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11. Waste

11. Waste

This chapter describes the existing environment, potential impacts and mitigation measures for waste management within the proposed JRYUP area.

11.1 Methodology

The *Environmental Protection (Waste Management) Policy 2000* (Waste EPP) and the *Environmental Protection (Waste Management) Regulation 2000* coordinate and clarify waste management practices in Queensland and provide improved environmental safeguards.

This assessment reviews the following waste management issues associated with the proposed expansion of the Jilalan Rail Yard and identifies practical mitigation measures for the proposed works:

- Hazardous wastes
- Sewage (domestic wastewater)
- Waste management services (including recycling, resource recovery and general waste)
- Trade waste treatment and discharge

The assessment has been based on a review of available information, field investigations and discussions with site personnel and waste management contractors.

11.2 Environmental Values

In the context of waste management, environmental values are impacted through resource loss and environmental impact on both the project area and disposal areas relevant to the Project.

The environmental values to be enhanced or protected, as described in the Waste EPP are:

a. the life, health and wellbeing of people
b. the diversity of ecological processes and associated ecosystems
c. land use capability, having regard to economic considerations.

11.3 Description of existing waste management practices

11.3.1 General

The Jilalan Rail Yard has an existing Waste Management Plan (document OPS OI-JIL.084-1.0). Waste management at the site is the responsibility of Thiess Services (Thiess) as part of an overall, State-wide waste management contract.

A summary of the waste types and quantities currently managed by Thiess is shown in Table 11.1.

Table 11.1 Summary of current waste types and estimate of annual quantities

Waste category	State-wide % of total volume	Jilalan station (t/annum)	Jilalan depot (t/annum)	Total (t/annum)
Batteries	0.01%			
Building & construction waste (C&D waste)	14.7%			
Cardboard	0.26%	8.5		8.5
Commingled recyclables	0.09%			
General waste [1]	66.42%	75	187	262
Hazardous	3.71%		9	9
Liquid waste	1.37%			

Waste category	State-wide % of total volume	Jilalan station (t/annum)	Jilalan depot (t/annum)	Total (t/annum)
Medical	0.01%			
Mixed metal or steel [2]	0.53%		4.5	4.5
Office paper	0.27%			
Oil water/sludge	6.62%			
Security destruction	0.13%			
Septic	4.49%			
Timber	0.74%			
Waste oil	0.55%			
Tyres	0.01%			
Green waste	0.09%			
Brake blocks [2]			9	9
Total	100%	83.5	209.5	293

Table Notes:
1. Assumes bins are, on average, 80% full
2. Assumes monthly collection and bins are 100% full

11.3.2 Waste management services and general waste

Waste management contractors are responsible for the collection and disposal of general wastes from this facility. Two general waste bins (skips) from the station area and five from the depot area are collected twice per week.

The following wastes are collected and recycled:

- Waste oil (volume not known)
- Scrap metal (Simsmetal) – one steel recycling bin collected on an as-needs basis
- Cardboard – one recycling bin emptied once per week
- Waste coal from cleaning (Plane Creek Mill) (quantity not known)
- Copper brushes (quantity not known)

The waste contractor transports the general waste to the Sarina landfill. Sarina Shire Council operates two waste disposal facilities, one at Brooks Road, Sarina and the other at Cedar Street, Louisa Creek. Under the proposed waste management strategy for Sarina Shire the Sarina landfill is to be closed and the Louisa Creek landfill upgraded.

Waste coal dust from the locomotive cleaning system is sent to Plane Creek sugar mill and burnt in the boilers.

11.3.3 Hazardous waste

Two skip bins are used to collect the waste materials and they are emptied on an as-needs basis.

Hazardous materials generally include solvents, paints, cleaning fluids, greases, acids and alkali materials. Waste oils are collected and monitored as a separate category as they are reused or reprocessed for further use.

11.3.4 Sewage/septic

Domestic-type wastewater is generated or collected from:

- Decanting from locomotives
- Workshop toilets and showers
- Office toilets

The existing Jilalan Rail Yard has a licence (100 to 1,500 equivalent persons (EP)) to release treated domestic-type wastewater to receiving waters. This is subject to a number of quality characteristics including:

- 5-day biochemical oxygen demand (mg/l)
- Suspended solids (mg/l)
- pH (pH units)
- Dissolved oxygen (mg/l)
- Anionic surfactants
- Oil and grease
- Total copper
- Free residual chlorine (mg/l)

The discharge point is to an open drain directly adjacent to and west of the site. This eventually drains to Elizabeth Creek.

