CONTENTS

TABLES

20. WASTE

This section addresses Section 3.8 of the ToR. It describes the relevant State and Commonwealth regulatory frameworks and a summary of technical information from other sections of the EIS in relation to waste management associated with construction, construction phase decommissioning, commissioning and operation of all aspects of the Project.

Sections 20.1 and 20.2 present the legislative framework and strategy for waste management. Section 20.3 provides an overview of construction waste streams and their management, including a list of wastes, management methods and estimated quantities in Table 20-1. Section 20.4 provides an overview of operational waste management. Risks associated with waste are assessed in Section 20.5 and presented in Table 20-2.

20.1. Legislative framework

The regulatory requirements governing waste management are contained within the Queensland *Environmental Protection Act 1994* (EP Act), the *Environmental Protection Regulation 2008* (EPR 2008) and associated *Environmental Protection (Waste Management) Policy 2000* (EPP (Waste)), and the *Environmental Protection (Waste Management) Regulation 2000 (EPR (Waste) 2000)*.

The EP Act 1994 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 EPR 2008 defines "general waste" as waste other than regulated waste.

The EPR 2008 defines "regulated waste" as waste that:

- is commercial or industrial waste, whether or not it has been immobilised or treated; and
- is of a type, or contains a constituent of a type, that is listed in schedule 7 of the EPR 2008.

In general regulated wastes contain hazardous constituents; however they also include tyres, surfactants, non-toxic salts, sewage sludge, grease trap waste and vegetable oils.

20.2. Waste management strategy

Environmental harm associated with wastes generated by the construction and operation phases of the Project will only occur if wastes are not managed properly. In response, the waste management strategy for the Project will consider waste management from the planning stage through to design, construction and operation. By necessity, there is appropriate flexibility in the strategy for the management of all wastes.

An important first principle for the Project is the development and implementation of sustainable waste management practices. Waste will be managed to avoid adverse impacts on the life, health and wellbeing of people and ecological processes and associated ecosystems potentially affected by the Project. 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 and transportation) will be undertaken to optimise the efficiency of waste management. Segregation of the waste stream will provide for focussed management of the individual waste components. This will minimise 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 disposal facility. A review of the marketability of waste for recycling and reuse will be undertaken on a regular basis throughout the Project. Waste will be sent for disposal to landfill only when other options have been exhausted.

20.2.1. Waste management hierarchy

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

- implementation of the waste minimisation hierarchy, which prioritises the following over waste disposal:
  - waste avoidance;
  - waste re-use;
  - waste recycling;
- water conservation, treatment and reuse;
- efficient energy usage;
- compliance with Federal and State waste management policies, in particular the EP Act 1994 and associated regulatory instruments as a minimum; and
- effective waste disposal (as a last option).

These principles will be integrated into the design and construction planning phase of the Project process to ensure they are fully embedded into construction and operation activities.

All waste generated on-site during the construction and operation phase will be disposed of in accordance with the measures presented in the Draft Environmental Management Plan (EMP). Overall strategies 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.

20.2.2. Cleaner production

Under the EPP (Waste), the administering authority in deciding on a development approval or environmental authority must give consideration to any cleaner production program prepared to address the waste generation.

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 will contribute to cleaner production outcomes include:

- selection of pipeline construction materials and diameter that may reduce the hydraulic head and therefore pumping power consumption and associated greenhouse gas emissions for the pipeline operation;
- selection of pipeline materials and diameter that may reduce raw materials consumption, embodied energy and associated greenhouse gas emissions of the pipeline construction;
- selection of pipe materials that are resistant to corrosion, reducing maintenance and repair requirements; and
- selection of the best available practicable technology (fixed and mobile plant and equipment) for construction to optimise efficiencies.

Contracts with construction companies will require 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 during the construction phase to maintain segregation and maximise economic reuse and recycling, in preference to disposal to landfill.

20.2.3. Waste tracking

In accordance with the EPR (Waste) 2000, the movement of certain regulated wastes within Queensland is subject to a waste tracking system. Interstate movements of certain regulated wastes are also subject to tracking under the *National Environmental Protection (Movement of Controlled Waste between States and Territories) Measure*. The Draft EMP for the Project presents a waste tracking system for those wastes that require tracking.

