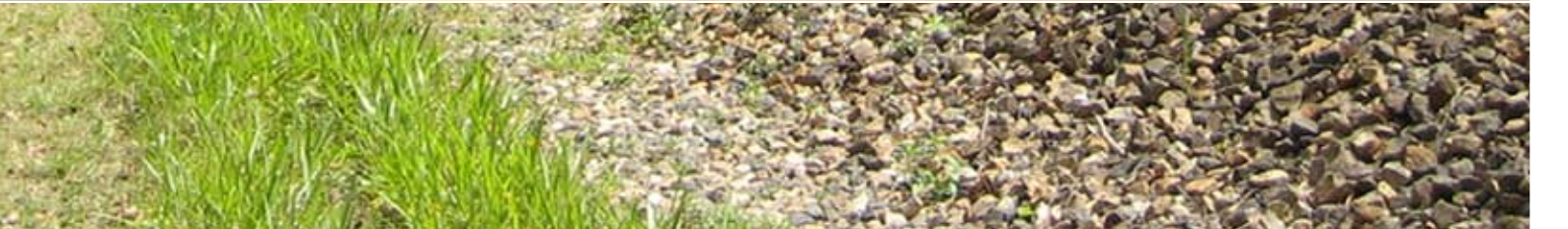


18 Waste



18.1 Introduction

Waste has the potential to impact biodiversity, water quality, social value and human health. Environmental conditions such as climate and topography can enhance or reduce the impact of waste. Waste can also be considered a resource if re-use options are available.

This chapter identifies and assesses the impacts due to waste generation during construction, operation and decommissioning of the project and any additional associated infrastructure. This chapter also addresses potential waste management, minimisation and mitigation measures.

Waste as defined under Section 13 of the *Environmental Protection Act 1994 (Qld)* (EP Act) includes:

- (1) anything, other than a resource approved under subsection (4), that is—
 - (a) left over, or an unwanted by-product, from an industrial, commercial, domestic or other activity; or
 - (b) surplus to the industrial, commercial, domestic or other activity generating the waste.

Example of paragraph (a) – abandoned or discarded material from an activity is left over, or an unwanted by-product, from the activity

- (2) waste can be a gas, liquid, solid or energy, or a combination of any of them.
- (3) a thing can be waste whether or not it is of value.

Table 18.1.2: Legislation review

Legislation	Implications	Level
<i>Environment Protection Act 1994</i> (EP Act) and Associated Regulations	Under Section 319 the proponent is bound by the general environmental duty. This means that the project must not release waste that is likely to cause environmental harm, unless all reasonable and practical measures are taken to prevent or minimise the harm. The waste generator must ensure that waste is transported by a licensed transporter and that it is delivered to a licensed facility. This is particularly important for Regulated (hazardous) Waste as defined under schedule 7 of the Environmental Protection Regulation 2008 (Qld).	Commonwealth
<i>Nature Conservation Act 1992</i> (NC Act) (and Regulations and Conservation Plans)	The release of waste may be considered a threatening process under the <i>Nature Conservation Act 1992</i> (NC Act) as certain waste can cause harm to native wildlife habitat and wildlife species that are protected under the act.	State
Environmental Protection (Waste Management) Policy 2000	The Environmental Protection (Waste Management) Policy 2000 (s.26-34) states: 'A local government must prepare and adopt a Waste Management Strategic Plan for its area, and start to implement the plan – within three years after this policy commences; and as soon as practicable after the repeal or expiry of any plan it has previously adopted under this division.'	State
Today's Waste... Tomorrow's Resource Maroochy's Waste Management Strategic Plan	It replaces a 1999 strategy of the same name and is intended to continue to embrace resource management, provide a greater depth and breadth compared to the previous strategy and complies with prevailing legislation.	Local

18.1.1 Aims

This Chapter aims to identify the following:

- the type and amount of waste produced, including an inventory of all solid and liquid waste generated at each stage of the project
- the collection, storage, handling, transport and fate of all waste
- the market demand for recyclable waste
- opportunities for waste avoidance and minimisation strategies
- stormwater management including design criteria and detailed information regarding collection, treatment and disposal of contaminated stormwater.

Waste management, including waste minimisation methods and cleaner production strategies, will be implemented through the selection of processes, equipment and facilities to prevent or minimise environmental impacts.

18.1.2 Relevant legislation and policy

The legislation and policy listed in Table 18.1.2 is relevant to waste management for the project.

