



# **CHAPTER 17- WASTE MANAGEMENT**



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# 17. Waste management

This chapter provides the waste management assessment for the project. It includes the types of wastes that could be generated during construction, operation (including maintenance) and decommissioning, and measures to reuse, recycle and safely dispose of wastes.

The assessment found the potential impacts from inappropriate waste management include health and safety risks, contaminated soil and water, visual impacts and fire hazards. All waste generated during construction will be managed using circular economy principles and the waste hierarchy before consideration is given to disposal. All wastes will be managed in accordance with the waste provisions contained within the POEO Act and other relevant legislative and policy requirements. Given the relatively small amounts of waste generated, and effectiveness of management measures, potential impacts associated with waste are considered minimal.

## 17.1 Approach

### 17.1.1 Overview

The *Waste Avoidance and Resource Recovery Act 2001* (NSW) establishes the following waste management hierarchy, which is relevant to the assessment and management of waste in NSW:

1. avoidance and reduction of waste
2. reuse of waste
3. recycling, processing and reprocessing waste
4. recovery of energy
5. waste disposal.

This waste assessment, including the development of measures to manage waste, has been undertaken in the context of this hierarchy. The waste assessment considers the types, amounts and potential impacts of waste that may be generated by the project, the majority of which would be related to construction with a smaller amount associated with decommissioning. Waste generation during operation would be minimal and limited to maintenance activities.

The waste assessment provides a preliminary identification, quantification and classification of waste in accordance with the *Waste Classification Guidelines Part 1: Classifying Waste* (NSW EPA, 2014a) (the Waste Classification Guidelines) as the primary guidelines for waste management in NSW. The Waste Classification Guidelines expand on the classifications of waste provided in Schedule 1 of the POEO Act and provide direction on the classification of waste, specifying requirements for management, transportation and disposal of each waste category.

A summary of the waste classifications that apply is provided in Table 17.1.

**Table 17.1 Summary of waste classification in NSW**

Type of waste	Definition
Special waste	A substance that has unique regulatory requirements, such as clinical wastes, asbestos or tyres, and includes waste classified as such under an EPA gazettal notice.
Liquid waste	A substance that shows flowing characteristics at an angle of repose of less than 5 degrees above horizontal, becomes free flowing at or below 60°C or when it is transported, and is generally not capable of being picked up by a spade or shovel, and includes waste classified as such under an EPA gazettal notice.
Hazardous waste	Includes substances classified under the Transport of Dangerous Goods Code as 'Class 1' to 'Class 8' type of waste. Also includes containers carrying these types of waste and other materials generated or collected under certain circumstances, including coal tar or coal tar pitch waste, lead-acid or nickel-cadmium batteries lead paint waste, or any mixture containing one of these types of wastes.

Type of waste	Definition
Restricted solid waste	A substance meeting the specific contaminant concentrations and/or toxicity characteristics defined in the Waste Classification Guidelines.
General solid waste (putrescible)	Includes standard household and litter bin waste that is collected by or on behalf of local councils, food waste, animal waste, manure and night soil, and any grit of screening from sewage treatment systems.
General solid waste (non-putrescible)	Includes household recyclable waste that does not contain food waste, garden waste, wood waste, containers previously containing dangerous goods that have been thoroughly cleaned out, virgin excavated material, and building and demolition waste.

The waste assessment has also considered circular economy principles. A circular economy is an economic system aimed at minimising waste and promoting the continual reuse of resources. The circular economy is based on three key principles as defined by the *NSW Waste and Sustainable Materials Strategy 2041* (DPIE, 2021b):

1. design out waste and pollution
2. keep products and materials in use
3. regenerate natural systems.

### 17.1.2 Methodology

#### Key tasks

The waste assessment involved:

- identifying potential waste generating activities based on the project description provided in chapter 3 (Project description)
- identifying potential waste types that could be generated and providing preliminary estimates of waste quantities based on industry and previous project experience
- undertaking a preliminary classification of identified waste in accordance with the Waste Classification Guidelines
- identifying potential impacts if waste is not managed appropriately
- identifying the waste management strategy, including measures to avoid, reduce and manage wastes in accordance with the waste hierarchy and circular economy principles.

The estimated waste quantities are indicative and have been identified for the purpose of determining potential waste management strategies. Although the actual quantities of waste generated by the project may differ from the estimates made, the identified waste management strategies would remain appropriate based on the waste stream identified and are scalable.