In addition, the treatment, storage and transport of regulated waste requires a registration certificate under the EP Act 1994. Where a contractor carries out these activities, the contractor will be required to hold the appropriate certification.

20.2.4. Waste monitoring

Waste monitoring and auditing will be undertaken including:

- assessing actual waste generation and comparing with predicted waste streams to enable continuous improvement of waste avoidance and management measures;
- monitoring for potential environmental impacts; and
- assessing implementation and effectiveness of management practices to enable continuous improvement of waste avoidance and management measures throughout the Project.

20.3. Construction phase

This section outlines the waste streams generated by Project from construction and demolition activities and also proposed management of the waste. Estimates of waste streams produced during the construction phase are provided in Table 20-1 based on information in Chapter 2 and other relevant sections of the EIS. These quantities are indicative and may be subject to change according to the final design. The practices for the management of waste are outlined in the Draft EMP in Chapter 29.

20.3.1. Waste generation

20.3.1.1. Construction waste

Construction and demolition waste will be generated from works associated with the dam and pipeline (timber framing, concrete and its components, rock, gravel, scrap metals, cable, wire, insulation, plastics and bitumen). Packing crates, pallets, cardboard and plastic packaging waste will be generated via delivery of materials and supplies to site. In terms of volume, the major construction waste streams are expected to comprise waste spoil, concrete, cleared vegetation, stormwater and construction wastewater, and sewage (Table 20-1).

The dam construction works area will be used for both dam and one pipeline workfront in the early stages, but on-site construction staging areas for the other pipeline workfronts will also be required (Chapter 2).

20.3.1.2. Regulated waste

Likely regulated wastes generated throughout construction include:

- paints, resins and solvents;
- grease trap wastes, hydrocarbon wastes including oil-water interceptor wastes, oily water, waste oil, oily rags;
- tyres, batteries;
- oil filters; and
- sewage.

20.3.1.3. Office and domestic waste

The dam construction site workforce is estimated to peak at approximately 120 to 140 personnel, with an additional 20 to 30 professional staff throughout the construction period (Section 2.4.6). The road construction workforce is estimated at approximately 35 personnel plus professionals, with the pipeline construction involving up to 150 personnel spread across multiple work fronts (Section 2.4.6). It is proposed that the dam workforce be housed at a construction accommodation camp at Taroom while the pipeline construction workforce will be accommodated at construction camps in Wandoan and Chinchilla.

Table 20-1 Waste streams, inventory and management

Waste Type	Management Method	Estimated Quantity
Non Regulated Wastes		
Excavated waste/spoil	Dispose within water storage area or mound over the pipe. Sell or make available for construction fill material at other sites. Landscaped stockpiles for later use. Crushed rock in embankment used for access roads.	260,000 m^3 (Dam) 378,000 m^3 (Pipeline)
Cleared vegetation, water storage area	Potential for cleared trees to be marketed as timber, wood chips or firewood. Use as aquatic/terrestrial habitat. Mulch on site to provide landscaping. Burning of vegetation will be undertaken as a last resort.	4,737 ha
Concrete	Minimise waste by producing / procuring only the amount necessary. Crushed and reused in concrete batching or used as fill.	~1% of approx. 292,900 m^3 total concrete produced
Steel/ metal off cuts	Minimise waste by producing / procuring only the amount necessary. Segregation and collection on-site in appropriate containers. Transportation by a waste contractor for off-site recycling.	Minor
Timber – pallets and off-cuts	Minimise waste by producing / procuring only the amount necessary. Pallets returned to suppliers for reuse where appropriate. Hardwood pallets will be used in preference to soft wood to reduce breakage. Reuse on-site as construction material wherever possible. Disposal of pallets to landfill will be avoided as far as is practicable.	Minor
General building materials	Reused and recycled where possible as construction material, fill etc. Disposed of in general or recycle bins as appropriate.	Minor
Piping	Minimise waste by producing / procuring only the amount necessary Segregation of waste into designated recycle bins and collection on-site Transportation by a waste contractor for off-site recycling	Minor
General wastes including food waste and non-recyclable plastics and paper	Collection and segregation on-site in suitable bins. Transportation by a waste contractor for off-site disposal to landfill.	Minor
Recyclable paper and packaging (cardboard, plastics, glass, aluminium cans)	Collection and segregation on-site in suitable bins. Transportation by a waste contractor for off-site recycling.	Minor
Stormwater and construction wastewaters (including dewatering water)	Collection in sediment ponds. Concrete batching wastewater treated to appropriate pH. Vehicle washdown wastewater to be treated via an interceptor. Treated stormwater and wastewater to be used for concrete batching, dust suppression or landscaping/rehabilitation.	262 ML (Dam) 203 ML (Pipeline)