Waste management for this project follows the waste management hierarchy as a guiding principle. The waste management hierarchy is a framework for prioritising waste management practices to achieve the best environmental outcome. The preferred order of adoption is as follows:

1. avoid waste by optimising construction, operation and decommissioning methods
2. re-use waste by identifying sources that can utilise the waste
3. recycle waste by identifying facilities that are able to recycle waste
4. energy recovery from waste
5. disposal of waste at appropriate facilities.

18.2 Methodology

18.2.1 Review of existing information

Information relevant to the project area was available from studies previously carried out by government and private organisations for similar projects. Baseline data collection and impact assessment has been undertaken based on a desktop review and a site visit.

Information review (existing reports)

A number of documents were assessed for relevance and used for general background information, including:

- *South East Queensland Infrastructure Plan and Program 2008 – 2026*
- *Rail Network Strategy for Queensland 2001 - 2011*
- *Landsborough to Nambour Rail Corridor Study Route Identification Report (former Queensland Transport now Department of Transport and Main Roads, 2008).*

18.2.2 Field investigations

An initial site investigation was undertaken over the entire project area, so that potential impacts created as a result of the project could be better understood. A waste audit was carried out, calculating the number of waste generating areas as well as waste utilities and services available along the existing rail line.

The majority of the site visit was done by travelling along the public road network, with careful inspections at each existing train station.

18.2.3 Limitations of study

The impacts of the future stages of the project with regards to waste generation and management have been assessed at an early stage in the project where detailed design and construction methods can only be assumed or predicted. As such, waste streams, quantities and their associated impacts are assessed

based on existing data available. Impacts and quantities will be further refined, elaborated and identified as the planning of the project progresses. Management requirements during construction and operation will also be further developed and documented in environmental management plans. Further details are provided in **Chapter 22, Environmental management plans.**

18.2.4 Assessment of impacts

The impact of the project on each aspect of land use and infrastructure has been described, and mitigation or management measures defined. Where there is a residual impact (i.e. an impact remains after the mitigation or management strategies have been applied) the significance of the impact is assigned, in accordance with the approach outlined in **Table 18.2.4.**

Table 18.2.4: Impact significance criteria for waste

Significance	Criteria
High Adverse	Impact is a major problem. Extensive disturbance to current amenity (e.g. visual amenity, odour or chemical or radiation exposure), resulting in some minor human health effects upon nearby residents and businesses. Considerable permanent adverse disturbance of ecology due to contamination over a local scale. Mitigation measures and detailed design work are unlikely to remove all of the significant effects.
Moderate Adverse	Adverse change resulting in some loss or permanent lowering of amenity; though no impact upon human health. Loss and permanent damage to ecology on a local scale. Some recovery is anticipated following completion of the works concerned. Mitigation measures are anticipated to alleviate some impacts.
Low Adverse	Impact recognisable but acceptable. Limited or temporary effects resulting in low levels of disturbance or loss to local amenity and ecology. No impact upon human health. Close to full recovery is anticipated following completion of the works concerned. Mitigation measures are anticipated to alleviate close to all impacts.
Negligible	Minimal change: No appreciable impact upon local amenity or ecology. No impacts upon human health. Effects are within normal bounds of variation or within the margin of forecasting error.
Beneficial	Impact beneficial to the environment. Any measures that are expected to result in an improvement of social values, amenity and ecological health. These can, for example, include creation of new habitat features (such as wetlands) to manage waste, or the introduction of measures that would achieve improvements in social values. Also included in this category are measures to ensure the long-term protection threatened ecological functions or social values.

18.3 Description of Environmental Conditions

The section of the north coast line between Landsborough and Nambour includes six stations: Landsborough, Mooloolah, Eudlo, Palmwoods, Woombye and Nambour. The characteristics of the stations are described in Table 18.3.

Table 18.3: Station characteristics

	Staffed/ Unstaffed	Toilets	Waste Collection Receptacles
Landsborough	Staffed (limited hours)	Y	eight general waste bins, two sanitary bins in Female toilet.
Mooloolah	Unstaffed	N	two general waste bins
Eudlo	Unstaffed	N	one general waste bin
Palmwoods	Staffed (limited hours)	Y	two general waste bins and 2 green wheelie bins
Woombye	Unstaffed	Y	two general waste bins
Nambour	Staffed (24 hours)	Y	16 general waste bins, four wheelie bins, two sanitary bins in Female toilet.

