2011* (WRR Act) is the Queensland Government's principal instrument for governing the management of waste. The objects of the WRR Act are as follows:

- To promote waste avoidance and reduction, and resource recovery and efficiency actions;



- To promote and facilitate Queensland's transition to a circular economy;
- To promote activities across government, business, industry and the community that extend the life cycle of products and materials;
- To reduce the consumption of natural resources and minimise the disposal of waste by encouraging waste avoidance and the recovery, re-use and recycling of waste;
- To minimise the overall impact of waste generation and disposal;
- To ensure a shared responsibility between government, business and industry and the community in waste management and resource recovery;
- To support and implement national frameworks, objectives and priorities for waste management and resource recovery.

## 2.3 Waste Tracking Obligations

Under Queensland's environmental protection legislation waste handlers are required to submit waste tracking information to the Department of Environment, Tourism, Science and Innovation (DETSI) as part of the system for tracking waste types as listed in Schedule 11 of the Environmental Protection Regulation 2019 (the Regulation). Therefore, non-mineral waste will be tracked in accordance with the DES Waste Tracking Guideline 2023 (DES, 2023)

A register will be developed and maintained for all regulated wastes generated on site. It will include the following details:

- Source of waste
- Type of waste
- Quantity of waste
- Storage location and details
- Dates of collection
- Date of disposal / recycling and
- Name and details (including licensing details) of transporter and facility used to dispose the waste

## 2.4 Other Regulatory Requirements

Other legislation that is relevant to the Project includes:

- *Environmental Protection Regulation 2019;*
- *Environmental Protection (Regulated Waste) Amendment Regulation 2018;*
- *Environmental Protection (Waste ERA Framework) Amendment Regulation 2018;*
- *Waste Reduction & Recycling (Waste Levy) Amendment Act 2019;*
- *Waste Reduction & Recycling (Waste Levy) Amendment Regulation 2019;*
- *Queensland Waste Management and Resource Recovery Strategy 2019;*
- Waste Avoidance and Recovery Act 2001
- Dangerous Goods Safety Management Act 2001; and
- Public Health Act 2005.

## 3 Waste Management Risk

A range of potential risks to the environment and environmental mitigation measures are outlined below.

### 3.1 Risks

Key activities that will generate or contribute to non-mineral waste material throughout construction and operation of the Project include:

- Construction waste;
- General solid waste generated by site staff, contractors, visitors, and other personnel;
- Workshop operation (waste oils, scrap metals, tyres; batteries); and
- Liquid waste from the treatment of sewage.

Details of the management of these risks are discussed in **Sections 5.5** and **Appendix A**.

Potential waste related impacts could include the following:

- Harm to flora, fauna, and the surrounding environment;
- Harm to human health;
- Fire or explosion from incorrect storage or mixing of hazardous substances/ dangerous goods;
- Dust resulting from the inappropriate storage, handling and disposal of wastes;
- Soil and water, including surface water and groundwater, contamination from inappropriate storage, spills, handling and disposal of solid and liquid waste and materials separated for recycling, reuse, or recovery;
- An increase in the incidence of vermin, insects and pests resulting from the inappropriate storage and handling of putrescible waste; and
- Inefficient use of resources and inappropriate procurement of resources.

A waste stream assessment is provided in **Appendix A** of this NMWMP.