Waste Type	Management Method	Estimated Quantity
Regulated Wastes		
Paints, resins and solvents	Minimise waste by producing / procuring only the amount necessary. Collection on site, appropriate segregation and storage within covered bunded area or suitable storage cupboard. Transportation off-site by licensed regulated waste transporter, to a licensed regulated waste receiver, for recycling or disposal.	Minor
Grease trap wastes, oil-water interceptor wastes, oily water, waste oil, oily rags	Grease trap and interceptor wastes will be pumped out and removed by a licensed regulated waste transporter. Waste oils and rags will be stored in covered bunded areas to prevent spillage. Rags will be stored in designated containers. Oily wastes collected and disposed of off-site by licensed regulated waste transporter, to a licensed regulated waste receiver, for recycling or disposal.	500L / month hydrocarbons 1 skip bin / week solid waste
Tyres, batteries	Stored in designated area. Batteries stored within covered bunded area. Transportation off-site by licensed regulated waste transporter, to a licensed regulated waste receiver, for recycling or disposal.	Minor
Oil filters	Oil filters either drained (hot draining, puncturing, crushed) and sent to landfill; or taken off site and disposed of by an approved regulated waste contractor. Storage of oil filters on-site in a designated container in covered bunded area.	Minimal – likely to be generated every three months from each unit
Sewage	Sewage from the construction site will be pumped out and disposed of at a licensed facility. Portable toilets used along the pipeline route, for collection or pump out by a contractor for off-site disposal to a licensed facility.	6,000 L/day
	Sewage from accommodation camp will directly connect to the town system if the final location is close enough to town services. Sewage from Project offices in towns discharged to the town sewer systems.	14,000 L/day

Wastes generated from the office areas and construction camp areas include general wastes (food scraps, paper, rags, cans and glass), regulated wastes (detergents), recyclables (paper and cardboard, plastics, glass, aluminium cans) and domestic wastewater.

Portable day camps and corresponding facilities will be used along the pipeline route to support mobile work teams.

Site offices are proposed at the dam construction site and project offices are proposed in the townships of Wandoan and Chinchilla. The site offices will use waste contractors engaged to service the Project whereas the Project offices will use existing town waste disposal services.

Where possible, the construction camps will continue to be used for alternative uses (i.e. as social infrastructure) after the construction period finishes. If required, construction camps will be dismantled at the completion of construction works and the sites rehabilitated.

20.3.1.4. Wastewater

Wastewater will be generated through ablutions facilities, kitchens and laundry/washing facilities, including grey water and black water. Wastewater will also be generated from the dewatering of foundations, stormwater run-off from roads and construction areas into sedimentation ponds, vehicle wash down and workshop bund sumps.

20.3.1.5. Excess spoil

Spoil (excavated soil and rock) will be produced from construction of the dam and pipeline, and associated infrastructure works. The method of construction for the dam requires the excavation of 218,100 m^3 of material from the diversion channel alignment during the early stages of the Project. The excavation of the dam footprint will generate 23,000 m^3 of other than rock (OTR) material and 19,000 m^3 of rock material (Chapter 2). The potential for this spoil to be contaminated is considered to be unlikely at the dam construction site however appropriate risk assessment processes will be in place to identify any potential in situ contaminants.