The capacity of the relatively new Biolytix sewage treatment plant (STP) (refer Photo 11.1) is 16.6 m^3/day. The results of effluent testing are shown in Table 11.2.

Table 11.2 Effluent testing sampled 30 April 2007 at 1300 hours

Sample description	LOR	Treatment plant clarifier	Treatment plant after sand filter	EPA discharge limit
Total Copper (mg/L)	0.002	0.019	0.004	0.1
BOD (mg/L)	1	10	15	20
Total P (mg/L)	0.01	12.9	12.35	N.A
pH	0.1	7.12	7.1	6.5-8.5
DO (mg/L)	0.1	5	3	>2
TSS (mg/L)	1	6	<1	30
Oil and grease (mg/L)	0.1	1	1.4	10
MBAS (mg/L)	0.25	1	0.8	1

Table Notes:
LOR Limit of reporting
BOD Biological Oxygen Demand
Total P Total Phosphorous
DO Dissolved Oxygen
TSS Total Suspended Solids
MBAS Methylene Blue Active Substances

Photo 11.1 Jilalan sewage treatment plant

The office area is not connected to the STP and has its own septic tank system.

11.3.5 Trade waste

All trade wastewater from the current facility washdown areas report to a recently upgraded, onsite wastewater treatment plant, known on site as the pollution treatment plant (PTP). The PTP has a design capacity of 100 m^3/day.

Locomotives are generally acid washed to remove copper oxide build-up on the roof and windows deposited from the overhead power supply cables. This creates an acidic wastewater with a high metals concentration, predominantly copper with iron and aluminium. Coal dust and hydrocarbons are also removed from the equipment. The wastewater has historically had high levels of odour due to organic compounds.

Generally, one locomotive per day is cleaned in this system.

The trade waste treatment process (refer Photo 11.2) includes:

- A triple interceptor system at the locomotive wash area
- Aeration
- Flocculation and sedimentation
- Sludge disposal


Photo 11.2 Pollution treatment plant (PTP)

Virotec Global Solutions have recently upgraded the trade waste treatment system at the Jilalan Rail Yard using their ViroFlow™ Technology. The basic process is described below and shown in Photo 11.3. The results of water quality testing of the resultant wastewater are shown in Table 11.3.

ElectroBind™ reagent is mixed with process wastewater in a 50,000L mixing vessel at a predetermined addition rate and agitated to ensure optimum contact time. ViroFlow™ Technology replaced the conventional alkaline (lime) treatment and produced a dense, stable sediment that is easily recovered and dewatered (Source: Virotec case study brochure, December 2006).

Table 11.3 Treated water quality results from pollution plant

Parameter	Before treatment	February 2005	March 2005	April 2005	EPA discharge limit
pH	6.5	6.54	6.73	6.6	6.5 – 8.5
Copper (mg/L)	0.54	0.07	0.03	0.05	0.1 mg/L
Phosphorus (mg/L)	10	1.6	0.53	2.0	2.0 mg/L
Suspended solids (mg/L)	53	8	3	24	30 mg/L
Oil and grease (mg/L)	29	<2.0	<2.0	<2.0	10 mg/L
BOD (mg/L)	201	14	6	10	20 mg/L
Odour	High	None	None	None	No odour

Photo 11.3 ViroFlow trade waste treatment system

The collected sludge is removed to landfill. The treated wastewater is generally recycled through the washdown facility and discharged to an adjacent open drain in accordance with the ERA Licence requirements (refer Table 11.3).

11.3.6 Stormwater

In general stormwater across the site is directed into drainage paths to the east and west of the site. All stormwater from work areas around buildings is directed into the pollution plant for treatment.

Stormwater from building roofs is directed into external drainage paths in most cases, but the water from the control room buildings is directed into a tank for later reuse.

11.4 Potential construction impacts

The potential environmental impacts of the waste materials generated during the construction phase of the Project are shown in Table 11.4.

