CHAPTER 7

Demolition and disposal implementation

1. Principles of Demolition and Disposal

ENGIE Hazelwood will progressively decommission and then demolish a range of remaining redundant mining plant and infrastructure. Decommissioning is expected to be completed as per the conceptual schedule in Table 7.1.

Table 7.1 Conceptual demolition schedule

CLOSURE DOMAIN		SUB-DOMAINS		
NO.	TITLE	NO.	CLOSURE DOMAIN	DEMOLITION SCHEDULE
1	Mine void	1	Mine void lake	Temporary floating booms used for shoreline protection during mine fill to be removed at the end of the mine filling period.
		2	Mine batters and floor	Redundant infrastructure generally removed during rehabilitation of batters. Installed geotechnical monitoring instruments below RL +45m progressively decommissioned as required prior to completion of mine filling.
		4	Landfills and disposal areas	Operational infrastructure in the HARA has already been removed. Leachate disposal pump and pipe to be removed as part of the HARA rehabilitation and capping phase.
		6	Infrastructure	Fire service pipe network below RL +45m to be progressively shortened as the water level rises during the mine filling phase. Sections of the fire service ring main, located below RL +45m on the HARE wall will be reconfigured prior to becoming submerged to maintain this fire service ring main. The fire service ring main to be removed in the latter stages of the mine filling phase. M1 and M2 aquifer dewatering bores pumping infrastructure and discharge piping to be removed when no longer required.
2	Hazelwood Cooling Pond (not within MIN5004)	5	Watercourses, storages and diversion structures	Dam walls and the concrete spillway on the Hazelwood Cooling Pond to be demolished as part of the rehabilitation of the pond. Internal pond embankments and the concrete deep intake structure (associated with the former power station) to be demolished as part of the rehabilitation of the pond. The connecting weir between the Works Effluent Pond (WEP) (to be retained) and the Hazelwood Cooling Pond to be refurbished and retained as a water level control structure on the WEP.
		6	Infrastructure	Remnant pumping infrastructure associated with both the former power station and the mine water services, including fixed pump bay structures, to be removed as part of the rehabilitation of the Cooling Pond. Remnant foreshore protections, including retaining walls and rock groynes, located along the former public recreational areas of the Hazelwood Cooling Pond, to be removed during rehabilitation of the pond.
3	Mine surrounds	3	External overburden dumps	The leachate collection system from the former ash landfills to be decommissioned once the ash landfills are capped and rehabilitated. Redundant roads are progressively removed as part of final landform shaping and management of the overburden dump. The service roads that remain are for maintenance and fire service access and will be retained. Drainage infrastructure being installed to improve runoff quality and reduce ingress
		4	Landfills and disposal areas	Infrastructure, such as ground water management and security fencing where applicable, were installed as part of the rehabilitation of those landfills and will remain in place, as required by associated EPA licences.
		5	Watercourses, storages and diversion structures	Northern Overburden Runoff Pond (NORP) to be converted to an environmentally beneficial water structure. The associated penstock valve and structure to be removed and replaced with a weir as a water level control structure. The existing penstock on the downstream former NORP pump pond to be removed to permit overflow water into Bennetts Creek.

CLOSURE DOMAIN		SUB-DOMAINS		
NO.	TITLE	NO.	CLOSURE DOMAIN	DEMOLITION SCHEDULE
3	Mine surrounds	6	Infrastructure	Most buildings, including associated services, and hardstands to be removed by the end of the earthworks period. Remaining buildings to support the mine filling to be removed at the end of the mine filling period. Redundant power lines to be decommissioned and removed progressively during the land forming in the earthworks phase. Remaining redundant power lines to be removed at the end of the mine filling phase. Water supply infrastructure used to supply the fire service and mine filling systems to be removed at the completion of the mine filling phase. Perimeter roads around the mine crest and the EOD will be retained. Secondary roads to be either progressively removed as part of landform rehabilitation or, where required, retained for ongoing maintenance and fire service access. Onsite fuel, oil and grease storage to be removed at the end of the earthworks phase. Ongoing requirements to support mine filling and monitoring, to be via external commercial sources.
		7	Remaining land incl. conservation areas	Existing fences that separate conservation areas from other land to be retained.
4	Waterways	5	Watercourses, storages and diversion structures	The Morwell River Flood Diversion structure will either be modified or demolished, depending on the final design for interconnection inlet structure from the Morwell River. The Morwell Main Drain (MMD) will be diverted into the mine void via drop structures and redundant piping, other drop structures and the steel aqueduct over the former interconnecting railway (ICR) crossing to be removed.
		7	Remaining land incl. conservation areas	Existing fences that separate conservation areas from other land to be retained.
		8	Waterways	Nil