Compared with dam construction (outlined above), a larger volume of excess spoil is expected to be generated from pipeline trench excavation (378,000 m^3).

The pipeline route traverses properties with notifiable activities and a number of properties where the current land use has the potential to cause soil contamination (Section 8.2.1). This means that there is the potential for contaminated soils along the pipeline route. The land uses with the potential to cause contamination include stockyards and to a lesser extent chemical storage, fuel storage, and septic tanks in association with buildings. The notifiable activities on properties intersected by the pipeline route include livestock dips, landfills, hydrocarbon storage, chemical storage, hazardous contaminant (confirmed contaminated sites), and rifle range (Section 8.2.1).

Potentially contaminated soils will require investigation, management and remediation in accordance with the requirements of the contaminated land provisions of the EP Act 1994, prior to reinstatement or removal off-site. Section 8.2 provides information on these procedures. Where possible, the final pipeline alignment will be designed to avoid areas of contamination.

20.3.1.6. Green waste

Vegetation clearing will be undertaken at all work sites, including the dam construction area and water storage area, pipeline easement and associated infrastructure (clay borrow areas and road works).

A total of approximately 4,737 ha of vegetation (excluding pasture and grassland) will be required to be removed for the construction of the dam, pipeline and associated infrastructure (Sections 10.2.1 and 10.2.2). Approximately 90% of the clearing will occur within the water storage.

20.3.2. Waste management

20.3.2.1. Construction waste

Waste will be minimised by producing / procuring only the amount of raw materials necessary. Concrete waste will be crushed and re-used in the batching plant or used as fill. Building materials, timber and metal off-cuts and plastics from construction and demolition will be collected and stored in segregated areas for re-use on site where practicable.

Recyclable materials will be placed in designated bins whilst other material will be disposed of as general waste to local approved waste facilities.

Packaging materials will be treated as described for office and domestic waste below.

Other sources of waste generation include the decommissioning of Glebe Weir infrastructure within the water storage area, as described in Section 2.3.3.6. The decommissioning of the Glebe Weir infrastructure will seek to recover and reuse as much of the materials and equipment as possible (e.g. steel shutters if fitted, pumps, compressors), with the buildings to be demolished and the heavy waste materials (e.g. bricks, concrete) placed in the weir pool.

There will be no landfill facilities located at the construction site, with all general or regulated wastes requiring disposal to be collected by licensed contractors for off-site disposal or treatment. Stockpiling of wastes will be limited to inert materials such as spoil or waste concrete, and to green waste such as cleared vegetation and mulch.

Impoundment of wastes will be restricted to the use of sediment ponds for stormwater runoff, dewatering water and other construction wastewaters (Table 20-1).

20.3.2.2. Regulated waste

The management of regulated wastes (collection, transport, tracking, treatment and disposal) will be in accordance with the DERM Guidelines, including appropriate licensing of the contractor, transport vehicles and receiving facilities.

Chemicals, fuels, oils and any other substances that if spilled could potentially cause pollution or contamination of the land or water, will be stored appropriately in bins, storage tanks or within bunded areas to minimise the risk of spill and thus environmental impact. Chemical storage will comply with relevant Australian Standards and Material Safety Data Sheets (MSDS) requirements. MSDS for products kept on site will be readily available to employees and contractors. Further information on management of hazardous substances is provided in Chapter 26.

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 the site. Diesel will be kept in bulk quantities in double skinned tanks allowing self bunding, or other contained structures. Bunded areas will be inspected routinely.

Waste products (e.g. oil/water separator waste, sludges and residues) will be contained within weather-proofed, sealed and bunded areas to ensure stability of the waste containment receptacles and prevent any leakages or spills. Regular inspections will be undertaken of the tanks, bunds and storage areas to ensure integrity. Clean water will be released to the stormwater system, with contaminated water to be treated through an oil/water separator or pumped out by a licensed contractor for off-site treatment or disposal, depending on the nature of the contamination.

Hydrocarbons and hazardous materials expected to be present on site during construction are outlined in Chapter 26.

