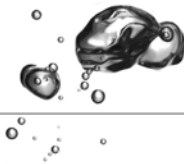


17. Waste Management	17-1
17.1 Waste Management Regulations	17-1
17.1.1 Waste Definition	17-1
17.2 Waste Management Strategy	17-1
17.2.1 Waste Management Hierarchy	17-1
17.2.2 Cleaner Production	17-2
17.2.3 Waste Minimisation	17-2
17.2.4 Waste Reuse and Recycling	17-3
17.2.5 Waste Storage, Handling and Disposal	17-3
17.2.6 Waste Tracking	17-5
17.3 Waste Inventory, Characteristics and Management	17-5
17.3.1 Waste Characteristics	17-5
17.3.2 Construction Wastes	17-5
17.3.3 Operational Wastes	17-9
17.3.4 Monitoring and Reporting	17-11
17.3.5 Spill Containment and Remediation	17-11
17.3.6 Hydrocarbons and Hazardous Wastes	17-12
17.3.7 Management of General Wastes	17-12
17.4 Summary	17-12





17. Waste Management

17.1 Waste Management Regulations

The regulatory requirements governing waste management are contained within the Queensland *Environmental Protection Act 1994* (EP Act), the *Environmental Protection Regulation 1998* and associated *Environmental Protection (Waste Management) Policy 2000* (EPP (Waste)), and the *Environmental Protection (Waste Management) Regulation 2000*.

The relevant aspects of these regulations are presented in **Appendix B** of the EIS.

17.1.1 Waste Definition

The EP Act defines “waste” as anything that is:

- left over, or an unwanted by-product from an industrial, commercial, domestic or other activity; or
- surplus to the industrial, commercial, domestic or other activity generating wastes.

The *Environmental Protection Regulation 1998* defines “general waste” as waste other than regulated waste and “regulated wastes” as ‘non-domestic’ waste. The EPP (Waste) states “regulated waste” means a waste that:

- contains a significant quantity and concentration of a hazardous contaminant;
- the hazardous contaminant exhibits hazardous characteristics because of its toxicity, carcinogenicity, mutagenicity, teratogenicity, flammability, corrosivity, reactivity, ignitability or infectiousness, through its physical, chemical or biological characteristics; or
- the waste may cause environmental harm if improperly transported, treated, stored, disposed or otherwise managed.

17.2 Waste Management Strategy

Environmental harm will only occur if wastes are not managed properly. An example of this is the potential for hydrocarbon wastes and wastewaters to cause land contamination, water and/or groundwater pollution. In response, the waste management strategy for the Project will consider waste management from the pre-preparation and planning stage through to design, construction and operation. There is appropriate flexibility in the strategy for the management of all wastes.

An important first principle for the Project is sustainable waste management. In terms of environmental value, waste will be managed to avoid adverse impacts on the life, amenity, health and wellbeing of people and the diversity of ecological processes and associated ecosystems. For example, the separation of components of the waste stream at the point of generation (e.g. the segregation of steel, glass, and paper and maintaining segregation during generation, storage or transportation) will be undertaken to optimise efficient waste management. Segregation of the waste stream will provide for tailored treatment of the individual components hence minimising the potential for on-site and off-site pollution and enhance recovery and opportunities for reuse/recycling (such as aluminium cans, containers such as glass bottles, paper, scrap steel, pallets and cleared vegetation).

Waste streams will be assessed for potential reuse prior to transport to an approved facility. A review of the marketability of waste for recycling and reuse will be undertaken on a regular basis with landfill disposal occurring only when other options have been exhausted.

17.2.1 Waste Management Hierarchy

The principles for sustainable waste management practices for the Project are:

- implementation of the waste minimisation hierarchy:
 - waste avoidance;

- waste reuse;
- waste recycling;
- water conservation, treatment and reuse;
- efficient energy usage;
- compliance with Federal and State waste management policies, the EP Act and associated regulatory instruments as a minimum; and
- effective waste disposal (as a last option).

All waste generated on-site during the construction and operation phase will be disposed of in accordance with a Waste Management Plan (WMP), which will include:

- waste stream characterisation and separation;
- assessment of waste reduction opportunities for identified waste; and
- management of waste in accordance with the waste management hierarchy.