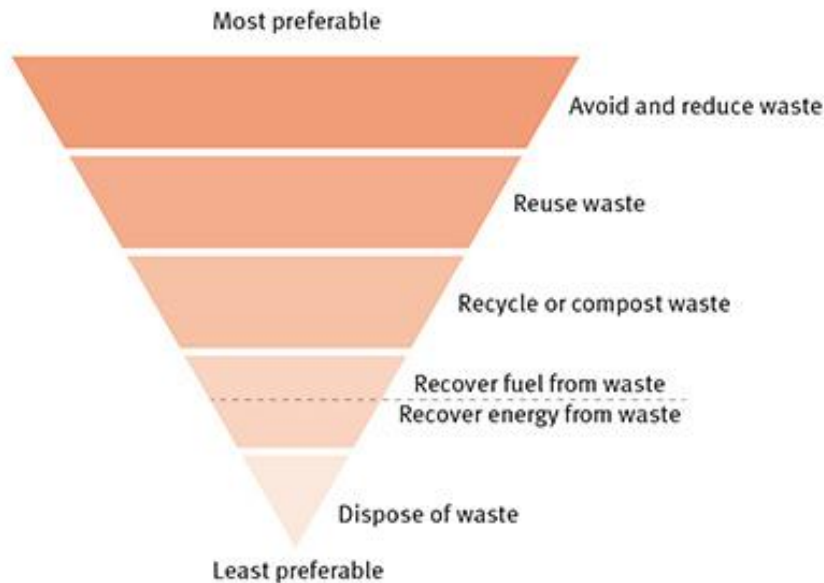
## 4 Waste Management Objectives

The principal objective of this NMWMP is to describe management measures and monitoring programs that fulfil the regulatory obligations of the Project pertaining to waste, as summarised in the points below and described in **Section 2**;

- Ensure that the Project's impacts on waste management are minimised;
- Develop strategies for dealing with and improving waste management;
- Ensure resources are used efficiently to minimise wastage;
- Determine environmental hazards that could arise from the improper handling, treatment or disposal of wastes;
- Comply with relevant legislation to minimise environmental liabilities;
- Use methods of waste storage and handling that are approved by regulators;
- Confirm disposal and transportation of regulated wastes are carried out by approved contractors under appropriate documentation; Nominate the Project's monitoring and reporting requirements in relation to waste; and
- Monitor the effects of management and mitigation measures.

The project aims to follow the waste management hierarchy (**Figure 2**), which is a framework that guides the order of preference for managing waste. Waste should be avoided as a priority, after which options for reuse and recycling

should be explored. The options of fuel production, energy production or disposal should be reserved for residual waste that is unsuitable for higher order options.



**Figure 2 Waste Management Hierarchy (Waste Management and Resource Recovery Strategy [Qld])**

Additional aims for waste management include:

- The types and amounts of waste generated by the facility;
- Procedures for identifying and implementing opportunities to improve the waste management practices employed;
- Procedures for dealing with accident, spill and other incidents that may impact on the waste management;
- How often the performance of the waste management practices will be assessed;
- The indicators or other criteria on which the performance of the waste management practices will be assessed; and
- Complying with the relevant legislative requirements governing waste management in Qld.

## 5 Waste Management Measures

The following subsections describe the management measures to be implemented in order to manage Project waste risks.

### 5.1 Principles of Waste Management

The *Queensland Waste Management and Resource Recovery Strategy* (Department of Environment and Science 2019) lists three strategic priorities to support the transition to a zero-waste society:

1. Reducing the impact of waste on the environment and communities;
2. Transitioning towards a circular economy for waste; and
3. Building economic opportunity.

The waste management measures proposed by this NMWMP incorporate each of these strategic priorities, as discussed in the following sections.

## 5.2 Mitigation Measures

Management measures proposed to avoid and reduce, re-use and recycle material identified as part of this NMWMP are detailed in the sections below.

### 5.2.1 Avoid and reduce

The following strategies for avoiding and reducing (where avoidance is not possible) waste generation onsite have been identified:

- Identify and implement measures for avoiding waste generation and, if avoidance is not reasonable or practicable, reducing on-site waste generation;
- Implementation of Project office sustainability measures through the selection of energy and resource efficient goods and equipment, where practicable (e.g. low wattage fluorescent lighting, inverter air conditioning, insulation panelling to reduce energy consumption, water efficient facilities and rainwater harvesting to reduce water consumption and wastage);
- Where reasonable and practicable, order goods in bulk to minimise packaging waste, and where practicable, return packaging materials to the supplier;
- Develop and implement arrangements with suppliers to return unused construction materials to the supplier; and
- Encourage Project workers to avoid or reduce waste through inductions and toolbox talks.