Table 11.4 Potential construction impacts

Waste type	Waste characteristic	Source	Potential environmental impact
Batteries	Regulated waste	Vehicle servicing	Stormwater runoff from storage. Transport impacts
Building materials	Inert	Construction	Transport impacts and landfill space
Concrete	Inert	Excess from concrete pours	Transport impacts
Cardboard	Inert	Construction materials packaging	Transport impacts and landfill space
Domestic: recyclables eg cans, plastic bottles, glass	General waste	Construction workforce	Transport impacts
Domestic: food, wrapping	General waste	Construction workforce	Odour, transport impacts and landfill space
Green waste	Inert	Site clearing	Dust generation

Waste type	Waste characteristic	Source	Potential environmental impact
Empty drums and containers – suitable for return to supplier	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	Transport impacts
Empty drums and containers – suitable for recycling	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	Transport impacts
Empty drums and containers – not suitable for recycling	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	Containment and treatment of rinse water, transport impacts and landfill space
Electrical cables	Inert	Cable off cuts	Recycling wastes and transport impacts
Timber crates and pallets	Inert	Supply of machinery and parts	Transport impacts, dust generation
Scrap steel	Inert	Steel off cuts	Transport impacts
Plastics	Inert	Pipe and conduit of cuts	Transport impacts and landfill space
Oil and lubricants	Regulated waste	Machinery oil changes and lubrication	Stormwater runoff from storage. Transport impacts
Oil filters	Regulated waste	Vehicle servicing	Transport impacts
Cleaning rags	Regulated waste	Vehicle servicing	Transport impacts and landfill space
Tyres	Regulated waste	Vehicle servicing	Storage and transport impacts, landfill space
Paints and solvents	Regulated waste	Painting	Stormwater runoff from storage. Transport impacts
Sewage	Regulated waste	Construction workforce	Transport and treatment/disposal impacts

The main water sources for the Project, the stormwater drainage systems and the location and design of proposed rail infrastructure are detailed in Chapter 2. Potential water quality impacts are discussed in Chapter 7.

11.5 Potential operational impacts

The potential environmental impacts of the waste materials generated during the operational phase of the Project are shown in Table 11.5.

Table 11.5 Potential operational impacts

Waste type	Waste characteristic	Source	Potential environmental impact
Batteries	Regulated waste	Vehicle and plant servicing	Stormwater runoff from storage. Transport impacts
Building construction and demolition materials	Inert	Construction	Transport impacts and landfill space
Paper and cardboard	Inert	Packaging and office paper	Transport impacts

Waste type	Waste characteristic	Source	Potential environmental impact
Domestic: recyclables eg cans, plastic bottles, glass	General waste	Workforce	Transport impacts
Domestic: food, wrapping	General waste	Workforce	Odour, transport impacts and landfill space
Hazardous	Regulated waste	Track, locomotive and wagon maintenance	Stormwater runoff from storage. Transport impacts.
Waste oil and lubricants	Regulated waste	Vehicle and plant servicing	Stormwater runoff from storage. Transport impacts
Oil spill clean up materials	General/regulated waste	Vehicle and plant servicing	Stormwater runoff. Transport impacts and landfill space
Metal	Inert	Vehicle and plant maintenance	Transport impacts
Electrical cable	Inert	Plant maintenance	Transport impacts
Sewage	Regulated waste	Workforce	Increased discharge to adjacent drainage line
Trade waste	Regulated waste	Facility washdown area	Increased discharge to adjacent drainage line
Timber	Inert	Non-recyclable wooden pallets and cable reels	Dust generation
Green waste	Inert	Landscape maintenance	Dust generation

Potential stormwater quality impacts are discussed in Chapter 7.

11.6 Mitigation measures

11.6.1 Waste management plan – construction

Introduction

Where possible, the quantity of wastes generated and removed from site will be reduced, with wastes to be segregated and recycled. Onsite reuse of wastes including soil, green waste and concrete is to be undertaken, with wastes associated with materials packaging returned to suppliers wherever possible. Remaining wastes during the construction phase will be recycled or disposed at Council's landfill where recycling is not feasible.

Regulated waste will be removed by a regulated waste contractor.

Waste collection practices will be designed to prevent the site from becoming contaminated by oil or chemical spills during construction. New opportunities to reduce, reuse or recycle waste that may become available throughout the construction period will be incorporated into the waste management strategy.