**Noting the Hazelwood Cooling Pond itself was not within scope for this Risk Assessment as it is outside of the mining licence area*

The following safety principles will apply to the demolition and disposal of all remaining plant and equipment:

- permanent removal of all energy sources from the plant or equipment to be decommissioned to facilitate its safe removal;
- mitigating fire risks – removal of oils, greases, combustible liquids and materials, stored coal and accumulated coal dust (thorough wash down, revised fire service provision for machines);
- mitigating environmental risks – removal of oils, hazardous materials, dust, chemical residues, preventing discharges of low quality or contaminated fluids to the environment, and disposal of wastes to authorised locations using accredited contractor where required;
- mitigating structural collapse – stability considerations (typically crane structures) ongoing corrosion from weather exposure, general degradation over time, restricted site access; and
- managing security and access risks – the risk of unauthorised entry to the decommissioning site after and during decommissioning activities.

All works to be performed on the Hazelwood site during the active rehabilitation phase will be carried out in accordance with all relevant safe working and environmental management policies and procedures.

ENGIE Hazelwood maintains an asset register and a buried infrastructure register for infrastructure located within MIN5004. These registers are used to record operational status information about infrastructure including a classification as either “inert”, that will be left in situ for closure or “targeted for removal”, that will be removed from the site during the demolition process. Only inert material is permitted to be left in situ below the final pit lake level; all other material will be removed and disposed of in an authorised location. The registers are updated annually as a method of tracking progress against completion. At completion an audit of these registers will demonstrate successful completion has been achieved, refer to *Chapter 10 - Closure criteria.*

All redundant equipment and infrastructure associated with the former mining and power station operations have been decommissioned and demolished. The remaining infrastructure and equipment have been reconfigured to support the rehabilitation phase and will themselves be progressively removed, once no longer required.

The following key infrastructure items have been decommissioned ahead of preparing the DMRP and final rehabilitation is being administered as specified in the rehabilitation plan associated with the EPA Licence for the facility where relevant:

- Coal systems 1, 2 and 3
- Hazelwood ash retention area (HARA) – Subject to EPA licence
- Hazelwood ash ponds (HAP1 and HAP4) – Subject to EPA licence
- Raw coal bunker rising conveyors
- Mine plant
- Power station

2. Infrastructure Yet to be Decommissioned

2.1 MINE HAZARDOUS INFRASTRUCTURE

ENGIE Hazelwood will progressively remove hazardous infrastructure during the IPSCCP period. This may include fuelling bays and underground storage tanks, asbestos clad buildings and pipes, and transformer oils. This work will be completed after the infrastructure is no longer required. Where applicable, contamination surveys will be conducted to ensure adequate clean up measures were undertaken.

2.2 RECIRCULATION POND (RP)

The recirculation pond will be retained for as long as deemed required to transport residual saline wastewater for the site (mostly ash pond seepage during remediation). That saline wastewater is then sent off the mine lease to the salt pond where it will flow via a pipeline to the Loy Yang ash pond.

2.3 POWER INFRASTRUCTURE

All overhead power lines will be maintained during the active rehabilitation period as power is needed for the aquifer pumps and fire service booster pumps. Power infrastructure includes above and below ground power lines and services, as well as three substations (MWW, MWN and MWE). Details of major power infrastructure present at the site are presented in Table 7.2 below.