### 5.2.2 Reuse

The following reuse strategies (e.g. for the identification of waste materials that would otherwise be destined for landfill disposal) have been identified:

- Train staff to identify opportunities for reuse, where practicable;
- Identify and implement strategies for the reuse of waste products generated;
- Where reasonable and practicable, chip and mulch vegetation cleared for the Project and re-use mulched material for stabilization and topsoil improvement.

### 5.2.3 Recycle

The following recycling strategies have been identified:

- Develop and implement Project specific recycling strategies;
- Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative;
- Provide separate recycling bins, skips and storage areas for recyclable materials around the project site;
- Investigate the availability and usability of treated wastewater, stormwater runoff or groundwater inflow for site activities, such as dust mitigation, wash-down uses or watering landscape works (WRM, 2024);
- Where reasonable and practicable, segregate metals for recycling;
- Collect empty oil and fuel drums and other containers for return to licensed recycling facilities. This is to be done by a licensed contractor; and
- Ensure sufficient loading / unloading space exists at the project site to allow waste materials to be segregated and stored for recycling and reuse.

#### 5.2.4 Recover

The following waste streams have been identified for the recovery options:

- Recovery of waste oils; and
- Waste grease.

#### 5.2.5 Treatment

Non-mineral waste will not be treated onsite, instead it will be taken offsite and treated at a licensed waste facility.

#### 5.2.6 Offsite disposal

Waste unable to be reused, recycled, recovered or treated will be disposed of offsite in appropriately licensed landfill sites and sewage treatment systems.

Waste disposal is to be in accordance with Australian Standards, legislative requirements and guidelines. Wastes that are unable to be reused or recycled will be disposed of off-site to a licensed landfill facility following classification.

As per condition **C6**, unless otherwise permitted by the conditions of the Environmental Authority or with prior approval from the administering authority and in accordance with a relevant standard operating procedure, waste must not be burnt.

#### 5.2.7 Onsite disposal

In accordance with the EA, scrap tyres and green waste can be disposed of within the ML700073.

Refer to condition **C10**, tyres must be stored and disposed of in accordance with the *Operational policy - Disposal and storage of scrap tyres at mine sites ESR/2016/2380 Version 2.02*, or the most recent revision available.

#### 5.2.8 Hazardous materials or dangerous goods

This section identifies strategies for hazardous materials and dangerous goods:

- Undertake the storage and transport of any hazardous materials or dangerous goods (including fuel and hazardous waste) in accordance with relevant Australian Standards, legislative requirements and guidelines;
- Hazardous materials and potential sources of hazardous wastes must be documented, and a register of hazardous and regulated waste updated and maintained as required. The register is required to be updated for each new hazardous material introduced on site;
- Safety Data Sheets (SDS) must be kept at the storage location of all hazardous materials and dangerous goods;
- Undertake refuelling and maintenance activities within designated bunded areas to minimise the potential for soil and water contamination from these activities; and
- Prepare and implement, if required, spill response measures in relation to hazardous materials and dangerous goods.

#### 5.2.9 On-site waste storage

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

- Maintain accessible and stable areas at construction worksites for the storage of waste materials;
- Ensure provision of bins at worksite common areas, fitted with lids and serviced to avoid overflowing and spills;
- Liquid wastes are to be stored in appropriate containers in bunded areas until transported off-site; and

- Hazardous wastes will be managed by appropriately qualified and licensed contractors, in accordance with relevant Australia Standards, legislative requirements and guidelines.

### 5.2.10 Waste transport

Where waste is required to be transported to a waste disposal site, the following measures apply:

- Ensure the movement of hazardous materials and regulated wastes occur at non-peak times to minimise the possibility of traffic conflicts and associated risks;
- Transportation of hazardous wastes, regulated wastes and contaminated soils must be undertaken by a suitably licensed waste contractor;
- Ensure that waste transport contractors have the necessary qualifications and permits prior to undertaking waste transportation activities for the Project; and
- Conduct waste tracking in accordance with legislative requirements, including identifying any exemptions from waste tracking.

