

Connell Wagner

Town of Weipa
Water Service Provider No 191
Strategic Asset Management Plan



January 2008

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**Strategic Asset Management Plan for the
Town of Weipa Water Services
for Weipa Town Authority
SPID No 191**

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Australian Bureau of Statistics Data

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Customer Service Standard Brochure

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Projected 10-Year Financial Program

Endorsement

This Strategic Asset Management Plan was prepared for the Town of Weipa in July 2004 to comply with the requirements stated in Section 408 of the Water Act 2000 and the Guidelines for Preparing Strategic Asset Management Plans, as prepared by the Queensland Government, Department of Natural Resources, Mines and Energy. The Weipa Town Authority operates the majority of the water and sewerage systems on behalf of Rio Tinto Alcan.

The Strategic Asset Management Plan has been developed based on a site visit and discussions held with the members of Weipa Town Authority. We certify that the information provided in this document is appropriate to the registered services and infrastructure provided by Rio Tinto Alcan and managed by the Weipa Town Authority, and outlines:

- The operational, maintenance and asset renewal strategies, processes, procedures and actions that will assist the Weipa Town Authority in achieving the adopted level of service standards; and
- The financial arrangements to assist in the implementation of the Strategic Asset Management Plan.

This documentation is certified and endorsed by a Registered Professional Engineer.

Signature: Terence Ward

Date: 25/2/2008

Name: Terence Ward

RPEQ Number: 6415

1. Introduction

1.1 Overview

Weipa is located on the western coast of Cape York Peninsula Queensland, about 200 kilometres south of Cape York and approximately 800 kilometres from Cairns. Weipa is located within the Cooktown Shire boundary, but is operated independently by the Weipa Town Authority under an Act created by the Queensland Parliament. This Act gives the town the status of a Special Bauxite Mining Lease which is now controlled by Rio Tinto Alcan and covers an area of approximately 2,590 square kilometres. The Weipa community commenced development in 1965 around the original Comalco Bauxite mining lease. **Figure 1** provides a locality map of Weipa.

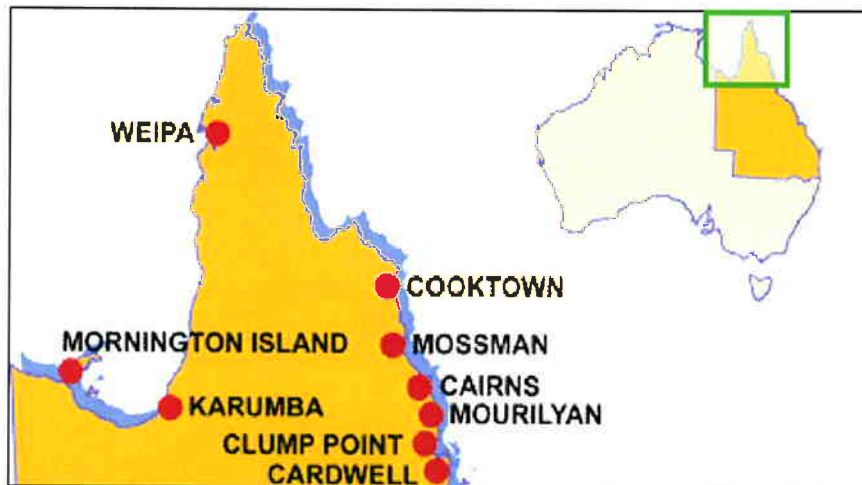


Figure 1 - Locality Map Far North Queensland

Source: EPA Queensland

1.2 Purpose of the SAMP

The Water Act 2000 came into force in December 2000, replacing the Water Resources Act 1989 and outlined changes in regulations, which affected the operation of water service providers in Queensland. Under the Water Act 2000, each water service provider, unless exempted by the regulator (The Department of Natural Resources, Mines and Energy), is required to prepare a Strategic Asset Management Plan (SAMP) and Customer Service Standard (CSS). Section 408(4) (a) – (d) specifies that the SAMP must detail:

- The registered services to which the plan applies;
- The infrastructure for providing the services;
- The methodology used by the service provider for developing customer service standards;
- The standards for appropriate levels of service, including customer service and performance indicators for the service;
- The proposed financial program to finance the implementation of the SAMP and CSS; and
- An operation, maintenance and renewals strategy that demonstrates how each standard will be achieved.

This SAMP has been developed to outline the strategies for operating, maintaining and renewing the assets related to the water and sewerage service and to comply with the Water Act 2000.

The Weipa Town Authority is responsible for all assets within the town, however, the Civil Infrastructure Section of Rio Tinto Alcan are directly responsible for the operation and maintenance of the sewer treatment plant, pump station, rising mains, over flow tanks and the Evans Landing water supply. The Weipa Town Authority is responsible for the operation and maintenance of the telemetry, water infrastructure including supply lines (excluding the Evans Landing supply) and sewer gravity system including manholes. The organisational structure is shown in **Section 2.3** of this report.

2. Overview of Registered Services

The Town's Water and Sewerage Systems are monitored and managed by Town Office under a Water and Sewerage Strategy, which was developed in 2003. The following sections provide a brief overview of the registered water supply and sewerage service provided by the Weipa Town Authority.

2.1 Water Supply

The Weipa Town Authority operates two water supply schemes:

- Rocky Point, Trunding and Nanum Water Supply Scheme; and
- Evans Landing Water Supply Scheme.

The water supply system provides water to approximately 1,225 connections.

2.2 Sewerage

The Weipa Town Authority in collaboration with Rio Tinto Alcan provides a reticulated sewerage system to the community. The sewerage system comprises of gravity mains, pump stations and sewerage ponds. Rio Tinto Alcan maintains the licenses to operate the sewerage ponds. The reticulated sewerage system provides services to approximately 1,225 connections.

