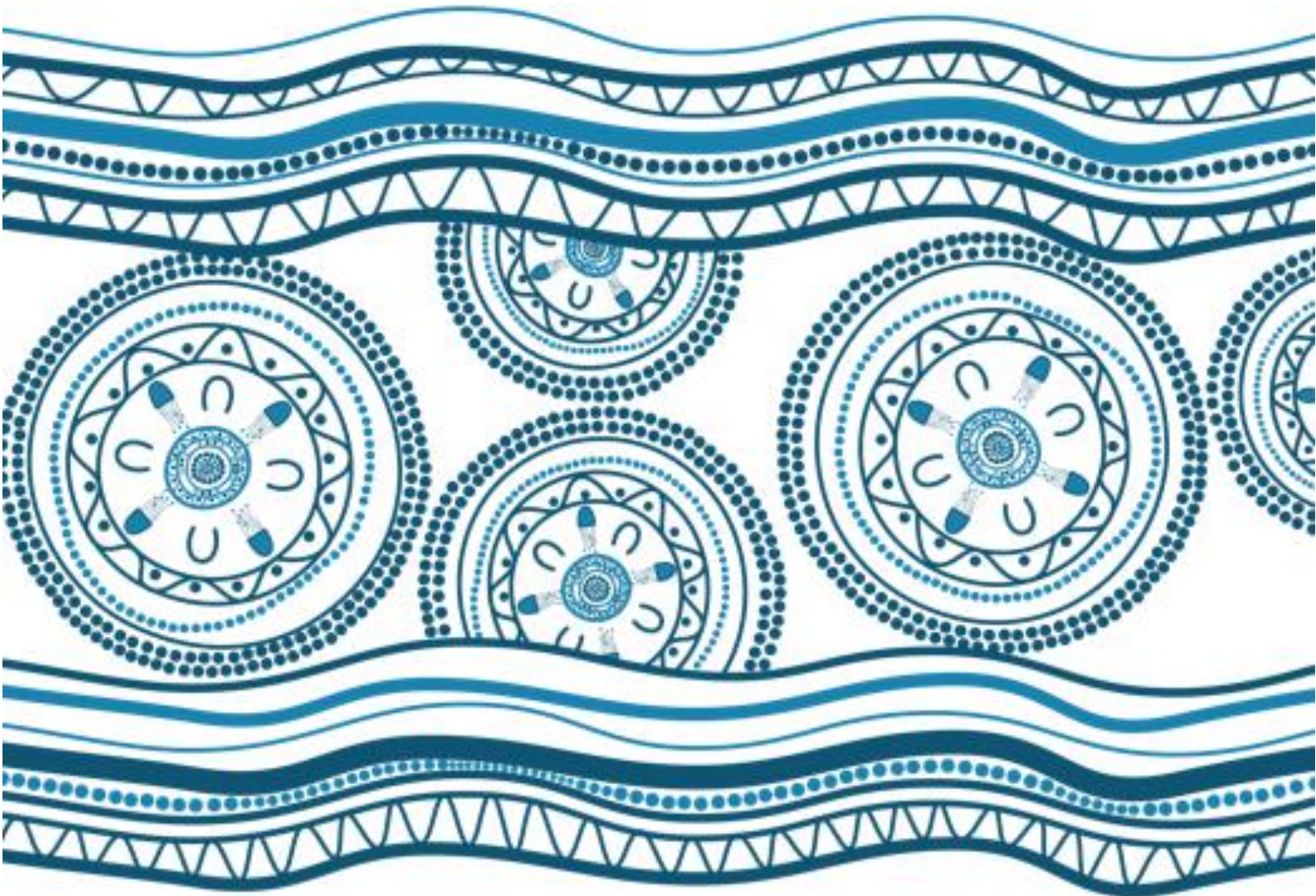


Chapter 23

Waste



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23 Waste

This chapter assesses the estimated types and volumes of waste generated during construction and once the project is operational, and how this can be sustainably managed in line with circular economy principles.

23.1 Assessment methodology

The methodology for the waste assessment involved classifying the waste products likely to be generated by the project into different streams. These potential waste streams have been classified in line with current NSW waste classification guidelines (NSW Environment Protection Authority (EPA), 2014) and would likely include:

- Special waste (eg waste tyres or asbestos)
- Liquid waste (eg concrete slurry, wastewater)
- Hazardous waste (eg contaminated spoil)
- General solid (putrescible) waste (eg from vegetation clearance and food waste from site offices)
- General solid (non-putrescible) waste (eg from construction and demolition as well as virgin excavated natural material (VENM) and excavated natural material (ENM)).