17.2.2 Cleaner Production

Generally, cleaner production can be achieved through any or all of the following techniques:

- input substitution;
- product reformulation;
- production process modification - selection of the best available practicable technologies;
- improved operation and maintenance - selection and use of the most appropriate processes and equipment;
- reuse of resources that are otherwise wastes; and
- closed-loop recycling – where a product is recycled and used again in the same form.

Aspects of the Project that contribute to cleaner production outcomes include:

- selection of the best available practicable technology (fixed and mobile plant and equipment) for dam construction to optimise efficiencies; and
- recycling of glass, aluminium, steel, cardboard and vegetation.

Contracts with construction companies will be prepared to encourage all contractors to adopt best practice waste minimisation procedures including the purchase of materials cut to standard sizes, reuse of concrete formwork where practicable, and source separation and segregation of all recoverable materials.

Separate skips will be provided to maintain segregation and maximise economic reuse and recycling, in preference to disposal to landfill.

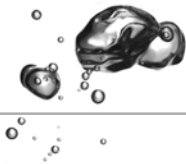
17.2.3 Waste Minimisation

The major construction wastes will comprise cleared vegetation, and waste soil, fines, rock and concrete, as well as wastewaters from plant and vehicle washing, sewage.

Solid Wastes

Solid waste can be minimised by:

- vegetation clearing to be limited to the level necessary for construction.
- concrete waste can be reduced through appropriate planning of batches against placement requirements and efficient placement methods.



- building material wastage can be reduced through efficient procurement and staging of supply of materials, and (where possible) return arrangements with suppliers for unused materials.
- packaging wastes can be reduced through specifying recyclable and low volume packaging (eg paper/cardboard filler or steel ties rather than foam or shrink wrap) from suppliers.

Liquid Wastes

Wastewater generation (eg sewage, vehicle washwater) relates to the quantity of input water and thus can be minimised through the water saving initiatives outlined above.

Excess oils, fuels and chemicals will be minimised through efficient procurement practices (e.g. staged delivery), return arrangements with suppliers, and appropriate handling procedures to ensure that wastage is minimised.

Gaseous Wastes

Gaseous wastes primarily relate to emissions from fuel combustion and vegetation burning, which will be minimised through initiatives to reduce fuel consumption and vegetation clearing, as outlined above, as well as vegetation mulching/reuse, and allowing vegetation to dry prior to any burning.

17.2.4 Waste Reuse and Recycling

The proposed measures for waste reuse and recycling are outlined in **Table 17-1** and **Table 17-2**.

In summary, the major construction wastes, such as cleared vegetation and waste rock, fines, soil and concrete, as well as stormwater and washwater, will be reused or recycled at the construction site and inundation area. Other wastes will be recycled or reused as far as practical, including:

- reuse of timber formwork on other projects;
- recycling of scrap metals and plastics;
- recycling of packaging waste (eg bottles, cans, boxes, drums);
- recycling of office paper;
- recycling of waste oils and batteries; and
- reuse of excess chemicals (eg solvents, herbicides) on other projects.

Recyclable wastes will be stored in separate bins or areas as appropriate, for collection by a licensed waste contractor and recycling off-site.

In addition to the reuse and recycling of wastes generated during construction, cleaner production initiatives include investigation and possible use of recycled materials in the construction materials, depending on availability, cost and performance requirements.

17.2.5 Waste Storage, Handling and Disposal

The proposed measures for waste storage, handling and disposal are outlined in **Table 17-1** and **Table 17-2**.

Major construction wastes will be stockpiled in designated areas on site prior to reuse on site, with stormwater (including seepage from stockpiles) and washwater captured and treated (eg via settling basins or oil-water separators) prior to reuse on site. No wash water or sewage will be disposed of to waterways or stormwater drains.

All storage and handling areas will be appropriately planned and designed to ensure sufficient capacity for storage and to minimise the risk of overflows, fires or other impacts. Stormwater flows from stockpiles, cleared and disturbed areas will be captured via cutoff drains or similar devices for diversion to sediment controls, and collection for reuse on-site where possible. Dust from waste stockpiles will be managed through measures such as water application, or other temporary stabilisation techniques.

Storage of domestic rubbish and packaging wastes will be in covered bins or skips located near to the site office, ablutions and workshop areas, with the bins colour coded and/or marked to denote waste segregation requirements.

Storage of mixed building wastes and recyclable building wastes (e.g. scrap metal, plastic or timber), will be in skips located at a designated area.