Table 72 Hazelwood power infrastructure

POWER INFRASTRUCTURE	LOCATION
Hazelwood Overhead Feeder	West Field South batters; South East Field South batters
Hazelwood Main Feeder line	East Field East Batters
MWE substation	East Field East Batters; South East Field South batters
MWW substation	West Field South batters
MWN substation	North Field West Batters
Electrical power distribution system	Throughout Site
Power supply cable	West Field South batters
Hazelwood Overhead Feeder line	South East Field West Batters; South East Field
AusNet Overhead Feeder	South East Field West batters (BPC); South East Field South batters (BPC)

Power is supplied to the Hazelwood site via 66kV supplies (which in the case of MWN and MWW are duplicated) and a separate 66kV supply to MWE. An internal 6.6 kV electrical distribution network extends around the perimeter of the mine. Duplicate electricity supplies are provided to key infrastructure for improved reliability.

2.4 NON-PLANT AND EQUIPMENT INFRASTRUCTURE

Non-plant infrastructure on the mine site will be managed on a case by case basis using a risk-based assessment that recognises the proposed long term use of the area, the potential for sub-aqueous burial in the final pit lake or coverage under the final landform and leaving the site in a safe and stable site. These assessments will use the same risk identification and assessment methodology that is applied across the project in accordance with relevant regulations and risk management practices.