23.1.1 Policy framework

The assessment identified the likely sources, types (classification) and timing of waste generated by the project and has been undertaken in accordance with the following policies and regulations:

- *Protection of the Environment Operations Act 1997* (NSW) (POEO Act)
- *Environmentally Hazardous Chemicals Act 1985* (NSW)
- POEO (Waste) Regulation 2014
- NSW Government Resource Efficiency Policy (NSW Office of Environment and Heritage, 2019)
- NSW Waste Classification Guidelines (NSW EPA, 2014)
- Technical Direction: Legal offsite disposal of Roads and Maritime Services Waste (NSW Roads and Maritime Services, 2015c)
- Guideline for the Management of Contamination (NSW Roads and Maritime Services, 2013)
- Australian and New Zealand Standard 4452: The Storage and Handling of Toxic Substances (Australian and New Zealand Standard, 1997).

23.2 Existing environment

This section summarises the predicted waste generation associated with the construction and operation of the project. This includes works undertaken onsite and the transportation and disposal of materials offsite.

23.2.1 Existing waste and contaminated sites

Existing waste streams at both project areas are likely to be associated with general solid waste generated by recreational users to the areas, and small quantities of green waste associated with landscaping and maintenance.

A preliminary site investigation (PSI) was completed in August 2020 to assess the likelihood of soil contamination in the project area (refer to Chapter 17 (Soil, water and contamination)). A search of the NSW EPA contaminated land database identified two contaminated sites within one kilometre of the project that have been notified to the NSW EPA. These include the Kurnell Port and Berthing Facility Terminal and the Former Caltex Kurnell Service Station (about 225 metres southeast and 848 metres southwest of Kurnell respectively). Other potential contamination includes acid sulfate soils, Per and Polyfluoroalkyl Substance (PFAS), and an unexploded ordnance area. There are also sites within a one kilometre radius of the project that are listed on the National Pollutant

Inventory as well as licensed activities under the POEO Act for storing/managing potentially contaminating material.

A Targeted Site Investigation (TSI) was completed in December 2020 which identified asbestos within test pit samples taken at both the La Perouse and Kurnell project areas. Concentrations of Total Recoverable Hydrocarbons (TRH) C¹⁰-C⁴⁰, PFAS, and Benzo[a]Pyrene were also identified within the project area, however they were all below the adopted assessment criteria apart from Benzo[a]Pyrene which was above the hazardous waste classification criteria in one sample but is estimated to be associated with historical road bitumen (see Chapter 17 (Soil, water and contamination)).

Nickel was found to exceed the adopted criteria at Kurnell and concentrations of monobutyltin were found. However, this is expected to represent the natural background concentrations for the site rather than contamination caused by humans. Organochlorine Pesticides were also identified and exceeded the adopted criteria however the risk of contamination is expected to be low. Refer to Chapter 17 (Soils, water and contamination) and Appendix Q (Targeted Site Investigation) for further details on likely contaminants present within the project areas.

23.2.2 Recycling and disposal infrastructure

Under the POEO Waste Regulation (clause 71), it is an offence to transport waste generated in NSW more than 150 kilometres from the place of generation for disposal. Table 23-1 identifies the existing recycling and waste disposal facilities near La Perouse and Kurnell and their distances by road to the project areas.

Table 23-1: Existing recycling and disposal facilities near the project

Waste facility	Accepted waste	Licence	Distance from project areas
Port Botany Transfer station – Veolia Lot 21 Military Road Matraville NSW 2036	<ul style="list-style-type: none"> • Building and demolition waste • Wood waste • Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal • Paper or cardboard • Fully cured and set thermosetting polymers and fibre reinforcing resins • Fully cured and dried residues of resins, glues, paints, coatings and inks • Garden waste • Non-putrescible vegetated waste from agriculture, silviculture, or horticulture. 	EPL #6179 (21 October 2016)	3 km from La Perouse
Breen Recycling Facility 330 Captain Cook Drive Kurnell NSW 2231	<ul style="list-style-type: none"> • Grit, screenings from potable water • Wood waste • Cured concrete waste • Synthetic fibre waste • Waste tyres • VENM • Soils (putrescible) • Soils (non-putrescible), containing brick, concrete, timber or metal • Asphalt waste • Building and demolition waste • Glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal • Paper or cardboard. 	EPL #20697 (30 April 2019)	5 km from Kurnell
Genesis recycling centre 76-82 Burrows Road Alexandria NSW 2015	<ul style="list-style-type: none"> • Wood waste • Garden waste • Building and demolition infrastructure • Soils. 	EPL #4679 (18 November 2015)	14 km from La Perouse

23.3 Assessment of potential impacts

This section identifies the main waste streams likely to be generated during construction and operation.