Existing waste water/ sewerage facilities

Three existing sewage-pumping stations are located in the area, two at Palmwoods and one in Nambour. A medium-sized sewerage pressure main runs along the existing rail corridor connecting Palmwoods to Woombye. Eudlo is not sewered and there are no plans within the 20 year horizon to provide a better level of infrastructure or to increase the 'Urban Footprint'.

Existing waste disposal, collection and management

General domestic waste is currently collected on a weekly basis, and is then taken to landfill sites in either Nambour or Coolool. Waste is also sent to the Buderim Resource Recovery Centre and or rural transfer centres in Yandina, Mapleton and Kenilworth.

The following items can be disposed of or taken to the Buderim Resource Recovery Centre:

- tip trucks with green waste or clean concrete only
- all general waste (under three tonnes)
- items suitable for placing in community recycling areas
- domestic waste oil
- green waste / untreated timber
- white goods
- batteries
- domestic chemicals (<10 litres)
- concrete rubble.

The following items cannot be disposed of or taken to the Buderim Resource Recovery Centre:

- contaminated soil
- regulated waste
- tip trucks with General Solid Waste or unclean concrete waste.

The following items can be disposed of or taken to the Nambour and Coolool landfill sites:

- all general waste and limited regulated waste
- items suitable for placing in community recycling areas
- domestic waste oil
- green waste
- white goods
- batteries
- domestic chemicals (<10 litres)
- concrete rubble.

The following items can be disposed of or taken to Yandina, Mapleton and Kenilworth rural transfer stations:

- excess household waste
- recyclables accepted in kerbside recycling bins
- green waste (Mapleton and Kenilworth transfer stations only).

No commercial and industrial waste or car bodies are to be dumped at the transfer stations.

Existing sleepers/ railway usage

A report from QR Limited states that there are over nine million timber sleepers on the QR Limited network and the organisation is pursuing alternative sleeper technologies with an emphasis on composite type sleepers. Advantages of this alternative technology include:

- increased life cycles
- use of recycled waste materials to manufacture the sleepers
- ability to recycle the sleepers at the end of their service life
- elimination of the use of preservatives/insecticides/termiticides
- conservation of valuable timber resources.

18.4 Assessment of potential impacts and mitigation measures for the construction and decommissioning of the existing railway

All of the construction sites along the project area will have similar construction waste characteristics due to materials used and the construction method. The impacts of the decommissioning of the existing railway will be similar to the construction of the project and are therefore addressed in this section. The following sections outline different types of waste, the impacts and methods for impact mitigation and management.

There are numerous waste collection and disposal contractors within the Sunshine Coast Region that deal with a variety of waste types, including recyclables, liquid and regulated waste. It is envisaged that these will be engaged as part of the project.

18.4.1 Potential impacts

Debris from vegetation clearance

- aesthetic impacts
- potential distribution of weeds
- interruption of nutrient cycles
- potential fire hazard.

Building waste

Building waste encompasses waste from the construction of the project and the decommissioning of the existing railway, including the demolition of stations. Railway sleepers and rail tracks from the decommissioning are addressed in Section 18.4.3.

Building waste will include non-contaminated soil, rubble, bricks, cement, timber skids, pallets, drums, scrap metals, plastics, glues, packaging used in freight, bitumen, tyres and blasting waste such as containers, caps and wires.

If the building waste is disposed of in landfill, it will contribute to the general impacts of landfill which are mostly the land clearance required to site the landfill facility.

Other unlikely impacts include:

- contamination of groundwater and/or aquifers by leakage
- residual soil contamination after landfill closure

Waste from railway sleepers and train tracks

Waste from railway sleepers and train tracks generated by the decommissioning of the existing railway include metal tracks, timber and concrete sleepers and ballast.

If sleepers and tracks are disposed of in landfill, they will contribute to the general impacts of landfill which are:

- land clearance required to site the landfill facility
- possible contamination from treatment used on sleepers could affect groundwater and soil
- possible contamination of ballast from sources like oil and hazardous chemicals from the trains
- release of metal contaminants from tracks
- release of methane generated by decaying timber sleepers.

General waste from staff

General waste from staff may include food scraps and other putrescible waste, garden clippings, toiletries, recyclable and non-recyclable packaging and office waste from the temporary site office.

- contamination arising due to litter
- aesthetic impacts of litter
- increase in waste going to landfill.
- release of methane generated by decaying organic waste.