Storage of hazardous wastes, such as waste fuels, oils, batteries and chemicals, will occur in bunded facilities, such as a dangerous goods storage compound, temporary bunded areas or on bunded pallets. Appropriate handling and spill response procedures will be followed to ensure that spills and leaks are prevented and managed. Materials Safety Data Sheets (MSDS) will be maintained at the storage areas as well as emergency response equipment such as fire extinguishers and spill kits.

Sewage will be disposed of on-site using a conventional septic tank and effluent disposal system, designed to Australian Standards and to the approval of the relevant authority.

All regulated wastes will be tracked as required under Queensland legislation, and collected by licensed waste contractors for off-site recycling, treatment or disposal.

It is anticipated that there will be a range of wastes requiring treatment or disposal to landfill, wastewater treatment plants or other licensed waste facilities, including the following:

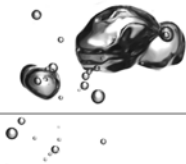
- domestic rubbish (e.g. food, textiles, packaging);
- non-recyclable packaging (e.g. foam, shrink wrap);
- non-recyclable building wastes;
- tyres;
- contaminated soil and spill response materials;
- non-reusable waste fuels, oils and chemicals; and
- septic tank and oil-water separator pump outs.

Disposal Facilities

It is anticipated that much of the solid waste to be landfilled (including domestic rubbish and mixed building wastes) will be taken to the landfill at Rifle Range Road, Stanthorpe, approximately 13.5 km to the northeast of the dam construction area. This landfill accepts the following wastes:

- commercial waste;
- building waste;
- recyclable packaging;
- green waste;
- scrap metal, including copper and brass;
- steel and aluminium cans;
- glass;
- tyres; and
- waste engine oil.

Stanthorpe Shire Council (SSC) is planning the development of a resource recovery facility at the landfill site, which should be operational by the time construction commences (S. Cobon, SSC, pers comm.). It is anticipated that the resource recovery facility will be able to accept much (if not all) of the construction generated waste packaging, metals, glass, timber, tyres, waste batteries and waste oils, for reuse or recycling as part of SSC operations. Should the resource recovery facility not be operational by the time construction commences, then an alternative facility to accept the wastes will be identified in consultation with the waste collection contractor/s and



operators of facilities in nearby regional centres. If an appropriate facility cannot be located nearby then the wastes will be transported to a metropolitan facility for reuse or recycling. The alternative facility will only be used until the SSC resource recovery facility becomes operational, following which the above wastes will be sent to the SSC facility in order to minimise waste transport costs.

There is a limit to the volume of waste that can be landfilled at the SSC waste facility, which is licensed to landfill 10,000 m³ per year, including all domestic, commercial and industrial sources. Any wastes in excess of the local facility's capacity will be transported to a larger regional landfill outside of the Shire.

Portable toilet and septic tank pump outs will be disposed of at the Stanthorpe Wastewater Treatment Plant, which should have sufficient capacity to accept the waste.

Hazardous wastes, such as oil-water separator pump outs, waste chemicals and contaminated soils, will not be disposed of locally but will be transported for treatment or disposal at a licensed facility (e.g. servicing the Brisbane metropolitan area).

17.2.6 Waste Tracking

The movement of regulated waste in Queensland is subject to a waste tracking system. The waste management plan for the project will use an approved waste tracking system for those wastes that require tracking, including procedures for identification of regulated wastes.

In addition, the treatment, storage and transport of regulated wastes requires a Development Approval under the EP Act. Where a contractor carries out these activities, the contractor will be required to hold the appropriate approvals as required by the WMP.

17.3 Waste Inventory, Characteristics and Management

17.3.1 Waste Characteristics

The major sources of waste generation from construction of the Project (including decommissioning of the construction site) are shown in **Table 17-1** and include:

- construction material wastes (timber framing, concrete and its components, rock, gravel, scrap metals, cable, wire, insulation, plastics and packaging and bitumen);
- vegetation and soils as a result of clearing and excavation (spoil);
- regulated waste (hydrocarbon waste, detergents, solvents, batteries and tyres);
- domestic and other general waste (food scraps, paper, rags, cans and glass);
- drums and containers from supply of chemicals and oils;
- recyclable waste (aluminium cans, glass, cardboard, plastics and paper); and
- sewage effluent and sludge.

The amounts of raw materials processed are detailed in **Section 3**. The practices for the management of waste are outlined in the Environmental Management Plan (EMP) in **Section 19**.