### 5.2.11 Accidents/spills

Spills will be managed through in accordance with best practice management (*AS1940: The Storage and Handling of Flammable and Combustible Liquids*), including the use of bunding and immediate clean-up of spills.

Hydrocarbon and chemical storage at the Project will be managed in accordance with best practice management (*AS1940: The Storage and Handling of Flammable and Combustible Liquids*), including the use of bunding and immediate clean-up of spills. Appropriate management of hydrocarbons and chemicals will prevent the contamination of both surface and groundwater resources.

Vehicles will be serviced regularly in appropriately bunded and lined workshops to ensure that oils and hydraulics fluid leaks are contained. The workshop will be fitted with appropriate contaminant interceptor traps or equivalent so that leaks and spills are captured and treated. Spill kits will be fitted and located in areas with the potential for spills to occur. The spill kits will be regularly checked and any items used to be replaced immediately.

In the instance of a spill occurring, the impact would be minor and localised, Hydraulic oils and fuels are stored in appropriately bunded and lined areas to prevent soil and groundwater contamination from leaks and spills. Should leaks of oils occur in the unlikely events of accidents or equipment failure, oil spill response kits are used to clean up any localised environmental impacts on adjacent soils, with contaminated soil removed from site and disposed of at an appropriate facility.

A spill kits spreadsheet register will be maintained.

## 5.3 Training

Effective management of waste relies on the understanding of potential risks and the control requirements. All staff and contractors arriving on site for the first time are to undergo a site induction that includes:

- An explanation of the risk posed by waste and a description of everyone's obligations;
- The locations and appropriate use of spill kits, and
- Instructions about the correct management of waste.

In addition to education through inductions, posters depicting the key waste management methods are to be placed in the main office building (where toolbox meetings take place). Additional training for roles associated with the management of regulated non mineral waste/hazardous goods will be provided as required.

## 5.4 Monitoring

Monitoring will be undertaken where putrescible waste is stored onsite. The monitoring requirements specific to waste are outlined below:

- Monitor for the presence of vermin, insects and pest levels and implement appropriate control measures, as required;
- Records of the following waste management information, as a minimum, must be kept:
  - resource use and waste generated from construction works;
  - waste recovered and re-used;
  - waste disposed of to landfill; and
  - waste transporter or contractor details (including company name, licensed operator name and license number).

Monitoring will be conducted monthly in locations where putrescible waste is stored.

## 5.5 Performance criteria

The Following performance criteria will be used to determine the effectiveness of the onsite waste management strategies:

- Quarterly inspection of all waste management areas to confirm adherence to waste segregation requirements and areas are clean, delineated and regular cost-effective disposal is being undertaken and up to date records are kept. This process is recorded through an inspection checklist.
- Inductions for all staff includes training on the appropriate storage, disposal and clean up of waste across the Project area.
- Waste posters are installed in tool box room
- All records are kept and up to date indicated by files tracking certificates
- Monthly inspections are conducted to ensure waste to disposed of correctly in the correct bin, and there are no vermin, insects are pests within waste storage areas

All performance criteria will be assessed through a biannual review as per **Table 5-1**

## 5.6 Improvement Opportunities

The following improvement opportunities in relation to cleaner production outcomes, the maximisation of resource use and minimisation of waste production, as well minimise or potentially eliminate the production of some waste streams are described below.

Aspects of the Project that contribute to cleaner production outcomes include:

- Selecting durable plant and equipment throughout the Project lifecycle to minimise the purchase of new plant and equipment.
- Selecting the most appropriate processes during operation and maintenance, such as the reuse of runoff for dust suppression, and the treatment of effluent for reuse as process water, and
- Recycling of materials such as glass, paper, cardboard and timber.