Hydrocarbon waste from end-use

Hydrocarbon waste may include lubricants, oils, oil filters from equipment and machinery, waste fuels, absorbable pads and oily rags.

Management measures will reduce the risk of a hydrocarbon spill occurring; however, in the event of a spill the impacts may include soil and creek contamination. Spill procedures will be developed as part of future construction and environmental management plans and a spill kit will be on hand to manage any spills if they occur.

Soil waste

Soil may carry seed stock of weed species and thus soil transportation may allow the weeds to spread. Soil stockpiles could cause dust impacts.

Wash down waste water

Equipment and machinery that is washed down on site with water and detergent will create runoff potentially containing oils, sediments, weed seeds and detergents.

The impact of this waste will vary depending on where it is discharged. If it is discharged to a waterway, the waste water will have different chemical properties of the receiving waters and therefore affect the ecology of the receiving waterway. In addition, the impact will be determined by the flow volumes of the receiving waterway and hence the size of the initial mixing zone.

Stormwater

Stormwater has the potential to spread contamination to surface water and groundwater and increase erosion from exposed soil and stockpiles.

Sewage (blackwater)

Onsite sewage will be generated from temporary staff toilets and chemical rinsing showers.

Impacts are likely to include:

- odour
- contamination if accidentally released into the surrounding environment.

18.4.2 Mitigation and residual impacts

Debris from vegetation clearance

Where possible, construction sites and or buildings will be located on previously cleared land. When vegetation clearance is required, vegetation will be mulched, stockpiled and spread with topsoil during rehabilitation. This is done to reduce fire hazards, recycle nutrients and to provide surface protection from erosion or access barriers. Care will be taken to ensure that weeds are not spread during transportation and upon application of the mulch.

After mitigation and management, all vegetation waste streams are expected to result in a negligible impact.

Building waste

Building waste will be minimised. For instance, suppliers will be encouraged to reduce and/or collect packaging. Recycling of building waste will be implemented if possible through sorting, stockpiling and containing recyclable waste. Where appropriate, leftover concrete will be formed into materials suitable for alternative projects or crushed for road base and bedding material.

If waste is inevitable, it will be sorted for disposal. Non-recyclable waste will be disposed of by a licensed contractor to a designated landfill.

The Waste Management Plan in Chapter 22, **Environmental management plans** includes the following measures to mitigate the building waste impacts:

- construction material quantities accurately estimated to reduce over-ordering and on-site stockpiling of materials
- choice of suppliers that have a working waste minimisation policy in place
- where possible, position construction sites and or buildings on previously cleared land
- re-use of mulch from cleared vegetation on site
- leafy branches of weed species not to be mulched
- building materials, timber, metals and plastics from construction and demolition to be reused where possible
- where appropriate, leftover concrete to be formed into materials suitable for alternative projects or crushed for road base and bedding material
- the environmental officer to investigate the recycling of any particular waste stream generated by the project, and to contact the respective organisation to arrange for containers for waste collection and removal of waste
- bins or skips to be provided for temporary storage of all waste (other than natural earth, rocks or vegetation) and frequent collection of these bins or skips

- all waste to be appropriately segregated and stored in suitable on-site storage facilities
- all regulated waste sealed, correctly labelled and contained within bunded areas prior to collection / removal
- movement of regulated waste to be tracked
- all hazardous materials and dangerous goods waste to be stored appropriately and containers appropriately labelled and collected by licensed contractors
- movement of vehicles containing hazardous material to occur during off-peak traffic times to minimise risks
- all collectable recyclable materials taken to recycling centres
- all putrescible waste will be stored in a manner not to attract vermin
- fill generated from earthworks activities is reused as backfill, bunds or embankment on the site
- any solid waste that cannot be reused or recycled in a practicable and feasible manner to be disposed of in off-site licensed landfill sites
- no waste materials left on site post construction
- spill and emergency response plans for hazardous materials or dangerous goods to be prepared
- implementation of a paper reduction office system at the site office and recycling of used goods as far as possible.

The decommissioning stage will involve removal of the redundant railway line, rehabilitation and construction of a rail trail (in some areas). The mitigation measures for the decommissioning stage will there be the same as those for the construction stage of the project. In addition:

- Where possible, materials from demolished structures should be retained and reused on site.
- Materials that cannot be reused on site should be transported to sites where they can be reused.

