PART D

EIS synthesis and conclusion

INLAND RAIL

CHAPTER D2

Waste management

Narromine to Narrabri

Environmental Impact Statement

ARTC

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

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D2. Waste management

This chapter summarises the waste management requirements for the Narromine to Narrabri project (the proposal). It identifies potential waste management risks and how these risks have been, and would continue to be, managed. It provides a preliminary assessment of the types of wastes that would be generated by the proposal and measures to manage and minimise these wastes.

D2.1 Approach

A description of the approach to the assessment is provided in this section, including the legislation, guidelines and/or policies driving the approach and the methodology used to undertake the assessment.

D2.1.1 Legislative and policy context to the assessment

Relevant legislation, policies and guidelines

The assessment has been undertaken in accordance with the resource management hierarchy outlined in the *Waste Avoidance and Resource Recovery Act 2001* (NSW). This hierarchy, which is considered at all stages of design development and construction planning, involves:

- Avoiding unnecessary resource consumption
- Promoting resource recovery, including reuse, reprocessing, recycling and energy recovery
- Disposing wastes appropriately, where avoidance and recovery are not feasible.

The assessment was also undertaken with reference to the following:

- Relevant legislation, including the EP&A Act, the POEO Act, and the *Protection of the Environment Operations (Waste) Regulation 2014*
- *Waste Classification Guidelines* (NSW EPA, 2014a)
- *NSW Waste Avoidance and Resource Recovery Strategy 2014–21* (NSW EPA, 2014b)
- *NSW Sustainable Design Guidelines* (Transport for NSW, 2017).

Secretary's Environmental Assessment Requirements

The SEARs relevant to waste, together with a reference to where they are addressed in the EIS, are provided in Appendix A.

D2.1.2 Methodology

The waste impact assessment involved:

- Reviewing the regulatory framework for waste management
- Identifying potential waste-generating activities
- Identifying the likely classification of waste generated by the proposal in accordance with relevant legislation and guidelines
- Estimating quantities of waste, where feasible
- Identifying available waste management options
- Developing a conceptual waste management plan for construction and operation.

The waste types and quantities estimated as an outcome of this assessment are indicative, and have been identified for the purpose of determining potential waste impacts and waste management options. Although the quantities of waste actually generated by the proposal may differ from the estimates made, the identified waste management options are variable and would be appropriate to the final waste quantities.

D2.2 Impact assessment—construction

D2.2.1 Waste-generating activities

The key waste-generating activity would be earthworks associated with constructing the rail infrastructure. This is predicted to generate a large amount of spoil and would require appropriate measures to manage potential impacts associated with handling and reuse/disposal. Other activities likely to generate waste during construction include:

- Vegetation clearing and grubbing
- Topsoil stripping
- Fencing (temporary and or permanent)
- Operation of concrete batching plants
- Construction of roads, drainage structures, culverts, bridges and other ancillary infrastructure
- Operation of borrow pits
- Construction of rail infrastructure—rail formation, welding, ballasting and tamping
- Operation of multi-function and other compounds
- Operation of temporary workforce accommodation.

Vegetation clearing and grubbing would generate green waste, including timber and leaves/grasses.

Temporary workforce accommodation would generate typical domestic waste, including food waste, paper, cardboard and containers. It would also generate electrical or electronic waste and wastewater.

Food waste, waste paper and cardboard, plastic, metal (including aluminium cans), glass, and electrical waste would be generated by construction staff. Maintenance fluids generated during plant and equipment operation include paints, solvents, lubricants and oils. Hydrocarbon and water mixtures or emulsions would be generated at plant and equipment wash-down areas within site compounds. Concrete waste would also be generated at concrete batching plants.

Wastewater generated by operation of compounds would include grey water and sewage from site amenities, and washdown water used for vehicles and equipment.

Waste generated during construction would also include packaging waste, such as pallets, plastic film wrap, cable reels and metal straps/bands.

D2.2.2 Classification and estimated quantities of waste generated

Table D2.1 provides the key waste streams predicted to be generated during construction, the likely classifications (based on Part 1 (Classifying waste) of the *Waste Classification Guidelines* (NSW EPA, 2014a)), and estimated quantities. Waste volumes and classifications would be confirmed during detailed design and construction planning, and incorporated into the construction waste management plan, which would form part of the CEMP (see section D2.4).