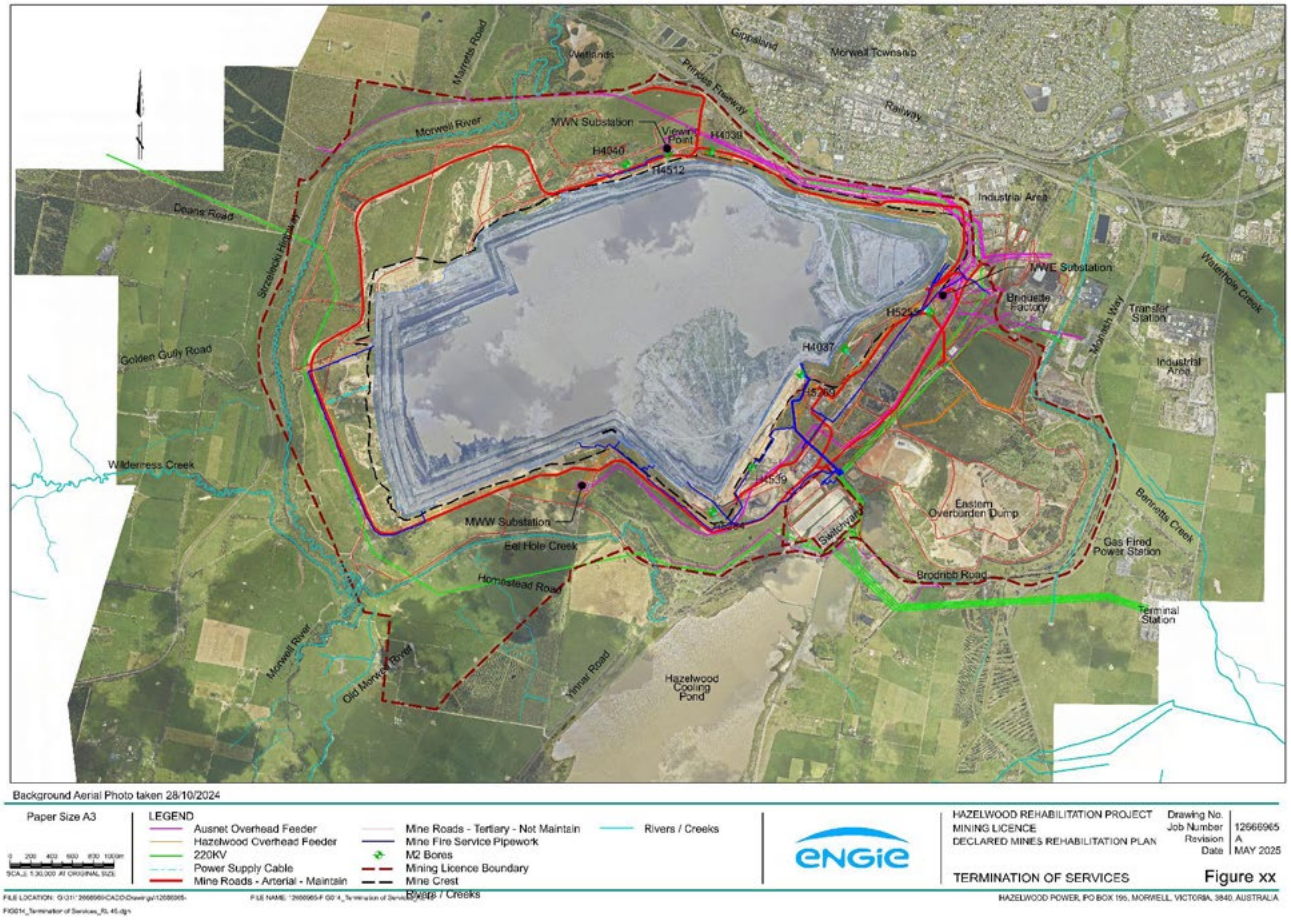

Figure 7.1 Non-plant and equipment infrastructure requiring decommissioning and disposal

2.5 MINE FIRE SERVICE SUPPLY SYSTEM

The mine site contains some 300 km of pipes and footings (comprised predominantly of concrete and steel) that comprise the fire services system. The fire services system is maintained for the duration of the active rehabilitation phase to ensure adequate fire prevention and mitigation whilst coal is progressively capped by overburden or covered by water as part of pit lake filling. During this time the fire services system will gradually be decommissioned in stages. The fire services system will be retained and disposed of sub-aqueously in the mine void. Any infrastructure remaining within the top 3m of the final lake level (low flux) will however be dismantled and removed to ensure public safety in the post closure repurposing phase, refer to Figure 7.2.