A decommissioning date for the Project has not been determined at this stage. A possible decommissioning date is likely to be too far in the future to allow effective planning for decommissioning to occur at this point in time.

When this does occur, further consideration of wastes will need to occur.

17.3.2 Construction Wastes

Spoil will be generated from excavations and road foundations. Where possible, this material will be incorporated into the road design with waste material placed and compacted in designated disposal areas. The surfaces of the waste areas will be suitably sloped and revegetated to prevent erosion of the cover material.

Cleared vegetation will be cleared up to 2 m below the Full Supply Level. Local firewood collectors will be invited to collect firewood from the area. Excess cleared vegetation will be allowed to dry and burnt under the supervision of the Queensland Rural Fire Service.

Inert soil, rock and concrete material from excavation will be incorporated into the RCC wall, used as fill in the former river channel below and downstream of the dam wall and in recreation areas where fill is required or where mounding will add to visual appeal. There will be no excess waste of this form. Some topsoil will be stockpiled for redistribution post-construction. Material awaiting use during construction will be placed in designated stockpile storage areas and these will be graded with appropriate slope and configuration to ensure stability and to minimise the potential for erosion.

Building materials, timber and metal off cuts and plastics from construction will be reused on site where practicable. Recyclable materials will be placed in designated bins whilst other material will be disposed of as general waste.

Concrete waste will be crushed and reused in the batching plant or used as fill within the construction area as required. No concrete waste will be transported from the construction area.

Waste spoil resulting from pipeline trench excavations, may be transported to the dam site for reuse in the dam construction where it is identified that additional fill is required.

The regulated wastes generated during the construction of the dam include waste oils, fuels, lubricants, tyres, batteries, oily air filters, paints, resins, solvents, sewage sludges and residues, spill clean up materials and water, soiled rags, drums and soils containing regulated wastes. These wastes will be reduced and/or recycled where possible. The management of regulated wastes (collection, transport, tracking, treatment and disposal) will be in accordance with the Environmental Protection Agency (EPA) Guidelines, including appropriate licensing of the contractor, transport vehicles and facilities.

Wastewater from the construction workforce facilities will be collected in holding tanks and transported to the Stanthorpe Wastewater Treatment Plant by licensed carriers.

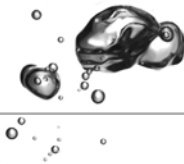
Washdown water from the concrete batching plant will be collected in a bunded area, treated in sedimentation ponds, and is to be reused on the construction site where possible. As the batching plant is an Environmentally Relevant Activity (ERA), effluent release will be subject to EPA Development Approval requirements.

An inventory of the likely construction wastes that may be produced throughout the construction period of the Project are provided in **Table 17-1**.

It is estimated that a total of 405 truck loads of waste will be transported off-site for the Urban Water Supply Dam, whereas 680 truck loads of waste will be transported off-site for the Combined Water and Irrigation Dam. These vehicle movements also include wastes from dam and pipeline construction activities. These vehicle movements have been included in the traffic assessment of the Project included in **Section 13** of the EIS.

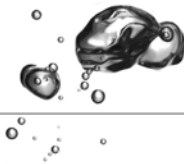
■ **Table 17-1 Anticipated Inventory of Construction Waste**

Waste Type	Characteristic of Waste	Source of Waste	Proposed Measures for Reuse, Recycling, Storage, Handling and Disposal
Solid Wastes			
Vegetation	Inert	Clearing in construction and inundation areas	Cleared timber will be reused for firewood, deposited in upper reaches as aquatic habitat, mulched for landscaping and rehabilitation, or else windrowed along the edge of the inundation area for drying and burning under supervision of fire authorities.
Topsoil and soils	Inert	Overburden from quarry excavation,	Soils will be reused on site for landscaping, rehabilitation, backfilling quarry areas, or disposed of