Spoil is excess soil, rock or dirt excavated from the site; it is the largest waste stream expected to be generated during construction. As described in section A6.3.4, it is predicted that about 690,000 m^3 of spoil would be generated during construction that would not be suitable for reuse. The approach to managing spoil is discussed in section D2.2.4.

TABLE D2.1 WASTE ESTIMATES AND CLASSIFICATION—CONSTRUCTION

Activity	Waste streams that may be produced	Likely classification of waste streams	Estimated quantity (tonnes, unless indicated)
Clearing and grubbing of vegetation	Green waste	General solid waste (non-putrescible)	114,590
Topsoil stripping	Topsoil	General solid waste (non-putrescible)	Included in cut-and-fill earthworks estimate (below)
Cut-and-fill earthworks, including earthworks associated with borrow pits	Spoil—comprising virgin excavated natural material or excavated natural material	General solid waste (non-putrescible)	690,000 m^3
	Contaminated soils (including asbestos-containing materials)	General solid waste (non-putrescible) Restricted waste and/or special waste[1]	To be confirmed during detailed design
Concrete batching plants	Waste concrete and concrete washout waste	General solid waste (non-putrescible)	2,200 m^3
Roads, drainage structures and culvert/bridge construction	Concrete, asphalt, aggregate, timber formwork, scrap metals, cable and packaging materials	General solid waste (non-putrescible)	30
Rail formation	Sleepers rail	General solid waste (non-putrescible)	200
Welding	Waste metal	General solid waste (non-putrescible)	Minimal
Ballasting and tamping	Waste ballast	General solid waste (non-putrescible)	Minimal
Fencing (temporary and permanent)	Waste metal/timber posts	General solid waste (non-putrescible)	Minimal
Multi-function and other compounds and borrow pits	Food and other organic waste	General solid waste (putrescible)	50
	Wastewater	Liquid waste	70 mega litres
	Waste paper and cardboard	General solid waste (non-putrescible)	100
	Waste containers—plastics, glass, metals	General solid waste (non-putrescible)	30
	Other office waste	General solid waste (non-putrescible)	80
	Electrical and electronic waste	General solid waste (non-putrescible)	Minimal
	Waste from vehicle/plant equipment maintenance—adhesives, lubricants, waste fuels and oils, engine coolant, batteries, hoses	General solid waste (non-putrescible)—drained oil filters (mechanically crushed), rags and oily rags (only if they contain non-volatile petroleum hydrocarbons and no free liquids). Hazardous waste—containers holding oil, grease, and lubricants if residues have not been removed by washing Liquid waste (oils).	Minimal
	Tyres	Special waste	Minimal

Activity	Waste streams that may be produced	Likely classification of waste streams	Estimated quantity (tonnes, unless indicated)
Temporary workforce accommodation	Food and other organic waste	General solid waste (putrescible)	310
	Wastewater	Liquid waste	470 mega litres (ML)
	Waste paper and cardboard	General solid waste (non-putrescible)	210
	Waste containers—plastics, glass, metals	General solid waste (non-putrescible)	100
	Other domestic waste	General solid waste (non-putrescible)	420

Note 1: Further information about the potential for contamination within the proposal site is provided in chapter B4.

D2.2.3 Potential impacts if waste is not managed appropriately

Potential impacts associated with aspects of waste generation and management during construction are summarised in Table D2.2.