Should a spill occur that potentially may cause or causes environmental harm, the DERM will be notified, and the site will be investigated, managed and remediated in accordance with the requirements of the contaminated land provisions of the EP Act.

20.3.2.3. Office and domestic waste

During construction, colour-coded, signed bins will be used to segregate and collect food wastes, paper and recyclables. The bins will be located throughout offices and workshop areas to maximise economic waste recovery. Site inductions will include education regarding signage and colour coding of bins and waste segregation requirements.

These bins will be emptied into larger bins or skips regularly and disposed to local approved waste facilities or recycling centres. All bins or skips will have lids, to reduce the potential for wind blown waste or attracting insects and vermin. General wastes will be collected regularly and transported by licensed contractors for disposal to an approved landfill.

20.3.2.4. Wastewater

Sewage from the construction camp and site office will be pumped out and disposed of at a licensed facility.

Sedimentation ponds will be developed to hold water from site stormwater runoff, foundation dewatering, and concrete batching processes. Sediment ponds will be designed to ensure they are stable and can accept stormwater flows within an acceptable return period. Water for dust suppression, haul roads and rehabilitation is to be sourced preferentially from the sedimentation ponds, then the Dawson River and tributaries and the Condamine River and tributaries under permit when required.

Accumulated silt from the sedimentation ponds will be removed and incorporated into fill or disposed of in the water storage.

As a means of reducing surface runoff in a rain event, stockpiles and areas of disturbance will be isolated with silt fencing or other appropriate means and stormwater runoff will be directed to sedimentation ponds. A sedimentation and erosion control plan has been mandated as part of the Draft EMP.

All liquid waste from workshops will be disposed of by a licensed liquid waste contractor (Section 20.3.2.2).

20.3.2.5. Excess spoil

Material excavated from the diversion channel may be used directly in the construction of the coffer dams or be stockpiled for later reuse or disposal. These stockpiles will be managed to form stable platforms to prevent runoff or dust. At the completion of the dam, the coffer dams will be removed to spoil.

The bulk of the spoil will be disposed of within the water storage area (within the cleared area at least 1.5 m below FSL) if not used in the formation of various platform areas or stockpiled for later use. The latter relates to the potential to stockpile good quality topsoil as mounds in areas above flood levels. The mounds will be grassed and will act as landscape features until the soil is later needed for community or commercial purposes. Spoil disposed in the water storage area will cause no additional impact on vegetation than that caused by filling of the storage.

Clean (not contaminated) excess spoil from pipeline construction will be formed into a low mound over the trench and easement, with appropriate gaps to allow for water movement. Similar projects have identified that the volume of spoil excavated from the trench exceeds that used for mounding above the pipeline and large amounts require removal. Surplus soil may be sold or made available for construction fill at other sites, supplied to local authorities for re-use (e.g. cover material for local landfills) or mounded and stabilised as a landscape feature.

Where the pipeline will traverse farming areas where laser levelling of paddocks has been undertaken, mounding of spoil is not appropriate. Western Downs Regional Council has advised that such excess spoil may be transported to Dalby landfill where there is an ongoing demand for waste cover material.

Potentially contaminated soils will require investigation, management and remediation in accordance with the requirements of the contaminated land provisions of the *EP Act 1994*, prior to reinstatement or removal off-site.

Rock material will be suitable for transport to a crushing plant and be used in access road construction or as scour protection.

20.3.2.6. Green waste

As the vast majority of the water storage is agricultural pasture, this will be left undisturbed, with only trees and shrubs to be removed. Tree and shrub vegetation will be cleared to FSL within the water storage area, except in the riparian zone of tributaries and the main channel or on steep or unstable slopes (which will be cleared to within 1.5 m (vertical) below FSL). In this case vegetation will be left in place as it may survive, depending on inundation frequency and duration. Trees and significant shrubs will be cut back to within 0.5 m of ground level with the planted portion left in place. The exceptions will be in areas where personal safety relating to boating or to swimmers may be an issue.

Millable timber, or timber suited to artisans will be sold and as much of the remaining suitable material as practicable will be mulched for use in construction site rehabilitation, landscaping of recreational facilities or made available for potential use in regional rehabilitation schemes. Mulch stockpiles will be located and managed to prevent fires and seepage of contaminants into surface water or groundwater.