After mitigation and management, all general construction waste stream is expected to result in a negligible to low adverse impact.

Waste from railway sleepers and train tracks

The following recycling options will be investigated following assessment of contamination levels and suitability of waste for re-use:

- Where possible, the ballast from the old line will be reused, if it is assessed as not to be contaminated during contaminated land investigations undertaken during the detailed design phase of the project.
- Where appropriate, concrete sleepers will be formed into materials suitable for alternative projects or crushed for road base and bedding material.

- Following assessment of levels of contamination, timber sleepers will be formed into materials suitable for alternative projects or resold for furniture if appropriate.

If waste is inevitable, it will be sorted for disposal and transferred to the appropriate facility. Non-recyclable waste will be disposed of by a licensed contractor to a designated landfill.

After re-use or recycling of all components of the decommissioned tracks suitable for re-use, all general sleeper and track waste is expected to result in a negligible impact.

General waste from staff

Management measures will include:

- appropriately placed litter bins to avoid the dispersal of litter and regular site maintenance duties
- waste sorting, composting and recycling
- sealable litter bins to minimise the attraction of vermin, insect and pests
- collection and transportation of waste by a licensed contractor with disposal at a suitable landfill facility.

After mitigation and management, the waste from construction personnel is expected to result in a negligible impact.

Hydrocarbon waste from end-use

Hydrocarbon waste will be:

- controlled as per any local government stipulations or management requirements under legislation
- stored in areas in accordance with the requirements of the relevant Australian Standards
- managed through the use of a spill kit
- appropriately contained to avoid release of the waste into the environment
- transported and recycled using appropriately licensed transporters and waste management facilities.

After mitigation and management, hydrocarbon waste is expected to result in a negligible impact.

Soil waste

The preliminary design has endeavoured to find balance between cut and fill to:

- minimise the requirement to stockpile excess soil
- remove excess soil from the site or
- minimise need for import fill material.

Depending on the quality of the material excavated, it may be practical to utilise excess material from some work sites as fill for other work sites. Excess spoil will be disposed of at the nearest approved location, generally by agreement with landowners or local council. Excess spoil that cannot be disposed

of in the vicinity it was created in will be hauled to approved disposal sites and disused borrow pits. Spoil disposal sites shall be located and managed to reduce erosion and runoff into local waterways and to prevent the distribution of weeds. This is detailed in **Chapter 21, Environmental management plans.**

Where soil that is assessed as contaminated or potentially contaminated, the on-site remediation will be the preferred option where appropriate.

After mitigation and management, soil waste is expected to result in a negligible impact.

Wash down waste water

To avoid impacts arising from the release of wash-down waste water, in particular, contamination of stormwater, all equipment will be washed down in a suitable wash-down facility. This facility will be located away from waterways and where possible have a sump guard to collect any grease, oil and other contaminants that can be removed by an appropriate and approved disposal method.

For all waste waters that are discharged, measures will be taken to:

- minimise the volumes of waste water generated
- minimise the treated water to be discharged to the environment
- ensure that the water to be discharged meets the requirements of the Department of Employment, Economic Development and Innovation, the Department of Environment and Resource Management (expressed in the documented Guidelines of the former EPA), the Water Quality Objectives for the receiving waters and the ANZECC Water Quality Guidelines.

After mitigation and management, all general wash down waste water is expected to result in a negligible impact.

Stormwater

Stormwater management is discussed in **Chapter 14, Water resources** and **Chapter 22, Environmental management plans.**

Stormwater management measures include:

- Control and treatment measures would also be implemented such as bunding, oil separators and silt and rubbish traps.
- Contamination of stormwater will be prevented in accordance with the requirements of the EPP (Water). In case of accidental contamination of an area or in case of works affecting a contaminated area, precautions shall be taken to divert stormwater from the area and temporarily cover the area until contaminated materials are removed from the site. Water shall not be used for cleaning contaminated areas.
- During earthworks, soil exposure will be minimised by using mulch to protect exposed areas and revegetating as quickly as possible.

Sewage (blackwater)

Sewage waste will be treated by an approved septic or anaerobic treatment system where possible or via connection with the municipal waste sewage infrastructure, depending on location of the site. It is likely that construction sites will use mobile toilet systems (port-a-loos) and shower systems and hence, sewage and sink water will be managed through the mobile system contractor. Where possible, the use of self composting toilets and /or waterless urinals will be introduced.