To maximise natural resource use efficiency and minimise waste production the following will be implemented within the Project area where feasible:

- cleared vegetation (green waste) during construction to be used for rehabilitation

To minimise or potentially eliminate the production of some waste streams, Project planning will be undertaken to:

- substitute inputs for activities that generate waste
- increase the efficiency in the use of raw material, energy, water or land
- redesign processes or products
- improve the maintenance and operation of equipment
- minimise the amount of material brought onsite, which will not only satisfy the waste management objectives, but also reduce costs associated with the project
- purchase in bulk where appropriate and practicable to reduce the amount of packaging waste and costs and
- return excess materials such as drums, buckets and used chemical containers to the supplier or other local users for reuse where possible.

## 5.7 Management Systems & Strategic Responses

The environmental authority holder must, prior to the commencement of activities, develop and implement a risk management system for activities which mirrors the content requirements of the Standard for Risk Management (*ISO31000:2018*), or the latest edition of an Australian Standard for risk management, to the extent relevant to environmental management. The Risk management system procedures for the Vulcan South Project have been developed (METServe 2024). The tables in **Appendix A** details the risks and control measures used to minimise the risk levels for the management of waste at the Project site.

## 5.8 Roles & Responsibilities

The roles and responsibilities of personnel are listed in **Table 5-1**.

**Table 5-1 Roles and responsibilities**

Responsible person	Management Measure	Timing
General Manager	Oversee implementation of the Non-Mineral Waste Management Plan	Throughout the construction, operational and rehabilitation phases
	Prepare and give inductions to new staff and contractors	Throughout the construction, operational and rehabilitation phases
	Providing technical support to all departments and personnel on issues related to waste management	Throughout the construction, operational and rehabilitation phases
	Production and installation of waste posters in the tool box room	Prior to the start of the construction phase
	Oversee the revision of the Non-Mineral Waste Management Plan	Throughout the construction, operational and rehabilitation phases
Storage/warehouse manager	Providing appropriate waste bins to adequately segregate waste and limit cross-contamination of waste streams	Prior to construction
Construction manager	Recording the types and amounts of waste generated by the Project	Weekly
	Ensure waste records and tracking certificates are completed and kept on file	Weekly
Environmental Advisor	Undertake regular inspections of waste segregation	Monthly
	Monitor for the presence of vermin, insects and pest levels and implement appropriate control measures	Monthly
	Inspection of all waste management areas to confirm adherence to waste segregation requirements and areas	Biannual



Responsible person	Management Measure	Timing
	are clean, delineated and regular cost effective disposal is being undertaken and up to date records are kept .	
All staff and contractors	The collection and disposal of the waste that is generated through its activities, including planned and un-planned shutdown operations	Throughout the construction, operational and rehabilitation phases
	Understand their waste management responsibilities	Throughout the construction, operational and rehabilitation phases
	Ensure waste is placed in correct waste bin	Throughout the construction, operational and rehabilitation phases
	Assist in the disposal & recycling of regulated and non-regulated wastes to offsite locations.	Throughout the construction, operational and rehabilitation phases

## 6 Reporting

The following are the reporting requirements of this NMWMP:

- Incidents relating to waste;
- A report in relation to waste management may also be prepared as and when required; and
- Third Party Reporting requirements as per condition **A27** of the P-EA-100265081.

## 7 Management Plan Revision

The following circumstances will trigger a revision of this NMWMP:

- Revisions to the P-EA-100265081 that change waste related conditions in Schedule C: Waste;
- Revisions to the Waste Reduction and Recycling Act 2011;
- Revisions to the Queensland Waste Management and Resource Recovery Strategy and/or
- Changes to waste management methodologies.

As per Condition C9 of EA-100265081, this NMWMP must be regularly reviewed and updated at intervals of no greater than five (5) years. The General manager will be responsible for instigating and managing the revision.

As described within **Table 5-1** the General Manager will inspect all waste management areas to confirm adherence to waste segregation requirements and areas are clean, delineated and regular cost effective disposal is being undertaken and up to date records are kept. This will be conducted on a biannual basis.

## References

Department of Environment and Science (2019) *Queensland Waste Management and Resource Recovery Strategy*. Department of Environment and Science, Queensland Government, Brisbane.

Waste – EIS information guideline.

DES 2023. Waste Tracking Guideline – Overview of managing waste tracking in Queensland.