TABLE D2.2 POTENTIAL IMPACTS ASSOCIATED WITH WASTE GENERATION AND MANAGEMENT

Aspect of waste management	Potential impacts
Generation of waste, including excavation and handling	▸ Dust from excavation, handling and movement of waste onsite ▸ Erosion and sedimentation due to runoff from excavations ▸ Mobilisation of acid sulfate or saline soils, where present ▸ Sediment laden/contaminated runoff and leachate generation, which, if located near to receiving watercourses, can impact water quality ▸ Noise from plant and equipment movement
Storage of and segregation of waste on site	▸ Odours and dust from stockpiling/storage of spoil and other wastes ▸ Cross-contamination of wastes due to improper segregation ▸ Erosion and sedimentation due to runoff from temporary stockpiles ▸ Sediment laden/contaminated runoff and leachate generation, which, if located near to receiving watercourses, can impact water quality ▸ Contamination of soils due to improper storage
Waste transportation	▸ Dust from loading waste onto vehicles and movement of waste collection on haul roads ▸ Road traffic noise from waste collection vehicles and from movement of spoil ▸ Traffic due to haulage of spoil to reuse locations (such as use for fill or to rehabilitate the borrow pits) and/or disposal locations ▸ Odours from loading waste onto vehicles and movement of waste collection vehicles to disposal or recycling facilities ▸ Mud tracking on road from waste collection vehicles
Non-classified or incorrectly classified waste transport and disposal	▸ Regulatory non-compliance ▸ Contamination of recycling facilities/landfills ▸ Contamination of soils, groundwater and/or surface water
Unlicensed waste contractors transporting waste	▸ Regulatory non-compliance ▸ Potential illegal dumping of waste

The potential impacts associated with excavating and disturbing soil, and associated impacts on water quality, are considered in chapters B4 and B5. The assessments concluded that impacts of sediment laden/contaminated runoff and leachate generation, mobilisation of acid sulfate or saline soils, and generation of contamination would be minimal due to the short-term duration of earthworks activities and with implementation of the proposed mitigation measures provided in section B4.5.

The water quality assessment (see chapter B5) considers potential water quality impacts of construction activities, including surface water runoff control for earthworks. The soil and water management plan prepared and implemented as part of the CEMP would include measures to manage issues associated with erosion and sedimentation that have the potential to impact on water quality. Impacts on water quality as a result of handling and storage of wastes would be minimal, with appropriate storage of waste and implementation of the measures provided in sections B5.5 and D2.4.

The air quality assessment (see chapters B10, C1 and C3) considers the potential for dust associated with construction activities, including the movement of spoil and use of key construction infrastructure (including borrow pits). The assessment concluded that dust generated by construction would not impact regional air quality, with potential impacts localised to a few hundred metres of works. Potential air quality impacts would be managed by implementing the measures provided in section B10.5, including developing and implementing a construction air quality management plan as part of the CEMP.

The traffic and transport assessment (see chapter B11) considers potential traffic impacts during construction, including movement of vehicles transporting spoil. Potential traffic impacts would be managed by implementing the measures provided in section B11.5, including preparing and implementing a construction traffic, transport and access management plan as part of the CEMP.

The construction noise and vibration assessment (see chapter B8) includes consideration of potential noise and vibration impacts from earthworks (spoil generation), operation of construction compounds and road traffic noise. With the implementation of the mitigation measures provided in section B8.5, noise impacts associated with waste generation, handling and transport are expected to be effectively managed.

Construction waste management activities would not have a significant impact on the environment or human health, assuming:

- The mitigation measures provided in the chapters listed above are implemented
- Construction wastes are managed as described in section D2.2
- Additional waste mitigation measures provided in section D2.4 are implemented.

D2.2.4 Waste handling and management

Overall approach to waste minimisation and reuse

All waste generated during construction would be managed using the waste hierarchy approach of avoidance and reuse before consideration is given to disposal. Procurement of excess materials would be avoided in accordance with relevant guidelines and policies, including the *Inland Rail Sustainable Procurement Policy* (ARTC, 2020b), the *Sustainable Procurement Guide* (Department of the Environment and Energy, 2018) and the *NSW Government Resource Efficiency Policy* (OEH, 2019).

All wastes would be managed in accordance with the waste provisions contained within the POEO Act and other relevant legislative and policy requirements (see section D2.1.1). The generation of construction waste would be limited through avoidance and reuse measures, as far as practicable. Should waste be found to be unsuitable for reuse or recycling, disposal methods would be selected based on the classification of the waste material, in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a). The *Waste Classification Guidelines* provide direction on the classification of waste, specifying requirements for management, transportation and disposal of each waste category.