Waste Type	Characteristic of Waste	Source of Waste	Proposed Measures for Reuse, Recycling, Storage, Handling and Disposal
		excavation of dam foundations and pipeline trenches	within the inundation area.
Waste rock	Inert	Excavation of dam foundations and pipeline trenches	Higher strength rock will be crushed and used in concrete batching. Lower strength rock will be disposed of within the inundation area or other areas within the construction site as required.
Waste fines	Inert	Quarrying, concrete batching	Waste fines will be captured in sediment dams and reused on site for landscaping, rehabilitation, diversion works, backfilling quarry areas, or disposed of within the inundation area.
Waste rock	Inert	Quarrying	Waste rock will be reused in fill areas and crushed and used in concrete batching, disposed of within the inundation area or stockpiled in designated areas, depending on rock characteristics and demand for materials.
Waste concrete	Inert	Dam wall construction	Waste concrete to be crushed and reused in concrete batching.
General building waste	Inert	Construction	Building wastes to be separated into components
Timber – pallets, off cuts, formwork	Inert	Construction, packaging	<p>Timber formwork (for concrete works) will be dismantled, washed and reused for future construction projects.</p> <p>Timber pallets will be returned/backloaded to the associated materials suppliers.</p> <p>Damaged and off-cut timber pieces will be reused for construction where possible, or else separated and stored in designated recycling skips for collection and recycling off-site. Un-recyclable timber (eg painted) will be collected for off-site disposal to landfill.</p>
Steel/metal off cuts	Inert	Weldmesh, pipework, structural materials / reinforcing	Metal wastes will be reused on site where possible, or else separated and stored in designated recycling skips for collection and recycling off-site.
Plastics	Inert	Conduit, pipework, packaging	Plastic construction wastes will be reused on site where possible, separated and stored in designated recycling skips for collection and recycling off-site, or (if not recyclable) disposed of to general waste bins for collection and off-site disposal to landfill.
Contaminated soil, rags, spill kit materials	Regulated	Fuel, oil and chemical spills	<p>All contaminated soils will be collected from site by a licensed contractor as early as possible following their excavation, for disposal or treatment at a licensed waste facility. All excavated contaminated soils will be stored in a temporary bunded facility until collection occurs, at a designated site away from drainage areas. All stockpiles will be demarcated to denote their contaminated status. If windy conditions prevail, the soil stockpiles will be temporarily covered to prevent dust generation.</p> <p>Contaminated rags and spill kit materials will be bagged and stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility.</p>
Waste oil filters	Regulated	Plant, equipment and vehicle maintenance	Waste oil filters will be bagged and stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility.

Waste Type	Characteristic of Waste	Source of Waste	Proposed Measures for Reuse, Recycling, Storage, Handling and Disposal
Waste batteries	Regulated	Plant, equipment and vehicle maintenance	Waste batteries stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility.
Waste drums	Regulated	Supply of chemicals, paints, oils, acids, fuels, cleaning agents	Waste drums with hazardous residues will be stored in the bunded dangerous goods compound for return/backloading to the associated materials suppliers, or else for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility. Waste drums with no hazardous residues will be stored in a designated area for collection and recycling off-site.
Tyres	Regulated	Plant, equipment and vehicle maintenance	Waste tyres will be reused on site where possible, or else stored in a designated area for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility.
Domestic rubbish	General	Site office, kitchen	Domestic rubbish (eg food, packaging, paper, textiles) will be stored in covered bins for collection and off-site disposal to landfill.
Domestic packaging waste	General	Site office, kitchen	Domestic packaging wastes (eg bottles, cans, boxes) will be stored in colour coded recycling bins for collection and recycling off-site, or (if not recyclable – eg certain plastics) disposed of to general waste bins for collection and off-site disposal to landfill.
Paper/ cardboard	General	Site office	Office paper and cardboard will be stored in colour coded recycling bins for collection and recycling off-site. Commercially sensitive material will be shredded and stored in colour coded recycling bins for collection and recycling off-site.
Liquid Wastes			
Sewage	Regulated	Site office, visitors	Sewage will be disposed of on site to septic or aerated treatment systems, which will be regularly serviced by a licensed contractor. Any sludge removed from the systems will be disposed of or treated off-site at a licensed waste facility. Portable toilets may be used for some construction areas, which will be regularly serviced by a licensed contractor and the waste material disposed of or treated off-site at a licensed waste facility.
Abstracted groundwater	Wastewater	Dam foundation dewatering	Abstracted groundwater will be treated in settling ponds, including the use of flocculants as required, and reused on site for dust suppression, pavement construction or landscaping.
Stormwater	Wastewater	Stormwater drainage	Stormwater will be collected in settling ponds and reused on site for dust suppression, pavement construction or landscaping. Collected stormwater will be visually inspected for the presence of hazardous contaminants (eg hydrocarbons) and if these are present the stormwater will be pumped to the site oil-water separator for treatment prior to reuse on site. Collected stormwater will also be tested for pH and if this exceeds allowable levels then the stormwater will be treated to an appropriate pH, then reused on site.
Concrete batching wastewater	Wastewater	Concrete batching	Concrete batching wastewater will be treated in on-site ponds to an appropriate pH, then reused either at the batching plant or else for dust suppression, pavement construction or landscaping.