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DNRME 2008, Handling Explosives in Surface Mines and Quarries

RGS 2024. Mineral Waste Management Plan.

Schedule 19 of the Environmental Protection Regulation. Defines recyclable waste and commercial waste, other than regulated waste.

METServe, 2022. Site-Specific Application Supporting Information Vulcan South, prepared for Vitrinite by METServe, November 2022.

WRM 2024. Water Management Plan.

# Appendix A

## Waste Stream Assessment

The waste streams associated with the construction and operation stage are described below in **Table A-1**. Quantities of waste are differentiated depending on the construction and operation stage.



Table A-1 waste stream assessment

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources (Activity and/or location)	Estimated quantity (construction)	Estimated quantity (operation)	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
Non-Regulated Waste	Organic products	Green waste (native vegetation)	Vegetation removal/land clearing for infrastructure and access, landscape maintenance	164 ha*	164 ha*	Temporarily stockpiled on or off site prior to mulching/reuse	Mulched and reused in landscaping or as soil treatment measures	None required - reuse onsite as mulch and for rehabilitation works.	If not handled or stored properly, potential to spread weed, potential fire hazard. If disposed to landfill contributes to methane generation
		Green waste (cacti / restricted weeds)	Vegetation clearing – restricted matter	164 ha*	164 ha*	Mechanical removal and transport to burial trench	Deep burial and monitoring of surface for regrowth.	Placement in deep trench and capped with >1.5m non-growth material	If not handled or stored properly, potential to spread weeds. If mulched, higher potential for infestation.
		Cardboard/paper	Construction work sites (office, kitchen, stores)	20m <sup>3</sup>	20m <sup>3</sup>	Colour coded recycling bins provided	Separation by individual disposers	Removal by waste contractor for recycling	Within landfills decomposing paper products generate methane which is a greenhouse gas
		Food scraps/ kitchen waste	Construction work sites (kitchen) Construction	130m <sup>3</sup>	230m <sup>3</sup>	Colour coded food scrap bins, or composting bin	Separation by individual disposers	Removal by waste contractor for composting or onsite composting	Potential odour production and vermin attraction if not handled appropriately. If landfilled contributes to greenhouse gas emissions from landfills
Construction Waste	Construction Waste	Timber from packaging material (pallets, crates)	Material delivery	<200 kgs	<200 kgs	Segregated into skips specific to timber off cuts	Reduce the amount of packaging sent to the site in consultation with the suppliers	Return to supplier or recycle with other timber products	Unnecessary use of landfill capacity if disposed to landfill. Reuse aids in reduction of need for more timber products. Plywood and Particleboard are timber products bonded with adhesives (resins) generally not suitable for composting. Possible refuse derived fuel at appropriately licensed facilities
		Lighting: Fluorescent light tubes, high intensity discharge lamps, compact fluorescent lamps, other mercury containing lamps	Construction activities	<10 kgs	<10 kgs	Segregated and stored for collection	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removal by a licenced waste contractor for resource recovery/recycling	Mercury containing items. Mercury is a potent neurotoxin in humans and a toxic heavy metal when accumulated in the environment
		Concrete	Construction activities	<10 tons	<2 tons	Segregated in the waste area or at source	Segregation	Removed by waste contractor for reuse/recycle	Unnecessary use of landfill

