CHAPTER 15 WASTE MANAGEMENT

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15 WASTE MANAGEMENT

This chapter identifies waste streams that will be produced by the Project and details procedures to be implemented to manage these waste streams.

15.1 INTRODUCTION

Wastes that will be produced from the Project include:

- non-mineral waste including:
  - general waste;
  - recyclable waste;
  - regulated waste; and
  - hazardous waste.
- wastewater; and
- mineral waste (tailings, waste rock).

15.2 IMPACT ASSESSMENT

The potential impacts from the Project include:

- odour generation and decline in amenity caused by the accumulation and spread of waste on-site;
- depletion of site heritage value;
- contamination at storage, disposal and/or reuse point(s); and
- depletion of landfill space.

The following waste management programme provides measures for the management of non-mineral waste, wastewater and mineral waste. Implementation of this strategy will prevent adverse impacts resulting from waste generation.

15.3 MANAGEMENT MEASURES

15.3.1 Overview

The management of waste will be undertaken in accordance with BHOP's proposed Waste Management Programme. The objectives of this programme are:

- to establish a waste management hierarchy under the *Waste Avoidance and Resource Recovery Act 2001* i.e. avoidance – resource recovery - disposal;
- to comply with the NSW Waste Avoidance and Resource Recovery Strategy 2006, which emphasizes a life cycle approach to waste and identifies the following key areas:

- to prevent and avoid waste, where possible;

- to increase recovery and use of secondary materials;

- to reduce toxicity in products and materials; and

- to reduce litter and illegal dumping;

- to comply with the DECCW (1999b) E*nvironmental Guidelines: Assessment, Classification & Management of Liquid and Non-Liquid Wastes*; and

- to comply with the POEO Act 1997.

15.3.2 Non-mineral waste

Non-mineral waste (general, recyclable, regulated and hazardous) will be generated during construction works and mine operations, particularly at maintenance workshops, administrative offices and changehouse facilities. Proposed management and disposal strategies for this waste are identified in *Table 15-1*.

The procedures for management of wastes, including requirements for tracking and recording of regulated and hazardous wastes, will be detailed in waste management programme and will meet regulatory requirements.

Table 15-1 Non-mineral waste types and management

Waste type	Waste categories	Storage and disposal method
General Waste	▪ Food scraps (putrescible waste) ▪ Food wrappers ▪ Non-recyclable plastics (packaging) ▪ Rope ▪ Rubber (hydraulic) hoses ▪ Polystyrene cups ▪ Damaged pallets or wooden products ▪ Rubber bands, metal clip binders, pens ▪ Damaged air filters ▪ Paper ▪ Magazines ▪ Cardboard ▪ Plastics ▪ Toner cartridges	To be stored on-site in wheely bins or bulk bins for collection and off- site disposal by BHCC waste disposal contractor or a licensed waste disposal contractor, respectively. Note that no recycling service currently exists in Broken Hill for paper, magazines or plastics. Should this service become available, BHOP will utilise this service for recyclable waste.
Recyclable waste	▪ Light and heavy vehicle tyres ▪ Scrap metal ▪ Aluminium cans ▪ Glass bottles	Scrap metal and used vehicle tyres to be stored on-site and reused on-site where possible. Tyres will be reused as markers or for other delineating purposes. If unable to be reused, they will be collected by a licensed contractor for off-site disposal. Aluminium cans and glass bottles to be stored on-site in bins and transported to a recyclables collection point in Broken Hill for recycling.
Regulated waste	▪ Oils ▪ Grease	Regulated waste to be stored on-site in drums or designated bins in a bunded area and collected by

Waste type	Waste categories	Storage and disposal method
	▪ Lubricants ▪ Oily rags ▪ Contaminated soils ▪ Oily contaminated absorbents ▪ Oil filters ▪ Oily water ▪ Coolant ▪ Contaminated hoses ▪ Contaminated drums	a licensed contractor for recycling or disposal off-site at a regulated facility.
Hazardous Waste	▪ Lead acid batteries ▪ Chemicals ▪ Reagents ▪ Contaminated drums/ containers	During the initial phase of operations, packaging from explosive products to be buried in a separated, designated site in the bottom of BHP Pit. In the long-term, this packaging will be disposed of as part of the back fill for stopes.
	▪ Explosive product packaging	Other hazardous waste to be stored on-site in a bunded area and collected by a licensed contractor for recycling or disposal off-site at a regulated facility.