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, are provided in Table D2.3. The table also outlines the contingency measures (disposal) for wastes that cannot be avoided, reused, recycled or treated. Measures to facilitate segregation and prevent cross contamination are also provided. These measures would be incorporated into the construction waste management plan (see section D2.4).

TABLE D2.3 WASTE MANAGEMENT MEASURES—CONSTRUCTION

Waste	Hierarchy	Management
Spoil	Reduce	The proposal is designed to adhere to the natural ground profile, where practicable, to reduce the amount of earthworks required and the amount of excess material that would be generated. Detailed design and construction planning would avoid spoil generation as far as practicable.
	Reuse	Spoil would be reused as part of the proposal, as far as practicable, including for rehabilitation of borrow pits.
	Recycle	Surplus material that cannot be reused would be stockpiled onsite. Options to recycle spoil would be investigated, where practicable.
	Dispose	Spoil not able to be reused would be disposed of at suitably licensed facilities in accordance with the waste classification. Minimal quantities of contaminated spoil are expected to require offsite disposal at an appropriately licensed facility. In-situ testing of soils in areas of potential contamination concern would be undertaken to determine the appropriate waste classification. Should offsite disposal be required, the material would be taken to an appropriately licensed facility by an authorised contractor. Any spoil classified as restricted waste and/or special waste in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a) would be directed to a waste management facility that is lawfully permitted to accept that type of contaminated waste.
Green waste	Avoid	Clearing would be minimised by placing temporary infrastructure in areas that have been previously cleared, degraded or have naturally lower above ground biomass.
	Reduce	Areas to be cleared would be marked, to reduce incidental clearing.
	Reuse	As far as practicable, cleared material would be chipped, mulched, and stockpiled for reuse during finishing works. Materials with special habitat value, such as hollow-bearing logs or trees, would be selectively removed for reuse, or placed in nearby bushland.
	Dispose	Priority weeds would be disposed of in accordance with relevant guidelines/requirements.
Rubbish and debris	Recycle	Where recycling is considered feasible, rubbish and debris would be stored for collection by an authorised contractor, for offsite recycling.
	Dispose	Where rubbish and debris is not recyclable, the waste would be removed to a storage location for collection by an authorised contractor, for offsite disposal.
Food waste	Disposal	Putrescible waste would be stored at allocated bins at each compound or accommodation site, for collection by an authorised contractor and disposed of offsite.
Wastewater	Dispose	Wastewater/sewage from site compound amenities/ablutions and temporary workforce accommodation facilities would be removed by an authorised contractor, for disposal in accordance with regulatory requirements.
Topsoil	Reuse	Topsoil would be stockpiled for reuse onsite. Stockpiles would be managed to maintain soil structure and fertility.
	Treat	Low-quality topsoil would be treated with ameliorants to improve structure and fertility.
	Dispose	Surplus or unusable topsoil would be used to rehabilitate borrow pits.
Waste concrete	Avoid	Procurement of surplus concrete powder would be avoided.
	Recycle	Waste concrete would be crushed and recycled, where practicable.
	Dispose	Waste concrete that cannot be recycled would be collected and stored in designated storage areas at compounds or concrete batching plants, for offsite disposal by an authorised contractor.
Waste ballast	Avoid	Procurement of surplus ballast would be avoided.
	Disposal	All unusable ballast would be placed into borrow pits as part of rehabilitation works.