Appropriate disposal permits for the disposal of contaminated soil from site will be obtained in accordance with Section 424 of the EP Act. Disposal permits enable appropriate and legal disposal and tracking of contaminated soil or materials.

Storage of waste materials will be in bunded or stormwater controlled areas where required.

Purpose

The main aims of this Waste Management Sub Plan (Construction) are to:

- Minimise waste generation and the cost of waste for all stages of the construction of the rail facilities
- Prevent damage to the environment
- Move the company and community towards ecologically sustainable development
- Ensure the operation complies with Environmental Licence conditions
- Outline the requirements of the *Environmental Protection Regulation (Waste) 2000*

Management strategies

The types and quantities of construction wastes and their likely treatment/disposal methods are listed in Table 11.6. These estimates have been derived from data for the existing facility and similar rail infrastructure construction projects.

Table 11.6 Waste management strategies - construction

Waste type	Waste characteristic	Source	Estimated quantity (t/annum)	Minimisation/likely treatment/ disposal
Batteries	Regulated waste	Vehicle servicing	0.2	Recycling
Building materials	Inert	Construction	50	Contractor will be encouraged to reuse through Contract. Sarina Shire landfill
Concrete	Inert	Excess from concrete pours	250	Cast into moulds for future use
Cardboard	Inert	Construction materials packaging	5	Contractor will be encouraged to minimise packaging. Recycling.
Domestic: recyclables eg cans, plastic bottles, glass	General waste	Construction workforce	20	Recycling
Domestic: food, wrapping	General waste	Construction workforce	40	Sarina Shire landfill
Green waste	Inert	Site clearing	5	Chipped and used onsite for landscaping. Cane areas will be harvested.
Empty drums and containers – suitable for return to supplier	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	5	Return to supplier
Empty drums and containers – suitable for recycling	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	5	Recycling
Empty drums and containers – not suitable for recycling	Regulated if they contain regulated waste such as paint, oil etc. Otherwise inert	Supply of chemicals, paint, oil, cleaning agents etc	5	Triple rinse on site, crush and puncture prior to disposal in Sarina Shire landfill
Electrical cables	Inert	Cable off cuts	5	Recycling

Waste type	Waste characteristic	Source	Estimated quantity (t/annum)	Minimisation/likely treatment/ disposal
Timber crates and pallets	Inert	Supply of machinery and parts	5	Returned to supplier where possible Remainder chipped and used onsite for landscaping
Scrap steel	Inert	Steel off cuts	50	Recycling
Plastics	Inert	Pipe and conduit of cuts	20	Sarina Shire landfill
Oil and lubricants	Regulated waste	Machinery oil changes and lubrication	2	Recycling
Oil filters	Regulated waste	Vehicle servicing	0.5	Recycling
Cleaning rags	Regulated waste	Vehicle servicing	0.1	Regulated waste contractor
Tyres	Regulated waste	Vehicle servicing	2	Regulated waste contractor
Paints and solvents	Regulated waste	Painting	0.5	Recycling
Sewage	Regulated waste	Construction workforce	300 EP peak	Existing onsite facilities or portable toilets if required.

Monitoring, auditing and reporting

Records of all waste materials generated during the construction phase are to be maintained. These records shall form part of a regular environmental management audit process for the construction works.

11.6.2 Waste management plan – operation

Introduction

Where possible, the quantity of wastes generated and removed from site will be reduced, with wastes to be segregated and recycled. Onsite reuse of wastes including soil, green waste and concrete is to be undertaken, with wastes associated with materials packaging returned to suppliers wherever possible. Remaining operational wastes will be recycled or disposed at Council's landfill where recycling is not feasible.

Waste collection practices will be designed to prevent the site from becoming contaminated by oil or chemical spills during construction. New opportunities to reduce, reuse or recycle waste that may become available will be incorporated into the waste management strategy.

Appropriate disposal permits for the disposal of contaminated soil from site will be obtained in accordance with Section 424 of the EP Act. Disposal permits enable appropriate and legal disposal and tracking of contaminated soil or materials.

Storage of waste materials will be in bunded or stormwater controlled areas where required.