23.3.1 Assessment of construction impacts

The likely construction-related wastes are listed in Table 23-2. These wastes are classified according to the Waste Classification Guidelines 2014 (NSW EPA, 2014). During the Targeted Site Investigation (see Chapter 17 (Soil, water and contamination)) opportunistic samples were collected with the intention of assessing the potential constraints associated with site contamination. However, the samples collected were not carried out at a density suitable to assess the waste classification of landside soil and marine sediment. Sediment would therefore need to be tested prior to disposal to determine its appropriate waste classification. Table 23-2 lists the potential waste classification types that may be encountered.

Table 23-2: Potential construction-generated waste by type

Waste Type	Likely wastes generated
General solid waste (non-putrescible)	VENM
	ENM (land soils and marine sediments)
	Concrete from kerb demolition and in situ pours
	Grout (or concrete) from the pile plug/headstock connections and land-based pile works
	Handrails, steel pipe offcuts from demolition of existing wharf lookout at Kurnell
	Municipal solid waste from site offices
	Sand and rock materials from temporary causeway construction
	Electrical cabling offcuts from services
	Vehicle maintenance waste
	Packaging materials
	Asphalt
General solid waste (putrescible)	Timber from demolition of existing wharf lookout at Kurnell
	Food waste from site offices
	Green waste
Liquid Waste	Wastewater, including sewage from site offices
	Fuels and oils from construction vehicles
	Concrete slurry
	Black & Grey water from the temporary crib and toilet facilities
Hazardous Waste	Excavated material with elevated levels of contaminants
Special Waste	Waste tyres from construction vehicles and asbestos

Waste material would be reused onsite where possible and/or appropriate. For waste material that cannot be reused onsite, the majority would be able to be recycled at appropriate licenced facilities. The remaining material not able to be recycled would be disposed of at nearby licenced facilities able to accept the waste (identified in Table 23-1).

Excavation material

Excavation material would comprise VENM and ENM and would be excavated at the wharf tie-in areas, car parking location at La Perouse and the utilities trenches. Where possible, the earthworks material generated would be reused on site for backfilling and landscaping.

There is potential for some excavated spoil to be hazardous due to existing contamination within the project area, including concentrations of asbestos, nickel, monobutyltin and organochlorine pesticides (see Chapter 17 (Soil, water and contamination)).

Removal of asbestos containing materials as special waste would be carried out by suitably qualified experts in accordance with the Asbestos Management Plan (see Chapter 17 (Soil, water and contamination)) and would be disposed of at an appropriately licenced waste facility.

As noted above, contamination testing was carried out to identify potential contaminants within the construction boundary. However, this was not carried out at a density suitable to determine offsite waste disposal requirements. Further sampling and testing for contaminants would be needed for any ENM generated from the site before it was transported offsite. If this material is found to be unsuitable for treatment and reuse onsite, it would be disposed of at an appropriate licenced facility identified in Table 23-1.

Marine sediment waste

A small volume of marine sediment could be recovered during the piling activities. This sediment would typically be waterlogged (eg mud and sludge) and would either wash out into Botany Bay as the pile is brought up to the surface (see Chapter 17 (Soil, water and contamination)) or set down on the construction barge. Sediment that is brought to the surface and placed on the barge would be tested and disposed of appropriately. These sediments would also be managed appropriately to avoid the generation of acid sulfate soils.

To undertake the piling activities, there may be some residual drilling fluid brought up with the sediment. However, there would be very low levels of residual drilling fluid produced and this fluid would be suitable for use in Botany Bay.

Timber and green waste

Some vegetation clearing would be required during construction (refer to Chapter 11 (Terrestrial biodiversity)). Any cleared vegetation will be reused as millable timber where practicable and/or mulched and reused onsite if approved in the Biodiversity Management Plan.