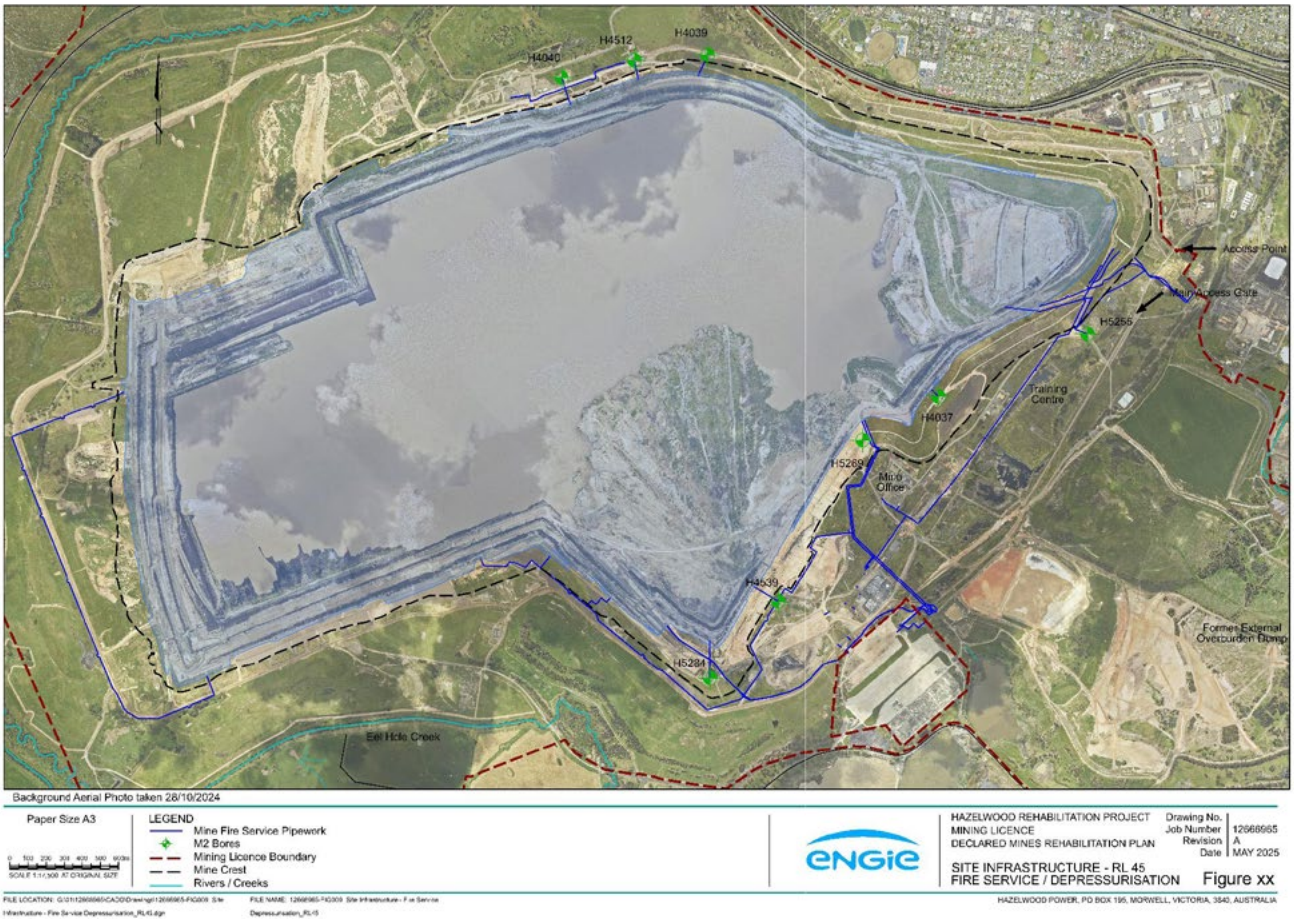

Figure 7.2 - Fire services system

2.6 BUILDINGS, MAINTENANCE WORKSHOP, WAREHOUSE

There are two main areas of buildings within the site; the mine administration building and training facility, and several smaller buildings and storage areas located around the site, including contractor's facilities. Whilst ERR is not an approval authority in respect of building demolition works, high level details are provided below for completeness.

Construction of the main administration building occurred during the 1970's and the training facility is classed as a temporary structure. Both are subject to ongoing use and maintenance. These buildings are constructed from a variety of building materials including asbestos. Table 7.3 presents some of the key building infrastructure.

Table 7.3 Hazelwood building infrastructure

BUILDING INFRASTRUCTURE	LOCATION
Mine Administration Building	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.
Mine Training Centre	Beyond the pit crest of the East Field Eastern Batters.
Delta Contractors Yard	Beyond the pit crest of the South West Field Northern Batters.
Mine Store	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.
Southern Outside Control Centre & Storage Shed	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.
Storage Buildings	Beyond the pit crest of the East Field Eastern Batters.
Pump House Building & Scrap	Beyond the pit crest of the East Field Eastern Batters.
MR5 Substation Sheds	Beyond the pit crest of the East Field Northern Batters.
Grass Level Booster Pump Station	Beyond the pit crest of the South East Field Southern Batters.
Mine Car Wash	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.
Mine Workshop	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.
Mine Electrical Workshop	Main Mine Office area, adjacent to the pit crest of the South East Field Southern Batters.

2.7 ROAD INFRASTRUCTURE

An intricate network of heavy and light vehicle unsealed roads exists within the site. A series of roads have been identified for retention post closure to enable access for the agreed land use, emergency access or monitoring and maintenance activities after relinquishment. Roads to be retained post relinquishment are presented in Figure 7.1. Roads that have no specific post relinquishment use would be ripped, topsoiled and revegetated.

In addition to the unsealed haulage and light vehicle road network, some vehicle hard stand areas are constructed from bitumen and/or concrete. Table 7.4 below summarises the hard stand areas requiring demolition and disposal of bitumen and/or concrete.

Table 7.4 Hazelwood hardstand infrastructure

HARDSTAND INFRASTRUCTURE
Mine bitumen car park
Mine bitumen car park maintenance
Mine bitumen car park employees
Mine bitumen car park administration building west
Mine bitumen car park training centre building
Mine road pedestrian crossing
Mine road pedestrian crossing eastern perimeter road extension / mine employees' car park
Mine road pedestrian crossing eastern perimeter road / mine employees' car park
Laydown Area

2.8 SEWAGE INFRASTRUCTURE

The sewage system includes above and below ground assets including septic tanks and associated infrastructure. They are typically located around major buildings and infrastructure.
These facilities are currently serviced regularly by a licensed contractor.

2.9 TELECOMMUNICATIONS

Above and below ground including fibre optic, fixed lines, boost and repeat stations and telecommunications tower.