## 17.2 Construction impacts

### 17.2.1 Waste types

Construction activities described in section 3.4 would generate waste. Table 17.2 provides the key waste streams with the potential to be generated and their likely classifications based on the Waste Classification Guidelines. Trench spoil generated during trenching activities will be reused on site and as such, is not considered to be a waste for the purpose of this assessment.

**Table 17.2 Key waste types and classification – construction**

Construction activity	Waste types that may be produced	Likely waste classification	Estimated quantity (m <sup>3</sup> unless indicated otherwise)
Preliminary survey works	Survey pegs	General solid waste (non-putrescible)	5
Clear and grade	Vegetation	General solid waste (non-putrescible)	Not able to be reliably estimated
Clear and grade	Old fencing material	General solid waste (non-putrescible)	5
Pipe storage, stringing and welding	Bevel protectors (pipe caps)	General solid waste (non-putrescible)	60
	Rope spacers	General solid waste (non-putrescible)	30
	Sawdust bags	General solid waste (non-putrescible)	30
	Timber skids	General solid waste (non-putrescible)	80
	Welding rods/grinding discs	General solid waste (non-putrescible)	6
	Pipe offcuts	General solid waste (non-putrescible)	15
Non-destructive testing and coating	Epoxy drums (containers only)	General solid waste (non-putrescible)	200 (75 litre drums)
	Epoxy pots (used by coaters)	General solid waste (non-putrescible)	6
Earthworks/trenching	Trencher teeth	General solid waste (non-putrescible)	6
Blasting (if required)	Excess rock (excavated natural materials)	General solid waste (non-putrescible)	To be confirmed during detailed design
Horizontal directional drilling	Drilling cuttings	General solid waste (non-putrescible)	100
Erosion and Sediment control	Sediment fencing/jute matting/geotextile	General solid waste (non-putrescible)	30
Hydrotesting	Hydrotest waters	Liquid waste	11,000
Scraper station and cathodic protection system	Scrap metal	General solid waste (non-putrescible)	15
	Cable offcuts	General solid waste (non-putrescible)	15
	Timber packaging	General solid waste (non-putrescible)	30
	Dunnage	General solid waste (non-putrescible)	15
	Paint containers	General solid waste (non-putrescible)	15
Construction equipment maintenance	Oil filters (spent)	General solid waste (non-putrescible)	300 filters
	Fuel filters (spent)	General solid waste (non-putrescible)	300 filters
	Air filters	General solid waste (non-putrescible)	300 filters
	Waste oils	Liquid waste	15
	Tyres	Special waste	50

Construction activity	Waste types that may be produced	Likely waste classification	Estimated quantity (m <sup>3</sup> unless indicated otherwise)
General construction site and compounds	General waste	General solid waste (putrescible)	20 tonnes
	Recyclable containers and office paper/cardboard	General solid waste (non-putrescible)	10 tonnes
	Wastewater	Liquid waste	200 kilolitres

### 17.2.2 Potential impacts

The potential impacts associated with aspects of waste generation and management during construction (if waste is not managed appropriately) include:

- contaminated runoff and leachate generation, which could impact water quality and aquatic ecosystems (if wastes are located near watercourses)
- visual impacts of improper waste storage on construction sites and litter generation
- health and safety risks due to handling of waste
- fire hazards from stockpiling of vegetation
- illegal dumping from third parties on stockpile sites or other waste storage areas
- unnecessary loss of capacity at available waste disposal facilities due to insufficient reuse and recycling.

Other potential indirect impacts in relation to water, noise and vibration, air quality, traffic and transport, and hazards and risks, have been considered in the respective chapters for these environmental matters (see chapters 8 to 10, 13 and 16).

### 17.2.3 Construction waste management strategy

The proposed approach to managing the different types of construction waste in accordance with the waste management hierarchy, including measures to facilitate segregation and prevent cross contamination, is provided in Table 17.3. The table also outlines the contingency measures (disposal) for wastes that cannot be avoided, reused, recycled or treated. Wastes generated during construction that cannot be reused on site or elsewhere will be transported off site to suitably licensed facilities for recycling or disposal.

**Table 17.3 Construction waste management**

Waste type	Waste management hierarchy	On-site management	Off-site management
Survey pegs	Reuse/recycle/disposal	Progressively collected and reused.	Excess quantities transported off site for reuse, recycling or disposal.
Vegetation	Reuse/recycle/disposal	Progressively collected and reused.	Cleared vegetation would be available for reuse, mainly as part of site reinstatement and rehabilitation in accordance with the rehabilitation strategy (see section 3.4.5). Excess quantities transported off site for reuse, recycling or disposal.
Old fencing material	Reuse/recycle/disposal	Reused by landowner if possible.	Excess quantities transported off site for reuse, recycling or disposal.
Bevel protectors (pipe caps)	Reuse/recycle/disposal	Temporarily stored in skips.	Excess quantities transported off site for reuse, recycling or disposal.