Purpose

The main aims of this Waste Management Plan (Operation) are to:

- Minimise waste generation and the cost of waste at the rail facilities
- Prevent damage to the environment
- Move the company and community towards ecologically sustainable development

- Ensure the operation complies with Environmental Licence conditions.
- Outline the requirements of the Environmental Protection Regulation (Waste) 2000

Management strategies

The types and quantities of operational wastes and their likely treatment/disposal methods are listed in Table 11.7. These estimates have been derived from data for the existing and similar facilities and are based on a 50% increase in train movements through Jilalan (from ~390 to 584) leading to a potential 50% increase in waste quantities generated. Where actual site data is not available, estimates have been made.

Table 11.7 Waste management strategies – operation

Waste type	Waste characteristic	Source	Estimated quantity (t/annum)	Minimisation/likely treatment /disposal
Batteries	Regulated waste	Vehicle and plant servicing	2	Recycling
Building construction and demolition materials	Inert	Construction	2	Contractor will be encouraged to reuse through Contract. Sarina Shire landfill
Paper and cardboard	Inert	Packaging and office paper	12	Recycling
Domestic: recyclables eg cans, plastic bottles, glass	General waste	Workforce	15	Recycling
Domestic: food, wrapping	General waste	Workforce	200	Onsite recycling with greenwaste. Sarina Shire landfill
Hazardous	Regulated waste	Track, locomotive and wagon maintenance	12	Collected by Contractor
Waste oil and lubricants	Regulated waste	Vehicle and plant servicing	20	Recycling
Oil spill clean up materials	General/regulated waste	Vehicle and plant servicing	5	Oil is collected by Contractor and recycled. Pads etc are disposed of to landfill.
Metal	Inert	Vehicle and plant maintenance	7	Recycling
Electrical cable	Inert	Plant maintenance	1	Recycling
Sewage	Regulated waste	Workforce	Approximately 78kL/day	Treatment by onsite sewage plant and effluent irrigation
Trade waste	Regulated waste	Facility washdown area	Up to 150m^3/day	Treated wash water is recycled to reduce water usage and discharge
Timber	Inert	Non-recyclable wooden pallets and cable reels	5	Chipped and used onsite for landscaping

Waste type	Waste characteristic	Source	Estimated quantity (t/annum)	Minimisation/likely treatment /disposal
Green waste	Inert	Landscape maintenance	2	Chipped and used onsite for landscaping

A second pollution treatment plant (PTP) will be constructed to address the potentially higher washdown flows. This also provides redundant capacity to assist with maintenance and plant breakdown. Details of the second plant will be very similar to the existing facility as described in Section 11.3.5.

Relevant QR operational procedures for managing of waste materials at the facility include:

- Management of Hazardous Substances and Lead Hazardous Substances SAF/STD/0004/WHS
- Acceptance, Handling and Transport of Dangerous Goods SAF/STD/0079/SWK
- GMR-550-28 Management Of Hazardous Substances And Lead Hazardous Substances
- SRD/0076 Hazardous Substance Brochure
- SRD/0077 Hazardous Substance Information Booklet
- BULL-SA-06-037 Guidelines for Shipping Hazardous Materials
- DRAFT of DMM-550-NN Process for Introduction of Chemical Substance for Use in Depot
- FM-1232 – Chemical Risk Assessment Rollingstock Division
- Hazardous Substance Training is given to staff during induction. QRLC Course Code 00001582-001-INS
- Dangerous Goods Awareness Video is given to staff during induction. QRLC Course Code 00001455-001-INS
- Environmental Awareness - Our Duty of Care (Video/CD-Rom) QRLC Course Code 00000413-003-INS is given to staff during induction
- Spill Kit Video Awareness shown during induction.
- FM-2280 – Emergency Spill Kit Inventory Checklist
- FM-1233 – Coal Spill Without Derailment or Door Open in Traffic
- FM-1234 – Coal Spill Leading to Derailment
- Management of Chemical Spills in Station, Yards and Terminals – OPS BI 4076-1.0
- Minor Spills in Yards and Terminals - PPT .041 00125202.001-ins.
- Dangerous goods minor spill cleanup. 00010874.001-ins.
- Optimum Locomotive Provisioning – OPS OI-JIL .080.3
- Critical Task : Rail Operators Fuelling Diesel Locomotive At The Fuel Point In The New Shops Road At Jilalan – OPS OI-JIL .009-5.0
- Delivery of Sand by Road Transport to the Jilalan Provisioning Facility OPS OI-JIL .097-2.0
- Decanting Toilets at Provisioning Shed OPS OI-JIL .036-3.0
- GMR-750-09 - Checking of discharge samples from pollution plant at Jilalan Loco Shed
- FM-1077 - Pollution Plant Operator Maintenance Record Sheet
- FM-2055 – Dissolved Oxygen Measurements for Sewerage Aeration Tank
- FM-2056 - Pollution Plant Holding Tanks Ph Test
- FM-2057 – Laboratory Sampling Record (Pollution Plant & Sewerage Plant)
- FM-2059 - Monitoring of Dynamic Lifter for Sewerage Solid Build-Up
- FM-2058 - Weather Monitoring Form for the Pollution Plant - Rollingstock Depot Jilalan
- FM-2062 – Jilalan Sewerage Treatment Plant Operator's Comments/Report
- FM2064 – Operational Logs for Jilalan Sewerage Treatment Plant
- FM-2066 - Ph Probe - Calibration Check sheet for Pollution Plant - Rollingstock Depot Jilalan
- FM-2068 - Pollution & Sewerage Record Sheet for Pump Outs
- FM-2069 - Dissolved Oxygen & P.H. Readings for Discharge Water (Pollution Plant) - Rollingstock Depot Jilalan