Waste Regulatory Status	Waste Category	Waste Stream Description	Waste Sources (Activity and/or location)	Estimated quantity (construction)	Estimated quantity (operation)	Storage Method	On Site Treatment (if any)	Disposal Method	Environmental / Human Impact
						location for direct removal from site.			
	Metal	Pipe and conduit offcuts, plastic piping, flooring vinyl	Construction activities	<10 tons	<10 tons	Segregated into plastic waste stream	Segregation into skips specific to material	Removal by waste contractor for recycling	Using recycled materials reduces energy consumption in comparison with creating a product with raw materials. Material unable to be recycled or reused will be disposed to landfill
		Steel off cuts, structural steel (including tracks), pipe work, operational equipment, building sheeting	Construction activities	<2 tons	<2 tons	Skips specific to waste steel to be provided during construction	Segregation by workers and storage in designated location	Removal by waste contractor for recycling. Monetary incentives can be obtained for recycling of waste steel.	Recycling of steel aids in the reduction of mining raw materials. Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
		Copper pipes and copper electrical cables, aluminium, corrugated roofing iron	Overhead wire installation, underground services installation, construction office fit outs	<2 tons	<2 tons	Skips specific to waste metal to be provided during construction	Segregation by workers and storage in designated location	Reuse/sell to scrap metal dealers	Recycling of steel aids in the reduction of mining raw materials. Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
		Aluminium beverage cans	Construction work site (workers)	< 100 kgs	<100 kgs	Coloured coded aluminium recycling bins to be provided	Separation by individual disposers	Removal by waste contractor for recycling	Using recycled metal reduces energy consumption in comparison with creating a product with raw materials
	Miscellaneous	Material/equipment packaging (shrink wrap/pallet wrap/bubble wrap, Poly-Styrene)	Materials delivery	<200 kgs	<200 kgs	Segregated into plastic waste stream	Avoid delivery to site, then segregation	Avoid where possible then reuse/recycle	Using recycled materials reduces energy consumption in comparison with creating a product with raw materials. Material unable to be recycled or reused will be disposed to landfill
		Food/beverage containers/wrappers (recyclable)	Construction work sites	<70 kgs	<70 kgs	Coloured coded recycling bins to be provided	Separation by individual disposers	Recycle	Using recycled materials reduces energy consumption in comparison with creating a product with raw materials. Material unable to be recycled or reused will be disposed to landfill

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	Plastics	Food/beverage containers/wrappers (non-recyclable)	Construction work sites	<100 kgs	<100 kgs	general waste bins	None	Landfill	Using recycled materials reduces energy consumption in comparison with creating a product with raw materials. Material unable to be recycled or reused will be disposed to landfill
		Mixed waste, unsegregated, unsorted waste (not regulated waste)	Construction work sites	<150 kgs	< 150 kgs	general waste bins and skips	None	Landfill	Unnecessary placement in landfill
	Liquid wastes	Oil spill clean-up kit materials, cleaning/maintenance rags	Construction work sites, plant and machinery workshops	<50 kgs	<50 kgs	Segregated in bins/skips specific for oily rags/materials, etc. in accordance with AS 1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.
		Pavement/surface water /stormwater runoff from construction sites	Construction activities	300 ML <sup>^</sup>	400 ML <sup>^</sup>	Stormwater retention/detention ponds/sediment pond	Sediment/silty water pond	Water is diverted through the water management system to onsite sediment dams (WRM, 2024)	Potential land and water contamination, siltation of waterways and creeks. Monitor downstream surface water offsite disposal points.
		Mine affected water	Any water that has been used or potentially contaminated by mining operations, including mine runoff water, groundwater seepage into pit, or water that has been used at the CHPP.	3, 139 ML of pit water being dewatered into MWD's	3, 139 ML of pit water being dewatered into MWD's	Mine affected water dams	Mine affected water will be reused for dust suppression and stored within the Mine water dams. None of the mine affected water dams are modelled to release even under extreme rainfall requirements.	Storage in mine affected water dams	In the instance of MAW release (of which there are none modelled) there would be hazardous contamination of the land and receiving environment.
		Empty plastic or metal drums/containers (recyclable)	Supply of chemicals, paint, oil, cleaning fluids, etc.	<200 kgs	<200 kgs	Store on bunded pallets in accordance with AS1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Return to supplier for reuse or licensed specialist hazardous waste contractor for offsite treatment / disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.