Waste Type	Characteristic of Waste	Source of Waste	Proposed Measures for Reuse, Recycling, Storage, Handling and Disposal
Crushing/screening wastewater	Wastewater	Aggregate crushing/screening	Crushing/screening wastewater will be treated in settling ponds and reused on site for dust suppression, pavement construction or landscaping.
Plant/vehicle washwater	Wastewater	Plant/vehicle washdowns	Washwater will be treated via a settling pond and oil-water separator and reused for plant/vehicle washing, disposed of to a septic/aerated treatment system. The oil-water separator will be regularly serviced by a licensed contractor and any sludges collected for disposal or treatment at a licensed waste facility.
Paints, resins, solvents	Regulated	Plant, equipment and vehicle maintenance; construction	Hazardous liquid wastes will be stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility. Unused liquid wastes will be reused on other construction projects as far as possible.
Waste fuels, oils and lubricants	Regulated	Plant, equipment and vehicle maintenance; separator pump outs; spill clean ups	Hazardous liquid wastes will be stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility. Unused liquid wastes will be reused on other construction projects as far as possible.
Herbicide/pesticide	Regulated	Weed/pest management	Hazardous liquid wastes will be stored in the bunded dangerous goods compound for collection by a licensed contractor and off-site disposal or treatment at a licensed waste facility. Unused liquid wastes will be reused on other construction projects as far as possible.
Liquid nitrogen	Inert	Dam wall construction	Liquid nitrogen losses will be minimised through appropriate storage practices. Unused liquid nitrogen will be reused for future construction work or returned to suppliers, as appropriate.
Gaseous Wastes			
Engine exhaust	Gaseous	Plant, equipment and vehicle operation	Plant, equipment and vehicles will be maintained to ensure appropriate fuel efficiency and exhaust standards. Plant and vehicles will not be left idling for longer than necessary.
Bushfire emissions	Gaseous	Vegetation burning	Cleared timber will be left to dry for a period prior to burning. Burning will be undertaken under the supervision of fire authorities.

17.3.3 Operational Wastes

The operation of the dam is unlikely to produce significant waste emissions. Waste will be generated predominantly from maintenance activities and recreation areas. All wastes from maintenance activities will be removed from site and disposed of in appropriate waste disposal facilities.

Permanent on-site toilet and washroom facilities will be provided. This system will incorporate a septic system, designed in accordance with current best practice and will be maintained regularly by a licensed contractor.

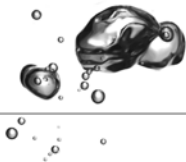
The operation of the pumping facility from the intake towers to the water treatment plant will generate very little waste. Principal waste generated at the facility is kitchen and office waste and left over materials from maintenance and cleaning of buildings and equipment. A small amounts of waste hydraulic oils and greases will be generated.

Waste from recreation areas (i.e. picnic facilities, boat ramp areas) will be generally only domestic rubbish that will be collected by a private contractor. Separate coloured bins will be provided for the collection of recyclable materials such as glass and aluminium.

The operation of the dam is unlikely to produce any other significant waste emissions.

As with the majority of dams, it is expected that this dam and pipeline operation will not generate significant waste streams. Recreational activities (e.g. BBQ and picnic areas, fishing activities) are likely to generate small quantities of domestic rubbish such as paper and plastics and food scraps. Ablution facilities will produce sewage requiring treatment and disposal, whilst the maintenance of facilities associated with the dam, such as recreational infrastructure and grounds will generate small quantities of paints, solvents, scrap metal/wood during maintenance activities.

An inventory of the anticipated wastes that may be produced throughout the operational period of the Project are presented in **Table 17-2**.