2.10 FUEL AND CHEMICAL STORAGES

Fuel and chemical storage areas are where substances such as oils, greases and combustible liquids are contained and comprise facilities such as fuel tanks, hydraulic oil tanks, lubricant tanks, bulk grease tanks, refuelling bays and above and underground storage tanks.

The mine's oil and grease storage store and diesel / oil compound are located beyond the pit crest of the Southeast Field South Batter (SEFSB).

Three bulk diesel fuel storage tanks have historically been located on site. One has been decommissioned and removed. The two remaining tanks are self-bunded above ground tanks that will be retained to service the heavy and light vehicle fleet associated with active rehabilitation of the site.

Refuelling of earthmoving plant occurs by mobile refuelling vehicles. Waste oil and grease is collected and retained within concrete bunds on site and is collected by an EPA-licensed contractor.

All hydrocarbon storages will continue to be managed in accordance with *AS 1940-2004 - The storage and handling of flammable and combustible liquids, during rehabilitation activities.*

3. Water Infrastructure Works and Relocations

The following infrastructure works and relocations were conducted prior to lake filling commencing:

- construction of eight M1 and M2 bores around the perimeter of the open pit void and connection of these to water inlet structures in the pit void. This will allow sealing of the pump bores and monitoring bore standpipes under non-artesian conditions and control aquifer pressures during the rehabilitation phase;
- sealing and decommissioning of the 17 M1 and M2 aquifer pump bores on the mine floor;
- construction of a new relocatable fire service diesel pump station to replace the existing DWPS capacity;
- following completion of above, decommissioning and/or removal of redundant fire service main and pipe infrastructure where necessary; and
- for the period in which the volumes of water are required to meet "maximum demand" conditions (as defined in the mine fire service technical guidelines), provision of diesel and/or electric pumps at the HCP.

The pump related works will be conducted in a manner which does not compromise the ongoing performance of the reticulated fire service system at any given time. Whilst electricity will still play a major part in water distribution it will be complemented by gravity and diesel flows. This will ultimately improve the reliability of the system by providing a dual transition power supply to the pumping network.

During active rehabilitation the mine fire service system will remain capable of supplying volumes of water consistent with the applicable "maximum demand" requirements from time to time (as defined in the mine fire service technical guidelines).

As the water level rises within the mine lake, the exposed coal areas will reduce by either being progressively covered by water or covered with a non-combustible clay layer as part of rehabilitation and batter stabilisation works. This ongoing reduction in fire risk as the water level increases in the mine lake will lead to a progressive water demand reduction required for the reticulated fire service system which will be determined in line with the MFSP "maximum demand" formula. The gravity or pumped water sources capable of delivering the required supply and pressure into the fire service system and the fire service pipeline network, which ensures water is delivered at the required flows and pressures to exposed coal areas throughout the mine, will be redesigned and altered accordingly.

During active rehabilitation the following features of the mine fire service system will apply:

- the reticulated fire service system will incorporate multiple water supply points spatially separated onsite to provide redundancy in the event of one supply point being made inoperable;
- the internal pump station design and relocation schedules will incorporate stages for the pumps to be relocated with minimal disruption to the ability to meet water supply maximum demand;
- prior to closure of the HCP's Pump House 50 & 53, an alternative water supply either via pumps or a gravity system will be in place to ensure maximum demand is met;
- the reticulated fire service water supply will continue to be designed to facilitate timely water supply in the event mains power is lost; and
- fire service pipelines will be progressively modified as the lake commences filling to ensure ongoing water supply to areas of exposed coal in reference to the "maximum demand" requirements specified in the MFSP.

During active rehabilitation ENGIE Hazelwood will maintain a fire service system capable of supplying water for the ongoing protection of exposed coal areas. The fire service system will be operated on an as needs basis for fire readiness, fire suppression and dust suppression.

4. Demolition approach

The following approach is taken when initiating demolition and disposal of infrastructure with no beneficial use post relinquishment:

- assess infrastructure against the site's register of services to ensure all services to all redundant services, including buried and remote services have been identified, disconnected and removed (as appropriate);
- assess infrastructure against Hazelwood asset listing register, generated in accordance with Condition 3 – WPV 2017 approval (EER DEDJTR 2017), to ensure all redundant infrastructure, that will not be utilised postmining is identified and removed;
- where assets are identified as inert and will be left in situ, details will be recorded in the Hazelwood buried infrastructure register;
- characterise waste material to ensure disposal is consistent with the waste hierarchy, figure 7.4; and
- assess waste material against EPA waste disposal guidelines to ensure industrial waste and hazardous materials are disposed of in compliance with the *Environmental Protection Act 2017*.