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Regulated Waste	Hazardous waste	Paints and solvents	Painting stations/noise barriers/ infrastructure, cleaning	<100 kgs	<100 kgs	Bunded compound or self bunded pallets	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for reuse/offsite treatment/disposal	If not handled appropriately, potential land and water contamination
		Wash-down water	Wash-down of transport vehicles, construction site wheel wash	1500 ML	1500 ML	Dedicated wash-down bay for vehicles holding tank may be required	Washdown water goes through an oily water separator	Oily water will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Potential land and water contamination. Water meter on wash-down water supply system - monitor water usage and subsequent wash-down water treatment and disposal
		Explosives and explosive packaging	Explosives magazine	<2 tons	<2 tons	In accordance with the Handling Explosives in Surface Mines and Quarries 2008 (DNRME, 2008)	Treated as a hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Potential human safety risk, in addition to potential land and water contamination.
	Liquid wastes	Oils	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage
		Lubricants	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage
		Grease	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage
		Hydrocarbons	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage

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		Diesel	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage
		Petrol	Wash down of transport vehicles, tunnel wash down water potential mixed with groundwater inflow	<50 ML	<50 ML	Tunnel drainage system, holding tank may be required	If unsuitable for offsite discharge to waterway then treated at offsite WWTP	This will be removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Treated tunnel wash-down water may be suitable for reuse onsite to reduce potable water usage
		Sewage	Construction work sites during construction	<6 ML	<5ML	Holding tanks and pumping stations	Pumped to truck, transported and treated at WWTP	Pumped to truck, transported and treated at offsite WWTP	Health impacts and surface water contamination if sewage not managed appropriately. Water meter on potable water supply - monitoring water usage
		Lead-acid; lithium hydride; Ni-Cd	Spent batteries from vehicles, construction machinery, portable equipment	<40 t	<40 t	Bunded compound	Segregation	Removed by a licensed contractor to a battery recycling facility or waste disposal facility licensed to receive regulated wastes	Contain lead, lead compounds and/or sulphuric acid. Lead compounds are toxic humans and the environment. Acid is corrosive. Audit handling and quantity of batteries used for project and confirm recovery, reuse, recycling, disposal
	Tyres	End of life tyres (Shredded/bald tyres)	Workshop	300 tons	100 tons	Segregated into stockpiles for removal off site	Segregation	Tyres must be stored and disposed of in accordance with the Operational policy - Disposal and storage of scrap tyres at mine sites ESR/2016/2380 Version 2.02, or the most recent revision available.	Inappropriate handling and storage potential health and environmental concerns; fires in stockpiles can release toxic gases, pollute waterways, tyre stockpiles provide breeding habitats for mosquitoes.
	Batteries	Lead-acid; lithium hydride; Ni-Cd	Workshop	40 tons	40 tons	Bunded compound	Segregation	Removed by a licensed specialist waste contractor in accordance with site management plan for offsite treatment or disposal to landfill	Contain lead, lead compounds and/or sulphuric acid. Lead compounds are toxic humans and the environment. Acid is corrosive.



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	Chemical	Empty drums/containers (non-recyclable)	Supply of chemicals, paint, oil, cleaning fluids, etc.	< 1.5 tons	< 1 ton	Storage In accordance with AS 1940 (bundled area)	Rinse in designated area on site (if appropriate), crush and puncture prior to dispatch to recycler or disposal	Removed by a licensed specialist hazardous waste contractor for offsite reuse / treatment / disposal	Land and water contamination including both surface and groundwater. Also a potential fire hazard. Audit appropriate onsite handling procedures, haulage and destination
	Contaminated Soil	Oils, lubricants, grease, hydrocarbons, diesel, petrol	Machinery / vehicle / rolling stock / track repair machines oil changes and lubrication during construction and operation	< 1.5 tons	< 1 ton	In accordance with AS 1940	Treated as a potential hazardous waste, handled and stored so that contamination does not occur	Removed by a licensed specialist hazardous waste contractor for offsite treatment/disposal	Land and water contamination including both surface and groundwater if not handled and stored appropriately. Also a potential fire hazard.

Note: Waste Rock management is addressed in the Mineral Waste Management Plan (RGS 2024)

\*The average annual disturbance of land (i.e. green waste) assuming the life of the Project is 9 years

^ Based on Table 7.1 of the Surface Water Impact assessment



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