■ **Table 17-2 Anticipated Inventory of Operational Waste**

Waste Type	Characteristic of Waste	Source of Waste	Proposed Measures for Reuse, Recycling, Storage, Handling and Disposal
Solid Wastes			
Domestic rubbish	General	Recreational activities (eg BBQs, fishing, picnics)	Domestic rubbish (eg food, packaging, paper, textiles) will be stored in litter bins provided on site for collection and off-site disposal to landfill.
Domestic packaging waste	General	Recreational activities (eg BBQs, fishing, picnics)	Depending on rubbish quantities collected, separate colour coded bins will be provided on site for collection of packaging wastes (eg bottles, cans, boxes) for recycling off-site.
Greenwaste	Inert	Grounds maintenance	Cleared vegetation will be chipped and reused in landscaping and erosion control, or collected for reuse or disposal off-site.
Metal, plastic, timber scraps	Inert	Facility and infrastructure maintenance	Wastes segregated and collected for off-site recycling or, if not recyclable, for off-site disposal to landfill.
Contaminated soil, rags, spill kit materials	Regulated	Fuel, oil and chemical spills	All contaminated soils will be collected from site by a licensed contractor as early as possible following their excavation, for disposal or treatment at a licensed waste facility. Contaminated rags and spill kit materials will be bagged and collected by a licensed contractor for off-site disposal or treatment at a licensed waste facility.
Liquid Wastes			
Sewage	Regulated	Recreational activities (eg BBQs, fishing, picnics)	Sewage will be disposed of on site to septic which will be regularly serviced by a licensed contractor. Any sludge removed from the systems will be disposed of or treated off-site at a licensed waste facility.
Herbicide/pesticide	Regulated	Grounds maintenance	Unused liquids will be reused for other maintenance activities as far as possible, or else collected by a licensed contractor. No dangerous goods will be stored at the dam facilities.
Paints, resins, solvents, fuels, oils	Regulated	Facility and infrastructure maintenance	Unused liquids will be reused for other maintenance activities as far as possible, or else collected by a licensed contractor. No dangerous goods will be stored at the dam facilities.

17.3.4 Monitoring and Reporting

Waste monitoring and auditing will be undertaken as part of the construction period of the Project. The purpose of monitoring waste management activities and outcomes on-site include:

- assessing actual waste results and comparing with predicted impacts and mitigation measures;
- monitoring for potential environmental impacts; and
- providing baseline data to enable continuous improvement of cleaner production, waste minimisation and other management measures throughout the project.

17.3.5 Spill Containment and Remediation

Standard procedures for the storage, handling, disposal and spill response for potentially hazardous waste materials will be applied. This includes the use of spill containment material and spill clean-up kits.

Sites that become contaminated will be investigated, managed and remediated in accordance with the requirements of the contaminated land provisions of the EP Act.

17.3.6 Hydrocarbons and Hazardous Wastes

Chemicals, fuels, oils and any other substances that, if spilled, would cause pollution or contamination of the land or water, will be stored appropriately to minimise the risk of environmental impact. Chemical storage will comply with Australian Standards and MSDS requirements. MSDS for products kept on-site will be readily available to employees and contractors.

Smaller quantities of chemicals, fuels and oils will be stored in self-bunded pallets, within a bunded area in the workshop, or in a bunded container on-site. Diesel will be kept in bulk quantities in double skinned tanks allowing self-bunding, or other contained structures where stored on site, other wise all fuels will be transported to the Project site as required.

All waste products (e.g. oil/water separator waste, sludges and residues) containment will be within weatherproof, sealed and bunded areas to ensure stability of the waste containment receptacles and prevent any leakages or spills. Regular inspections will be carried out of the tanks, bunds and storage areas to ensure integrity.

Hydrocarbons and hazardous wastes present on site during construction are outlined in **Section 18**.

17.3.7 Management of General Wastes

During construction and operation, colour-coded, signed bins will be used to segregate and collect general wastes, paper and recyclables. The bins will be located throughout offices and workshop areas to maximise waste recovery.

These bins will be emptied into larger bins or skips regularly. All smaller bins and larger bins or skips will have lids, to reduce the potential for attracting insects and vermin. General wastes will be collected regularly and transported for disposal to landfill.

17.4 Summary

Construction of the dam will generate some volume of waste material, particularly packaging, tyres and waste oils from machinery, and wastewater from the construction site facilities.

The contractor for the works will be responsible for:

- reducing the amount of wastes generated, where possible;
- collection of wastes, other than soil or rocks in suitable skips or bins;
- re-using or recycling waste at an appropriate facility, where possible;
- disposal of inert construction waste by burial on site below Full Supply Level;
- disposal of remaining wastes at an appropriate licensed landfill; and
- arranging transport of wastes with a licensed carrier, and in accordance with the EPA tracking system as defined in *Environment Protection (Waste Management) Regulation 2000*.