Timber suited as fish habitat (snags) will be salvaged and strategically placed within 5 m below FSL. Some timber will also be pushed into piles above FSL to serve as terrestrial habitat. The burning of cleared vegetation will be a last resort. If burning is to be undertaken it will be in excavated pits which are then covered when burning is complete, hence there will be no run-off into waterways.

Vegetation clearing will be staged, commencing with the area required for dam construction works, with the remainder to be cleared progressively until the water storage is ready to fill.

Pipeline clearing and grading works will include removing and stockpiling vegetation within the specified pipeline easement. Depending on agreement with the landholder, felled timber will be pushed to the edge of the easement where it will serve as terrestrial habitat. However in more thickly vegetated areas, mulching will be required and the material will serve in erosion control and site rehabilitation works. Clearing in riparian zones will be minimised by selecting the route of least impact, by reducing the corridor width as far as practicable, through sharing of existing easements for which clearing has already occurred or by using boring rather than trenching in some circumstances.

20.3.2.7. Decommissioning of construction site

At the completion of construction works, the work sites will be decommissioned. This includes removal of all temporary buildings and structures, and subsequent rehabilitation. Treatment of all wastes will follow the processes outlined earlier.

Within the construction footprint there are areas that may require specialised attention (e.g. decontamination), including:

- concrete batch plant;
- concrete raw materials stockpiles;
- construction water storage tank facilities;
- water treatment plant;
- construction offices;
- workshops;
- ablutions facilities;
- storage areas;
- bulk fuel supply tanks; and
- refuelling areas.

The final treatment methods applied at potential areas of contamination will be subject to the particular contractor agreement and in accordance with the controlling regulations.

20.3.2.8. Local waste management facilities

Existing landfills within the Banana Shire Council include facilities at Taroom, Trap Gully (near Biloela), Cracow, Theodore and Wowan. Existing landfills within the Western Downs Regional Council include facilities located near the pipeline route at Wandoan, Chinchilla and Dalby. These sites are generally able to accept general domestic, office and construction waste. It will be project policy to minimise the use of landfills and reduce/reuse/recycle as much as possible.

A waste contractor, holding the appropriate regulated waste transportation licences, will be engaged to manage all regulated wastes from the Project area. This will involve the collection and transportation to an approved facility. There is generally a limited capacity to accept regulated wastes at local landfills and disposal to larger regional or metropolitan facilities may be required. Trap Gully landfill can accept some regulated wastes, including tyres and grease trap waste.

20.4. Operation phase

Waste generated in the operational phase will include waste associated with maintenance tasks. Volumes will be minimal and all wastes will be disposed of at licensed facilities. Management of waste generated by contractors undertaking significant maintenance tasks will be the responsibility of the contractor. Waste at recreation areas, including from ablutions facilities, will be the responsibility of Banana Shire Council. Ablutions facilities at the recreation area will be dry composting toilets and will be in accordance with Banana Shire Regional Council requirements.

20.5. Impact assessment and residual risks

The methodology used for risk assessment and management is discussed in Section 1.8.

This section assesses the risks relevant to waste and summarises the mitigation measures proposed to minimise those risks.

The risk assessment has been undertaken for the Project as described in Chapter 2, in which SunWater has already incorporated a range of risk reduction and mitigation measures. Both risks with Project controls and residual risks are shown in Table 20-2.

Based on this assessment, the following conclusions have been made:

- while the construction and operation of the Project will produce wastes that pose a risk to the health of personnel, public and the environment, appropriate management of these wastes will reduce the risk to Low (as low as reasonably practicable);
- feasible management actions are described and these are reflected in the Draft EMP (Chapter 29) and/or the Proponent commitments (Appendix 1-F); and
- based on this risk assessment, the risks relevant to waste can be effectively managed and the residual risks are acceptable.

Risks associated with contaminated land, hazardous materials, terrestrial flora and greenhouse gasses are discussed in the relevant sections of the EIS.