Waste type	Waste management hierarchy	On-site management	Off-site management
Rope spacers	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Sawdust bags	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Timber skids	Reuse/recycle	Progressively collected and reused.	Transported off site for reuse on other projects or recycled.
Welding rods/ grinding discs	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Pipe offcuts	Recycle	Temporarily stored in skips.	Transported off site for recycling.
Epoxy drums (containers only)	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Epoxy pots (used by coaters)	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Trencher teeth	Recycle	Temporarily stored in skips.	Transported off site for recycling.
Drilling cuttings	Reuse	Stockpiled and reused as part of backfill and reinstatement works.	Materials surplus to project needs stockpiled for reuse as per resource recovery exemption or transported off site for disposal.
Sediment fencing/jute matting/geotextile	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Hydrotest water	Reuse/ disposal	The hydrotest water would be reclaimed from each pipeline test section after completion, stored (and treated as required) in tanks before being reused in the next section of pipe.  After pipeline testing is complete, hydrotest water will be reclaimed, tested for relevant water quality parameters, and where feasible, reused for further testing of the Hunter Gas Pipeline or otherwise disposed of in accordance with licensing requirements.	Transported off site for reuse or disposal.
Scrap metal	Recycle	Temporarily stored in skips.	Transported off site for recycling.
Cable offcuts	Recycle	Temporarily stored in skips.	Transported off site for recycling.
Timber packaging	Recycle	Temporarily stored in skips.	Transported off site for recycling.
Dunnage	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Paint containers	Disposal	Temporarily stored in skips.	Transported off site for disposal.
Oil filters	Disposal	Bagged and temporarily stored in a suitable storage container.	Transported off site for recycling.
Fuel filters	Disposal	Bagged and temporarily stored in a suitable storage container.	Transported off site for recycling or disposal.
Air filters	Disposal	Bagged and temporarily stored in a suitable storage container.	Transported off site for recycling or disposal.
Waste oils	Disposal	Temporarily stored in a designated bunded liquid waste drum.	Transported off site for recycling.

Waste type	Waste management hierarchy	On-site management	Off-site management
Tyres	Disposal	Temporarily stored in skips	Transported off site for recycling or disposal
General waste	Disposal	Temporarily stored in suitable colour coded bins	Transported off site for disposal
Recyclable containers and office paper/ cardboard	Recycle	Temporarily stored in suitable colour coded bins	Transported off site for recycling
Wastewater	Disposal	Portable ablation facilities for construction site offices	Regular off-site removal/pump out of wastewater from portable ablations to an appropriately licensed facility

## 17.3 Operation impacts

### 17.3.1 Waste types and potential impacts

Operation of the project would generate very small quantities of waste, mainly arising from maintenance activities. Anticipated waste types, classifications and estimated quantities are listed in Table 17.4.

Given the small amounts of operational waste, which would be disposed of at a suitably licensed facility, there would be a low risk of impacts on the environment and/or human health.

**Table 17.4 Key waste types and classification – operation**

Operation activity	Waste types that may be produced	Likely waste classification	Estimated quantity (per year) (m <sup>3</sup> )
Inspections and maintenance	Mill scale and dust	General solid waste (non-putrescible) or hazardous waste or restricted solid waste	< 1
	Waste oils and grease	Liquid waste or hazardous waste	< 1
	Chemicals	Liquid waste or hazardous waste	1-2

### 17.3.2 Operation waste management strategy

The proposed approach to managing operation waste in accordance with the waste management hierarchy is provided in Table 17.5. Wastes generated during operation will be transported off site to suitably licensed facilities for recycling or disposal.

**Table 17.5 Operational waste management strategy**

Waste type	Waste management hierarchy	On-site management	Off-site management
Mill scale and dust	Disposal	Temporarily stored on site at the scraper stations	Transported off site for disposal
Waste oils and grease	Disposal		Transported off site for disposal
Chemicals	Disposal or recycled		Transported off site for recycling or disposal (depending on volume)

## 17.4 Decommissioning impacts

### 17.4.1 Waste types and potential impacts

At project closure, the pipeline would be decommissioned as described in section 3.8, including compliance with the Pipelines Act and Regulation, AS 2885 and relevant environmental and waste management guidelines. AS 2885 mandates a structured, risk-based approach to decommissioning, including segment analysis and a safety management study, which ensures that potential risks to the environment and human health are systematically identified, assessed and mitigated.