After mitigation and management, sewage is expected to result in a negligible impact.

18.5 Assessment of potential impacts and mitigation measures for the operation

Operational waste will be generated through ongoing operation and maintenance of the rail line. The project will require onsite personnel during operation and consequently general domestic waste (packaging, food and other putrescible waste, office waste, toiletries) and sewage will be created. Along with general domestic waste, industrial waste such as hazardous (regulated) waste, waste oils, packaging, drums and general refuse may be generated.

Waste is to be separated into recyclables, landfill and hazardous waste for collection by a licensed collector and disposed at an appropriate waste transfer station. To minimise waste generation during the operation phase, regular inspections and preventative maintenance of the railway and facilities will be carried out to minimise unscheduled repairs and replacement.

18.5.1 Potential impacts

The main waste streams that will result from the operation of the project include:

- General waste from station staff and railway patrons may include food scraps and other putrescible waste, garden clippings, toiletries, waste from train bins, recyclable and non-recyclable office waste and packaging.
- Wastewater and sewage will be generated from station and train facilities.

Stormwater will need to be managed at stations and along the railway.

Hazardous and regulated waste are listed in Schedule 7 of the Environmental Protection Regulation 1998 [Qld] and include hydrocarbons form oils used for train operation and maintenance.

Impacts can range from environmental contamination to aesthetic impacts and impacts associated with landfill. At this stage, there is limited information available on the generation of regulated and hazardous waste, however it is expected that minimal quantities of hazardous waste will be generated from the project.

18.5.2 Mitigation measures and residual impacts

General waste from station staff and patrons

Management measures will include:

- appropriately placed litter bins to avoid the dispersal of litter
- waste sorting and the provision of recycling bins
- sealable litter bins to minimise the attraction of vermin, insect and pests
- collection and transportation of waste by a licensed contractor for disposal at a suitable landfill facility.

After mitigation and management, general waste from station staff and patrons is expected to result in a negligible impact.

Hazardous and regulated waste

Hazardous and regulated waste will be:

- stored, transported and used in accordance with the relevant legislation, regulations and standards
- appropriately contained as to avoid release of the waste into the environment
- transported and disposed of using appropriately licensed transporters and waste management facilities.

This is also discussed in Chapter 22, Environmental management plans and in Chapter 19, Hazard and risk.

After mitigation and management, all hazardous and regulated waste is expected to result in a negligible impact.

Waste water from stations and trains

Waste water will be disposed of in septic tanks or via connection with the municipal sewerage.

Any treated or partially treated water discharged to the environment will be monitored to ensure it meets regulatory requirements.

Waste water quantities are not expected to be sufficient to require implementing a waste water recycling system.

After mitigation and management, waste water is expected to result in a negligible impact, as quantities are expected to be minimal.

Stormwater

All waste produced by the operation of the railway will need to be contained to avoid any stormwater contamination. Stormwater will be diverted away from the tracks to avoid any contamination. Opportunities to collect stormwater from station buildings will be investigated.

Sewage from stations and trains

Sewage will be treated by an approved septic or anaerobic treatment system where possible or via connection with the municipal sewerage, depending on location of the site. Where possible, the use of self composting toilets and /or waterless urinals will be introduced.

After mitigation and management, sewage from stations and trains is expected to result in a **negligible impact**.

18.6 Summary and conclusions

With the available information, this chapter identified waste streams, management and the associated residual impacts. It has been shown that waste will be generated throughout construction, decommissioning and operation of the project.

Construction and demolition waste would consist of general building waste and hazardous waste. Most waste is able to be managed through disposal to one of the landfill sites within the region.

During operation, general waste such as sewage and litter will be generated along with site-specific waste. General waste shall be managed as appropriate to the waste type i.e. sewage waste will be treated by an approved septic or anaerobic treatment system where possible or via connection with the municipal waste sewage infrastructure. General litter will be removed by an appropriate contractor.