Table 20-2 Risk assessment results

Hazards	Factors	Impacts	Project Description Controls & Standard Industry Practice	Risk with Controls			Additional Mitigation Measures	Mitigation Effectiveness	Residual Risk		
				C	L	Current Risk			C	L	Mitigated Risk
Soil and water contamination from spillage of regulated wastes.	Regulated wastes managed (in accordance with Standards and Guidelines. Potential for accidental spillage exists.	Contamination is likely to be limited in extent in areas where spillage/leakage may occur (e.g. machinery workshops, storage sheds, etc.), however, if spilled, chemicals may impact on receiving water quality (in groundwater or local water courses).	Use of licensed regulated waste contractors and waste tracking systems. Bunding of regulated waste storage areas. Provision of spill response equipment and training. Regular maintenance and pump out of oily water interceptors. Notification and investigation of incidents and remediation (if required).	Minor	Unlikely	Low			Minor	Unlikely	Low
Health risks from insects and vermin.		Insects and vermin may be attracted to areas of putrescible waste generation and disposal (e.g. construction camps, recreational areas).	Covering, securing and regular collection of waste containers. Pest control if required.	Minor	Unlikely	Low			Minor	Unlikely	Low

Hazards	Factors	Impacts	Project Description Controls & Standard Industry Practice	Risk with Controls			Additional Mitigation Measures	Mitigation Effectiveness	Residual Risk		
				C	L	Current Risk			C	L	Mitigated Risk
Health risks from sewage and wastewater.		Amenities do not exist at the site so temporary facilities will be constructed for the Project.	Portable toilets to be used along the pipeline route, will be serviced regularly and wastes disposed by a licensed contractor. Ablutions in the future recreation areas will be dry composting toilets. Sewage from the construction site will be pumped out and disposed of at a licensed facility.	Minor	Unlikely	Low			Minor	Unlikely	Low

Hazards	Factors	Impacts	Project Description Controls & Standard Industry Practice	Risk with Controls			Additional Mitigation Measures	Mitigation Effectiveness	Residual Risk		
				C	L	Current Risk			C	L	Mitigated Risk
Smothering of vegetation, erosion and sedimentation from the production of excess spoil.	Production of excess spoil during construction is unavoidable.	Loss of vegetation.	Sediment and erosion control will be provided (See Chapter 14 and the EMP in Chapter 29). Excess spoil from dam construction will be placed in the impoundment area, which will be cleared of vegetation. Excess spoil along pipeline will be sold or formed into stable landforms or transported to Dalby Landfill Dalby landfill where there is an ongoing demand for waste cover.	Minor	Unlikely	Low			Minor	Unlikely	Low

20.6. Cumulative impact risks

The higher volume construction waste streams will be managed on-site, for example the re-use of spoil, concrete, cleared vegetation and wastewaters. Accordingly the risk of cumulative impacts associated with the higher volume construction waste streams is expected to be low. However, there are a number of construction wastes that will require off-site treatment or disposal, such as putrescible waste, mixed construction materials and regulated wastes. These wastes may be disposed of at local or regional waste facilities that may need to service incoming waste flows from other construction projects in the region, such as those associated with the coal seam gas industry. It is considered that there is a moderate risk of cumulative construction waste streams exceeding the capacity of local or regional waste facilities, which may necessitate for certain construction wastes to be transported to larger regional or metropolitan facilities at an increased cost. Consultation should be undertaken with the respective Councils to identify the potential for exceeding waste facility capacities and identify the most appropriate method for disposal of the Project's construction waste streams.

Operational waste streams will be relatively minor and the risk of cumulative impacts is expected to be low.

20.7. Summary

The management of waste associated with the construction, construction site decommissioning and operation of the Project will be undertaken in accordance with relevant legislative requirements, guidelines and the Draft EMP.

It is anticipated that much of the waste generated as a result of the works can be beneficially reused within the Project or in nearby projects. Where wastes cannot be reused, recycling opportunities will be maximised. Appropriate facilities exist in the local region to accept wastes that need to be disposed off-site.

Chapter 29 describes measures to reduce or negate impacts from waste.