Site audits and studies will inform the identification of hazardous material, including but not limited to asbestos, prior to the commencement of works to determine the extent of work required. All demolition works are undertaken in accordance with AS2601-2001: The Demolition of Structures (Standards Australia 2001) and the Work Safe Victoria Compliance Code – Demolition Edition 2 (2019). ENGIE Hazelwood maintain site records of site service locations through the survey team. This information will be compiled at the completion of the active rehabilitation phase and provided to future land managers for record as per the requirements of **Chapter 12 - Management of Rehabilitation and Closure Knowledge**.

5. Waste Management

ENGIE Hazelwood consider all waste disposal is accordance with the site Waste Management Plan, which ensures the waste hierarchy shown in Figure 7.3 is applied.

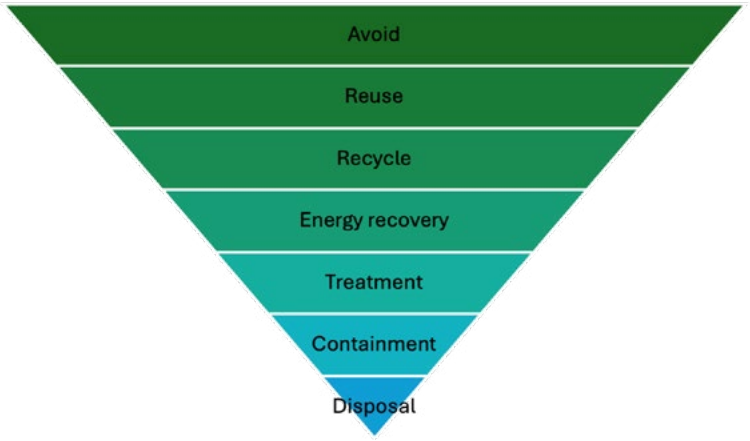

Figure 7.3 - Waste hierarchy

As a consequence of rehabilitation activities, the generation of day-to-day waste such as hydrocarbons, oil filters, office and paper, general food waste will occur at a rate similar to that during operating conditions. In addition to this operational waste, a moderate volume of demolition waste will also be produced. Demolition wastes include concrete, steel, electrical cables, pipes, plaster wall sheets and disused office furniture. Waste materials generated during demolition may contain asbestos and other hazardous substances which will be managed in accordance with relevant health and safety regulations.

Plant and equipment that is planned to be disposed or salvaged from the site may be temporarily stored in designated hard stand areas prior to removal off site. Prior to storage, all equipment and machinery inspected for hydrocarbon leaks and managed accordingly.

Any equipment not proposed for salvage will be disposed of on site in accordance with a waste management plan, transported to a suitable industrial scrap material recycling facility or transported to the appropriate waste recycling / landfill facility in accordance with all regulatory requirements.

Asbestos

Due to the age of the site, materials containing asbestos have been identified in some remaining buildings and structures and in materials such as vinyl floor tiles, wall and ceiling linings, service conduits, and bore liners. Site audits have identified sources of asbestos with locations maintained on the ENGIE Hazelwood asbestos register. All remaining waste containing asbestos will be removed off site and disposed of in an authorised facility.

Hydrocarbon and Hazardous Waste

All hazardous products including hydrocarbons and other chemicals are managed in accordance with the Mine's Waste Management Plan.

If the fuel depot is identified as not re-usable, the decommissioning and removal of above ground fuel storage tanks will occur in accordance with *Australian Standard AS 4976-2008, The removal and disposal of underground petroleum storage tanks*. The remaining hydrocarbon interceptor pit will be decommissioned and removed from site in accordance with the relevant Australian Standard.

An environmental preliminary site investigation (PSI) to identify potential sources of contamination has been undertaken and informed the development of a detailed site clean-up plan (CUP) under the *Environmental Protection Act 2017*.