Decommissioning is not expected to generate significant quantities of waste. The main activity with the potential to generate waste would be removal of surface facilities and infrastructure, including:

- cathodic protection test points
- pipeline marker signs
- fencing
- blue metal (construction aggregate)
- structural pipeline.

Under current waste management guidelines, it is anticipated that these materials would be classified as general solid waste (non-putrescible).

Final decommissioning activities would be determined through the segment analysis and safety management, as required by AS 2885. These processes inform the decommissioning environmental management plan, which would define actual waste types, quantities and management approaches. This structured planning would ensure that environmental and health risks associated with waste generation and disposal are effectively managed, resulting in a low potential for adverse impacts.

### 17.4.2 Decommissioning waste management strategy

All surface facilities would be dismantled and removed for off-site disposal or recycling in accordance with the relevant waste classification framework in place at the time, the waste management hierarchy and the indicative strategy outlined in Table 17.6.

The waste management strategy described here is indicative and subject to refinement through the safety management study and abandonment planning process. Final waste handling procedures would be defined in the decommissioning environmental management plan and implemented in accordance with the regulatory requirements and standards applicable at the time of decommissioning.

The decommissioning environmental management plan will outline the approach to managing potential environmental impacts from waste, ensuring that all activities are risk-based, compliant and aligned with best practice environmental standards that exist at the time. By implementing these plans and processes, waste generation and the potential for environmental impacts would be effectively managed, supporting a safe and responsible transition from operational to decommissioned status.

Further information on the approach to environmental management during decommissioning is provided in section 20.4.

**Table 17.6 Indicative decommissioning waste management strategy**

Waste type	Waste management hierarchy	On-site management	Off-site management
Structural steel piping	Recycle	Temporarily stored in skips	Taken off site progressively for recycling
Cathodic protection test points	Disposal	Temporarily stored in skips	Taken off site progressively for disposal

Waste type	Waste management hierarchy	On-site management	Off-site management
Signs	Reuse/recycle/disposal	Temporarily stored in skips	Transported off site for reuse, recycling or disposal
Fencing	Reuse/recycle/disposal	Reused by landowner, if possible	Excess quantities transported off site for reuse, recycling or disposal
Blue metal (construction aggregate)	Reuse off site	Stockpiled and temporarily stored on site	Taken off site for reuse

## 17.5 Mitigation and management

### 17.5.1 Approach to mitigation and management

All waste generated during construction will be managed using circular economy principles and the waste hierarchy before consideration is given to disposal. All wastes will be managed in accordance with the waste provisions contained within the POEO Act and other relevant legislative and policy requirements. With the implementation of these measures and the measures in Table 17.7, potential impacts associated with waste are considered minimal.

Waste will be stored temporarily on site and removed as soon as practicable for reuse or to an appropriately licensed facility for recycling or disposal. Disposal methods will be selected based on the classification of the waste material in accordance with the Waste Classification Guidelines.

The closest waste disposal facility to the project site is the Narrabri Waste Management Facility, located on Yarrie Lake Road. The Narrabri Waste Management Facility is licensed to accept general solid waste, tyres and asbestos, and accepts commercial wastes for recycling and disposal. There are also other waste facilities located in surrounding LGAs. The appropriate recycling and disposal location/s will be determined in consultation with facility operators during construction planning and defined in the CEMP (see Table 17.7) to ensure that the waste types and quantities can be accepted.

### 17.5.2 List of mitigation measures

Measures that will be implemented to manage waste are listed in Table 17.7.

**Table 17.7 Waste management mitigation measures**

Impact/issue	Ref	Mitigation measure	Timing
Construction waste management	WM1	Measures to manage waste will be included in the CEMP and implemented during construction. The measures will adopt circular economy principles and the waste hierarchy contained in the <i>Waste Avoidance and Resource Recovery Act 2001</i> . The measures will detail processes, responsibilities and actions to manage waste and minimise the potential for impacts during construction.	Pre-construction, construction
Waste classification and management	WM2	All waste will be classified in accordance with the <i>Waste Classification Guidelines</i> (NSW EPA, 2014a) (or any relevant resource recovery orders and exemptions) and managed in accordance with the <i>Protection of the Environment Operations Act 1997</i> and the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> .	Construction, operation, decommissioning
Decommissioning waste management	WM3	Measures to manage waste will be included in the decommissioning environmental management plan and implemented during decommissioning. The measures will detail processes, responsibilities and actions to manage waste and minimise the potential for impacts during decommissioning in accordance with relevant statutory requirements and waste guidelines.	Decommissioning