- FM-2070- Pollution Treatment Plant Malfunction and Maintenance Record - Rollingstock Depot Jilalan
- FM-2215 - Pollution Plant Receiving Tanks PH Test Form - Jilalan Rollingstock Depot
- FM-2219 Steam Clean Chemical Usage Monitoring Form
- DMM-850-01 – Operating Instruction for Chemical Clarification Plant for Jilalan
- GMR-750-07 Operations Manual For Sewerage Treatment Plants
- FM2325 – Water Treatment and Sewerage Treatment Plant Daily/Weekly Discharge and Maintenance Record Sheet
- GMR-850-39 Jilalan Flip Chart - Emergency Procedures
- FM-2173 Depot Emergency Call Record Form
- GMR-850-58 Emergency Preparedness and Response Plan Jilalan
- GMR-350-04 Procedure for Securing Rollingstock During a Cyclone
- GSA-EPMMI – Emergency Procedures Manual
- FM-1096 - QR National Rollingstock Business Unit Risk Management Plans: Audit Checklist.
- FFRMP1000 - Rollingstock Risk Management Plans
- Fire and Emergency Procedures Toolbox Talk QRLC Course Code 00010646-001-INS given during Induction
- Fire Fighting/Extinguisher Training QRLC Course Code 00001447-001-INS
- SAF/STD/0063/RSK Rollingstock Fire Performance

Monitoring, auditing and reporting

Records of all waste materials generated at the facility are to be maintained (note, these may be maintained by the Waste Contractor) in accordance with relevant legislation. These records shall form part of a regular environmental management audit process for the site.

11.7 Conclusion

Based on a review of the existing facility waste management and the proposed development the following conclusions can be made:

- The environmental values to be enhanced or protected are:
  - The life, health and wellbeing of people
  - The diversity of ecological processes and associated ecosystems
  - Land use capability, having regard to economic considerations.
- The Jilalan Rail Yard has an existing Waste Management Plan (document OPS OI-JIL.084-1.0). Waste management at the site is the responsibility of Thiess Services (Thiess) as part of an overall, State-wide waste management contract.
- The most significant waste materials generated from the existing facility include general waste, cardboard, metals, coal, hazardous wastes (oil, solvents, cleaning fluids, acids, alkali, batteries), sewage and trade waste. Metals (co-mingled), waste oil, coal and cardboard are re-used or recycled. The categories of waste materials from the upgraded facility will be as per current categories, with additional quantities for most materials.
- During construction the waste materials generated from the site in addition to the operational materials include construction and demolition waste (C&D waste), vegetation (from clearing), stormwater runoff from construction areas and additional sewage.
- Management strategies to minimise waste generation and separate recyclable materials must be incorporated into the upgraded facility operations as per QR procedures. There are significant opportunities to reduce the volume of general waste materials going to landfill.
- The sewage treatment facilities are capable of expansion to approximately 20 kL/day.
- The current trade waste system (PTP) has a capacity of up to 100 m^3/day and will require expansion or augmentation to address the larger facility requirements.