Waste	Hierarchy	Management
Waste metal	Avoid	Procurement of surplus metal, including rail, would be avoided.
	Reduce	Waste metal would be reduced by limiting offcuts.
	Recycle	Suitable rail offcuts or scrap metal (including metal bands from packaging of construction materials and hot waste from welding) would be stored for collection by an authorised contractor and recycled offsite. Market demand for this recyclable waste would also be considered.
Waste wood	Avoid	Procurement of surplus wood would be avoided.
	Reuse	Waste wood would be stored onsite for reuse, where practicable.
	Recycle	Waste wood that cannot be reused on site (including cable reels from packaging) would be collected in designated recycling containers for offsite disposal by an authorised contractor, where recycling is considered feasible. Market demand for this recyclable waste would be considered.
Waste glass	Recycle	Waste glass would be stored at recycling bins for collection by an authorised contractor and recycled offsite, where feasible.
	Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Waste plastic	Avoid	Procurement of surplus plastic would be avoided.
	Recycle	Waste plastic would be stored at recycling bins at each compound or workforce accommodation site, for collection by an authorised contractor and recycled offsite.
	Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Waste rubber	Avoid	Procurement of surplus rubber (e.g. gloves, earplugs, tyres) would be avoided.
	Recycle	Waste rubber would be stored at recycling bins for collection by an authorised contractor and recycled offsite.
	Dispose	Where recycling is not considered feasible, or is contaminated, waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Waste paper	Avoid	Procurement of surplus paper would be avoided.
	Reduce	Waste paper from office/administration facilities would be minimised by enabling 'secure print' feature on all printers and by encouraging double-sided printing.
	Recycle	Waste paper would be stored at recycling bins at each compound or workforce accommodation site, for collection by an authorised contractor, and recycled offsite, where feasible.
	Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Waste cardboard	Avoid	Procurement of surplus cardboard would be avoided.
	Recycle	Waste cardboard would be stored at recycling bins at each compound or workforce accommodation site, for collection by an authorised contractor, and recycled offsite, where feasible.
	Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal.
Waste aluminium cans	Recycle	Waste aluminium would be stored in recycling bins at each site compound, for collection by an authorised contractor, clubs or charities, and recycled offsite.

Waste	Hierarchy	Management
Electrical waste	Avoid	Procurement of surplus appliances and cabling would be avoided.
	Reuse	Product stewardship arrangements would be sought, with a view to some electrical appliances being reused under return-to-supplier arrangements.
	Recycle	Electrical waste would be stored at recycling bins at each compound or workforce accommodation site, for collection by an authorised contractor, and recycled offsite, where feasible. Market demand for this recyclable waste would also be considered.
	Dispose	Where recycling is not considered feasible, the waste would be collected and stored in designated waste storage areas, for collection by an authorised contractor, for offsite disposal.
Waste oil, grease, lubricants, oily rags and filters	Avoid	Procurement of surplus oil, grease, and lubricants would be avoided.
	Recycle	Only waste oil and oil filters to be recycled through storage in recycling bins at each site compound, collection by an authorised contractor, and recycling offsite, where feasible.
	Dispose	The waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for offsite disposal. Where feasible, containers holding oil, grease, and lubricants would be washed prior to disposal or stored separately for disposal as hazardous waste.
Waste pallets	Avoid	Procurement of surplus pallets would be avoided.
	Reduce	Delivery of material on pallets would be limited, wherever possible. If materials have to be delivered to site on pallets, ensure that pallets are returned to the supplier at time of delivery, where practicable.
	Reuse	Product stewardship arrangements would be sought, with a view to pallets being reused under the stewardship of the supplier.
	Recover	Options to recover wood from pallets by chipping, for reuse as mulch, would be pursued, where practicable.

Spoil management

As noted in section D2.1.1, the key waste-generating activity would be earthworks associated with constructing the rail infrastructure, leading to the generation of spoil.

Table D2.3 provides a summary of the proposed management measures for spoil, according to the waste management hierarchy. As described in section A6.3.4, using spoil to rehabilitate borrow pits is the preferred spoil management option. As the proposed borrow pits are located on private land and would be subject to lease agreements with the landowner, the extent to which this option could be used would be confirmed during detailed design and construction planning. Further information on the proposed borrow pits, including establishment, use, rehabilitation and associated potential impacts, is provided in chapter C3.

Spoil could also be reused as fill for other projects, within a financially feasible transport distance of the proposal site, where practicable and agreed with other project proponents. At this stage of the construction planning process there are considered to be limited opportunities to implement this option; however, this would be further considered during development of the spoil management strategy (see section D2.4).

Waste and stockpile locations

Waste would be stored temporarily within the proposal site, including at compounds and temporary workforce accommodation, before being transferred offsite for recycling and disposal. The exact location and volumes of waste stockpiles would be confirmed by the construction contractor(s).