15.3.3 Wastewater

Wastewater will be generated from equipment washpads, processing operations and as sewage from changehouse and amenities. The wastewater management system has been designed to maximise recycling and beneficial use of site water.

The vehicle wash facility will be a closed system, with all wastewater captured and directed through an oil / water separator and sediment separator, prior to reuse as washdown water. Wastewater from the two vehicle wash down pads adjacent to the maintenance workshop will be discharged via an oil / water separator through a sequence of two settling dams. Following settling, the water will be reused on-site in the vehicle wash facility, used in processing or allowed to evaporate.

The oil collected from the oil water separators will be stored in drums within an appropriately bunded facility beside the workshop until such time as the waste oil can be collected by an appropriately licensed contractor for disposal. The sediment collected from the wash bay settlement ponds and the truck wash sediment collection system, will be collected and placed in a dedicated sump (located in the vicinity of the settlement ponds) to be stabilised before being transported. The stabilised sediments will be transported to the BHP Pit (or Blackwood Pit when it is in use as a TSF) where the sediment will be deposited.

Investigations will be undertaken in treating this waste water for use in dust suppression and / or ground maintenance.

Sewage will be managed using the existing surface sewerage facilities and infrastructure within the Project Area. This will involve disposal via Broken Hill's reticulated sewage system, with the exception of sewage generated at the back fill plant area, which will be collected, treated and disposed of through an on-site septic system. The on-site septic system will be regularly maintained for continued operational efficiency.

15.3.4 Mineral waste

Waste rock

Details of management of waste rock are provided in *Sections 2.4*. Waste rock comprises inert aluminosilicate minerals such as feldspar, quartz, biotite, muscovite and sillimanite. These rock types do not generate acidic water; feldspar and sillimanite decomposition consumes acid.

The Potosi Gneiss unit is quarried as 'blue metal' for the local Broken Hill market and surrounding areas in the adjacent quarry owned and operated by consolidated E B Mawsons & Sons Pty Ltd. It is predominantly used for road base.

The volume of waste rock to be extracted from underground development is 250,000 tpa. Waste rock from underground mining will be deposited in underground voids as they become available. Where there are no voids available the waste rock will be:

- placed in underground drives waiting for a void to become available;
- used as rehabilitation material on-site; and / or
- stored in Kintore Pit awaiting back-loading into underground voids upon availability.

Inert waste rock will be utilised as:

- road base for the construction of underground and surface haul roads;
- fill material for earth bunding to be built as part of the noise mitigation; and / or
- material for rehabilitation purposes on-site.

Tailings

Details of management of tailings from the processing plant are provided at *Section 2.6*. Tailings will be piped from the processing plant to the mine backfill plant; pipes will be trenched and / or bunded. At the back fill plant the tailings will be thickened and separated by cycloning to produce two waste streams differentiated by particle size.

The coarser fraction of the tailings stream will be directed underground via boreholes and fill lines to mined voids (for use as backfill) as detailed in *Section 2.6.6*. The remainder will be deposited in surface storage in two separate facilities (*Figure 2-11*): TSF1 – two raises to the existing TSF (*Section 2.6.4*); and TSF2 – disused Blackwood Pit (*Section 2.6.5*).

During commissioning and ramp up of underground production, all tailings will be directed to the surface storage facility at TSF1 until suitable voids (empty stopes) are available underground.

For further information on the management of these facilities and their potential environmental impacts refer Chapters *2 Project Description* and *8 Air Quality Assessment* of this Report.

15.4 CONCLUSIONS

The Project will generate mineral and non-mineral waste and wastewater. A waste management strategy has been developed for the Project in accordance with the principles of key waste legislation and guidelines and the waste management hierarchy. Through its implementation identified waste streams will be appropriately managed, including reduction at source, reuse and recycling where possible, and practicable, and appropriate disposal. This will enable compliance

with relevant guidelines and regulatory requirements and minimise the potential for adverse impacts.