Table 18.6: Summary of impacts and mitigation (waste)

Potential Impact	Mitigation Strategy	Residual Impact Significance
Construction and Decommissioning		
Debris from vegetation clearance	Where possible, construction sites and/or buildings will be positioned on previously cleared land. Where possible, vegetation will be mulched, stockpiled and spread with topsoil during rehabilitation. This is done to reduce fire hazards, recycle nutrients and to provide surface protection from erosion or access barriers. Care will be taken to ensure that weeds are not spread during transportation and upon application of the mulch.	Low adverse
Building waste	Suppliers will be encouraged to reduce and/or collect packaging Recyclable waste will be sorted, stockpiled and contained. Where appropriate, leftover concrete will be formed into materials suitable for alternative projects or crushed for road base and bedding material If waste is inevitable, it will be sorted for disposal and transferred to an appropriate facility. Non-recyclable waste will be disposed of by a licensed contractor to a designated landfill.	Low adverse
Waste from railway sleepers, and ballasts	Where possible the ballast from the old line will be reused, if not contaminated. Suppliers will be encouraged to reduce and/or collect packaging from new railway sleepers Where appropriate, concrete sleepers will be formed into materials suitable for alternative projects or crushed for road base and bedding material. Where appropriate, timber sleepers will be formed into materials suitable for alternative projects or resold for furniture.	Low adverse, to beneficial
Wash down waste water	To avoid impacts arising from the release of wash-down waste water, all equipment will be washed down in a suitable wash-down facility. This facility will be located away from waterways and where possible have a sump guard to collect any grease, oil and other contaminants that can be removed by an appropriate and approved disposal method.	Negligible
General waste from staff	Management measures will include: <ul style="list-style-type: none"> ▪ appropriately placed litter bins to avoid the dispersal of litter ▪ waste sorting, composting and recycling ▪ sealable litter bins to minimise the attraction of vermin, insect and pests ▪ the use of a mobile composting facility (e.g. Bokashi Bin) for food scraps ▪ collection and transportation of waste by a licensed contractor with disposal at a suitable landfill facility. 	Negligible

Table 18.6: continued

Potential Impact	Mitigation Strategy	Residual Impact Significance
Sewage (blackwater)	Sewage waste will be treated by an approved septic or anaerobic treatment system where possible or via connection with the municipal waste sewage infrastructure, depending on location of the site. It is likely that construction sites will use mobile toilet systems (port-a-loos) and shower systems and hence, sewage and sink water will be managed through the mobile system contractor. Where possible, the use of self composting toilets and /or waterless urinals will be introduced.	Negligible
Hazardous and regulated waste	Hazardous and regulated waste are to be: <ul style="list-style-type: none"> ▪ stored, transported, and used in accordance with the relevant legislation, regulations and standards and appropriately contained so as to avoid release of the waste into the environment ▪ transported and disposed of using appropriately licensed transporters and waste management facilities. 	Negligible
Hydrocarbon waste from end-use	Hydrocarbon waste will be: <ul style="list-style-type: none"> ▪ stored, transported, and used in accordance with the relevant legislation, regulations and standards ▪ appropriately contained as to avoid release of the waste into the environment ▪ managed through the use of a spill kit ▪ appropriately contained as to avoid release of the waste into the environment ▪ transported and recycled using appropriately licensed transporters and waste management facilities. 	Negligible
Soil waste	The preliminary design has endeavoured to balance between cut and fill as best possible to minimise the requirement to stockpile excess soil, remove excess soil from the site or import fill material. Depending on the quality of the material excavated, it may be practical to utilise excess material from some work sites as fill for other work sites. Excess spoil will be disposed of at the nearest approved locations, generally by agreement with landowners or local council. Excess spoil that cannot be disposed of in the vicinity it was created in will be hauled to approved disposal sites and nominally disused borrow pits. Spoil disposal sites shall be located and managed to reduce erosion, runoff into local waterways and to prevent the distribution of weeds. Should excess soil/material be available at the end of the project, it should be assessed for suitability for reuse for fill on other projects or developments.	Negligible
Operation		
Waste water from stations and trains	Any treated or partially treated water discharged to the environment will be monitored to ensure it meets regulatory requirements and any requirements set out in the weed management plan will be carried through.	Negligible
Sewage from stations and trains	Sewage will be treated by an approved septic or anaerobic treatment system where possible or via connection with the municipal sewerage, depending on location of the site. Where possible, the use of self composting toilets and /or waterless urinals will be introduced.	Negligible
General waste from station staff and patrons	Management measures will include: <ul style="list-style-type: none"> ▪ appropriately placed litter bins to avoid the dispersal of litter and regular site maintenance duties ▪ waste sorting, and the provision of recycling bins ▪ sealable litter bins to minimise the attraction of vermin, insect and pests ▪ collection and transportation of waste by a licensed contractor with disposal at a suitable landfill facility. 	Negligible