Offsite recycling and disposal

The following waste-management facilities are located in the study area:

- Narrabri Waste Management Facility—Yarrie Lake Road, Narrabri
- Narromine Waste Management Facility—Gainsborough Road, Narromine
- Gilgandra Waste Facility—Pines Drive, Gilgandra
- Whylandra Waste and Recycling Centre—Cooba Road, Dubbo
- Moree Solid Waste Depot (Cleanaway)—Newell Highway, Moree
- Parkes Waste Facility—Brolgan Road, Parkes.

The majority of the landfill and transfer stations are operated by local councils for use by residents; however, the larger landfills and transfer stations are able to accept commercial waste. Arrangements would be made with landfill operators prior to the delivery of waste and recycling to any facility to ensure that the waste types and quantities could be accepted.

D2.3 Impact assessment—operation

D2.3.1 Waste-generating activities

The main waste-generating activity during operation would be associated with maintaining the rail infrastructure and corridor. Small quantities of green waste may be generated as a result of vegetation control. Other general debris and litter would also be collected. Spoil (fouled ballast materials) and other waste streams (such as concrete sleepers, rails) are also generated during track maintenance.

These activities already occur under ARTC's existing operational conditions.

For the most part, maintenance of plant and vehicles would be undertaken at ARTC's existing provisioning centres or at rail operator's facilities. As a result, waste associated with maintaining plant and vehicles during operation has not been considered further.

D2.3.2 Potential impacts if waste is not managed appropriately

The impacts associated with waste generation and management during operation would be similar to those for construction (see section D2.2.3), albeit at a much smaller scale. Operational waste, including general litter clean-up, would be managed in accordance with existing operational maintenance requirements and the impact is expected to be minimal.

D2.3.3 Classification, handing and management

The anticipated waste types, likely classifications and management measures proposed to align with the waste management hierarchy are listed in Table D2.4. The table also outlines the contingency measures (disposal) for wastes that cannot be avoided, reused, recycled or treated.

TABLE D2.4 WASTE MANAGEMENT MEASURES—OPERATION

Waste	Classification	Hierarchy	Management
Green waste	General solid waste (non-putrescible)	Reuse/ recycle	Green waste would be chipped, mulched and reused for vegetation management or collected by an authorised contractor and recycled offsite.
		Dispose	Priority weeds would be disposed of in accordance with relevant guidelines/requirements.
Litter and debris	General solid waste (non-putrescible)	Recycle	Rubbish and debris includes any unexpected waste encountered during general track and corridor maintenance, and may include scrap metal, plastic, wood, and other litter. Such wastes would be collected by an authorised contractor and recycled offsite, where recycling is considered feasible.
		Dispose	Where rubbish, debris and litter is not recyclable, it would be collected by an authorised contractor and disposed offsite at a suitably licensed facility.

Waste	Classification	Hierarchy	Management
Concrete	General solid waste (non-putrescible)	Reuse	Sleepers would be reused where appropriate.
		Recycle	Sleepers and other waste concrete unable to be reused would be crushed and recycled, where practicable.
		Dispose	Sleepers and other waste concrete that cannot be reused or recycled would be collected for offsite disposal by an authorised contractor.
Spoil (including unused and fouled ballast)	General solid waste (non-putrescible)	Reuse	Where suitable and practicable, spoil would be reused elsewhere on the ARTC network as bottom ballast for track work and/or capping on access tracks.
		Recycle	Spoil and fouled ballast unable to be reused would be collected for offsite recycling by an authorised contractor, where recycling is considered feasible.
		Dispose	Spoil and fouled ballast unable to be reused or recycled would be collected for offsite disposal by an authorised contractor.
Waste metal	General solid waste (non-putrescible)	Recycle	Suitable rail offcuts or scrap metal would be stored for collection by an authorised contractor and recycled offsite.

D2.4 Mitigation and management

D2.4.1 Approach

Approach to mitigation and management

Approach to managing the key potential impacts identified

The proposal has been designed, as far as practicable, to minimise spoil volumes and maximise reuse of the material as fill or for the rehabilitation of borrow pits. Waste would be managed during construction, as described in sections D2.2.4 and D2.3.3. The approach to waste management, including the management of spoil, would be guided by the waste management hierarchy, with a focus on reducing resource use and minimising waste generation as the highest priority. Wastes generated during construction would be reused and recycled, where possible.