Construction waste and packaging materials

Construction waste would include materials such as timber, concrete and asphalt, steel, metal, piping and conduits. Where reasonable and feasible, surplus concrete could be reused for pavements and access tracks. Packaging waste from material deliveries could include timber, cardboard, plastic and paper.

Demolition waste

Waste would be generated from the demolition of existing structures such as the existing Kurnell viewing platform and road pavement of the existing car parking spaces at La Perouse. Expected waste materials that would be generated include timber, steel, concrete, green waste and general waste.

Equipment maintenance and site office waste

Vehicle and equipment maintenance can produce wastes such as lubricants, oils, fuels and tyres. General solid waste from site compounds may include food scraps, glass, paper and cardboard, plastic, metal (including aluminium cans) and glass. These wastes can be appropriately managed, to avoid water pollution and soil contamination.

23.3.2 Assessment of operation impacts

The main waste streams generated during operation would be:

- Small quantities of green waste produced during landscaping maintenance activities.
- General solid waste produced from debris and litter (from waste receptacles along the wharves), including recreational boating waste. This would be collected in two 120 litre recycling and general waste bins at both wharves. Management of these bins would be determined once the wharves are constructed and would reflect existing public bin management measures.
- Contaminated waste which may result from any traffic or maritime accidents, spills and fuel leaks would be managed in accordance with the Guideline for the Management of Contamination (NSW Roads and Maritime Services, 2013).

These waste streams would be consistent with existing waste streams currently generated at both project areas. It is also expected that waste volumes would not significantly increase due to the

operation of the wharves and associated ferry services. There may be a small increase in the amount of general solid waste due to increased visitor numbers. Any waste produced during operation would be managed in accordance with the waste hierarchy, classified according to the Waste Classification Guidelines (NSW EPA, 2014) if required and would be reused, recycled or disposed of at suitable facilities.

23.4 Environmental management measures

Table 23-3 summarises the management measures to mitigate the predicted adverse impacts described above. They are supplemented by measures listed in Chapter 11 (Terrestrial biodiversity) and Chapter 17 (Soil, water and contamination).

Table 23-3: Environmental management measures for waste

Impact	ID	Environmental management measure	Responsibility	Timing
Avoid, minimise, and sustainably manage waste	W1	<p>A Waste and Energy Management Plan (WEMP) will be prepared in accordance with the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014). It will be implemented under the Construction Environment Management Plan (CEMP). The WEMP will include:</p> <ol style="list-style-type: none"> Measures and controls to minimise the amount of waste Measures to store, test, handle, transport, recovery, reuse, dispose of waste. It will also address any recovered material imported to site Waste management classification measures Measures to ensure organic waste is covered and stored onsite to prevent birds being attracted to the area Measure to ensure no construction generated waste is placed in public or residential bins Monitoring, record keeping and reporting, including any documentation management obligations arising from resource recovery exemptions Sampling and waste management measures in accordance with the Roads and Maritime Services Environmental Fact Sheet EFS-706 (NSW Roads and Maritime Services, 2015b) Measures to reuse and mulch cleared vegetation in accordance with QA Specification R178 (Vegetation). 	Contractor	Pre-construction and construction
Existing condition of construction sites	W2	<p>A Pre-Construction Land Condition Assessment will be carried out in accordance with the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014) before starting work. This will also identify any pre-existing wastes.</p>	Contractor	Pre-construction

Impact	ID	Environmental management measure	Responsibility	Timing
Condition of site post-construction	W3	A Post-Construction Land Condition Assessment will be carried out in accordance with the Environmental Procedure - Management of Wastes on Roads and Maritime Services Land (NSW Roads and Maritime Services, 2014). This will ensure the site condition is reinstated and suitable for handback in accordance with wider contractor specifications.	Contractor	Construction
Manage effluent waste	W4	Onsite effluent will either be discharged to the local sewage system or temporarily stored in septic or portable facilities. These facilities will be of sufficient capacity and located away from environmentally sensitive areas such as waterways. The effluent will be regularly collected and disposed of to an appropriately licenced facility. Pit toilets will not be permitted.	Contractor	Construction
Management of waste during operation	W5	Recycling and general waste bins will be installed at the wharves. Note: operational waste will be incorporated into existing management systems operated by Transport for NSW, National Parks and Wildlife Service, Randwick City Council and Sutherland Shire Council.	Transport for NSW	Operation