Wastes that cannot be reused/recycled would be disposed of at appropriately licensed facilities. As described in section D2.2.4, the preferred spoil management option (reusing spoil to rehabilitate borrow pits) would be subject to further refinement and assessment during detailed design and construction planning. The approach to finalising the preferred option would be defined by the spoil management strategy, which would be developed during detailed design and construction planning.

Approach to managing other impacts

Overall, waste would be managed during construction in accordance with the waste management plan, which would form part of the CEMP. The waste management plan would define the processes, responsibilities and management measures that would be implemented to manage waste. This would include procedures for the assessment, classification, management and disposal of waste in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a), the proposed waste management measures listed in Table D2.3, and relevant actions from the spoil management strategy. Further information on the CEMP is provided in chapter D5.

Waste management during both construction and/or operation would also be undertaken in accordance with ARTC's existing management and maintenance procedures, relevant environment protection licences and regulatory requirements.

Expected effectiveness

ARTC would engage appropriately licensed waste contractors to manage the collection, recycling or disposal of waste that cannot be reused onsite. Waste contractors would also be required to provide evidence of the works compliance with legislative requirements, conditions of approval and standards and guidelines.

Auditing and monitoring would be undertaken to ensure that management approaches provided in the environmental management plans are implemented and appropriate. As such, the management of waste throughout the project, by implementing the measures described in this section, is considered to be effective.

Implementation of these measures would help ensure that waste from the proposal is managed in an environmentally sound manner, and in accordance with any legislated requirements for waste disposal and waste tracking.

Interaction between measures

All mitigation measures would be consolidated and described in the environmental management plans for construction and operation. The plans would identify measures that are common between waste types and or impact categories. Common impacts and common mitigation measures would be consolidated to ensure consistency.

There is the potential for unexpected volumes of waste to be generated, including potentially contaminated material. During construction planning, suitable areas would be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Any previously unidentified contaminated material would be managed in accordance with the unexpected contaminated finds procedure (see chapter B4). Any spoil classified as restricted and/or special waste in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a) would be directed to a waste management facility that is lawfully permitted to accept that type of contaminated waste.

Spoil proposed for use at borrow pits would be managed in accordance with the waste management plan. Borrow pits would be rehabilitated in accordance with the proposed borrow pit rehabilitation strategy (see Appendix K).

D2.4.2 List of mitigation measures

Measures that will be implemented to manage waste are listed in Table D2.5.

TABLE D2.5 WASTE MITIGATION MEASURES

Stage	REF	Impact	Mitigation measures
Detailed design/ pre-construction	WM1	*Excess waste generation*	Detailed design would include measures to minimise spoil generation. This would include a focus on optimising the design to minimise spoil volumes and the reuse of material on site.
	WM2	*Management of spoil*	A spoil management strategy would be developed to define the preferred approach to managing spoil, including the use of spoil to rehabilitate borrow pits. The strategy would include: ▸ Confirming spoil quantities ▸ Undertaking appropriate investigations and surveys, including geotechnical investigations ▸ Consideration of the approvals and land application of waste exemptions required, associated lead time and any associated sampling and reporting obligations ▸ Consultation with landholders with borrow pits located on their property ▸ Defining the preferred option for reusing and/or disposing of any spoil not able to be reused at borrow pits. The outcomes of the strategy would inform the construction waste management plan.
Construction	WM3	*Construction waste management*	A construction waste management plan would be prepared and implemented as part of the CEMP. The plan would adopt the waste hierarchy principles contained in the *Waste Avoidance and Resource Recovery Act 2001* (NSW), and detail processes, responsibilities and measures to manage waste and minimise the potential for impacts during construction.
	WM4	*Construction waste and spoil management*	All waste generated would be classified in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014a) and disposed of in accordance with the relevant requirements of the *Protection of the Environment Operations (Waste) Regulation 2014*.
Operation	WM5	*Operational waste management*	Operational waste, including general litter clean up, would be managed in accordance with ARTC's existing operational maintenance requirements and the waste hierarchy principles in the *Waste Avoidance and Resource Recovery Act 2001* (NSW).