2.3 Weipa Town Authority Resources

The Director of Planning and Infrastructure oversees the operation of the community's water supply and sewerage system. Subcontractors are employed to undertake regular maintenance work on the systems. **Figure 2** provides an organisational structure for the water supply and sewerage system.

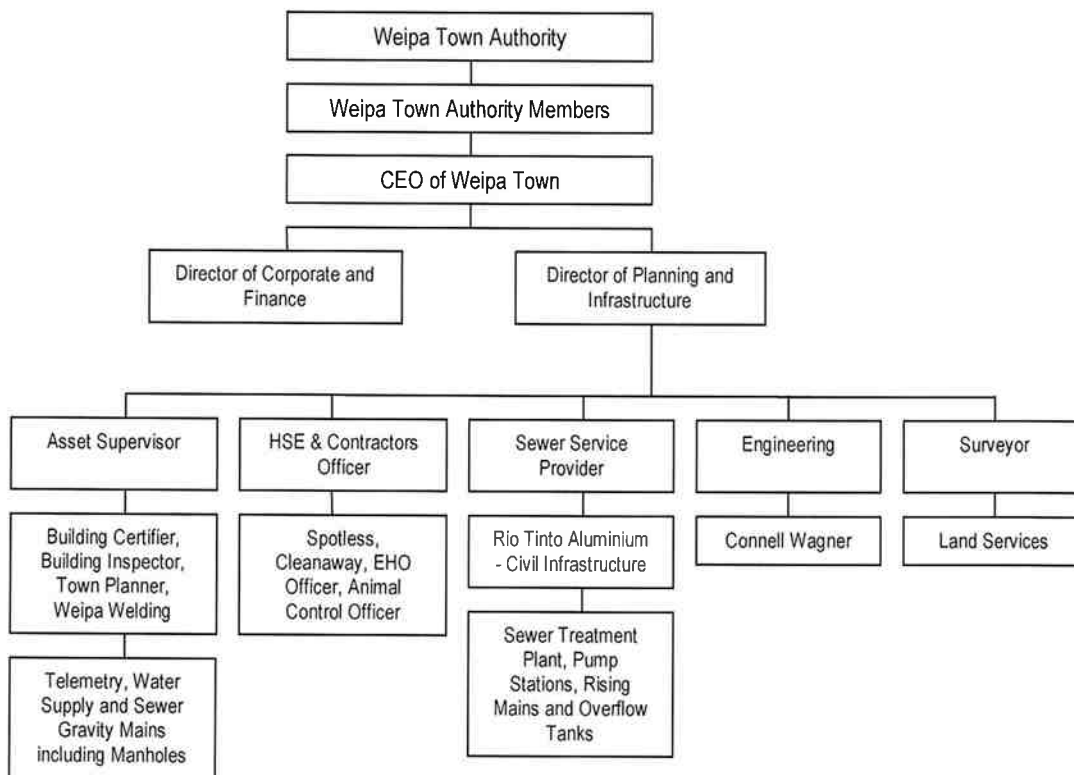


Figure 2 – Organisation Structure

3. Population Assessment

3.1 Historical Population

The historical population of Weipa, based on information from the Australian Bureau of Statistics (Appendix A), is summarised in Table 3.1.

Table 3.1 – Historical Population for the Town of Weipa

Year	Population	Population Change (per annum)
1996	2,200	
2001	2,502	+2.75 %
2006	3,141	+5.11 %

Source: Australian Bureau of Statistics (ABS) – Census Population and Housing

3.2 Population Projections

Previous population projections have been based on an estimated growth rate of 2-3% per annum. Bases on the ABS data above, based on an approximate average of 3.5% per annum, Table 3.2 provides a summary of the population projection for the next ten years.

Table 3.2 – Population Projection

Year	Population
2006	3,141
2007	3,250
2008	3,364
2009	3,482
2010	3,604
2011	3,730
2012	3,860
2013	3,995
2014	4,135
2015	4,280
2016	4,430
2017	4,585
2018	4,745

For the purpose of this report, this population projection has been adopted.

4. Water Supply System

4.1 Overview of Scheme

The town of Weipa consists of four community areas Rocky Point; Trunding, Nanum and Evans Landing.

Water for Rocky Point, Trunding and Nanum is supplied from a common water storage facility located at Rocky Point. Water is sourced from nine shallow aquifer bores. All bores have individual pumps that are controlled by a central controller and linked by telemetry.

The bores supply an open 9ML ground water storage reservoir. The water is then pumped to an adjacent 0.9 ML elevated reservoir via two centrifugal, high lift pumps (one duty, one stand-by) located in an open concrete pit between the low and high level reservoirs. These pumps are automatically controlled by floats in the elevated reservoir. An automatic monitoring system comprising of a flowmeter and a data logger is located on the outlet from the elevated reservoir, however this flowmeter has been broken for some time and valuable data on the actual water consumption for the town has been lost.

Water from the ground water storage reservoir has a low pH and is extremely corrosive. Lime is injected into the main between the high lift pumps and the elevated reservoir. Chlorine is also injected into the main between the high lift pump and the tower for disinfection purposes. The injection system are controlled by timers.

Water is distributed from the elevated reservoir to the three community areas via a reticulation pipework. Due to increasing demands on the system, a booster pump has been place at Nanum to provide adequate pressures to the area.

Water for the Evans Landing Water Supply Scheme is supplied by a water storage facility owned and operated by Rio Tinto Alcan. The water is delivered via a trunk main with a bulk meter that measures the cumulative flow. The Town Authority holds licences to operate the water supply bores. **Figures 3 and 4** provide an overview of the two water supply schemes.

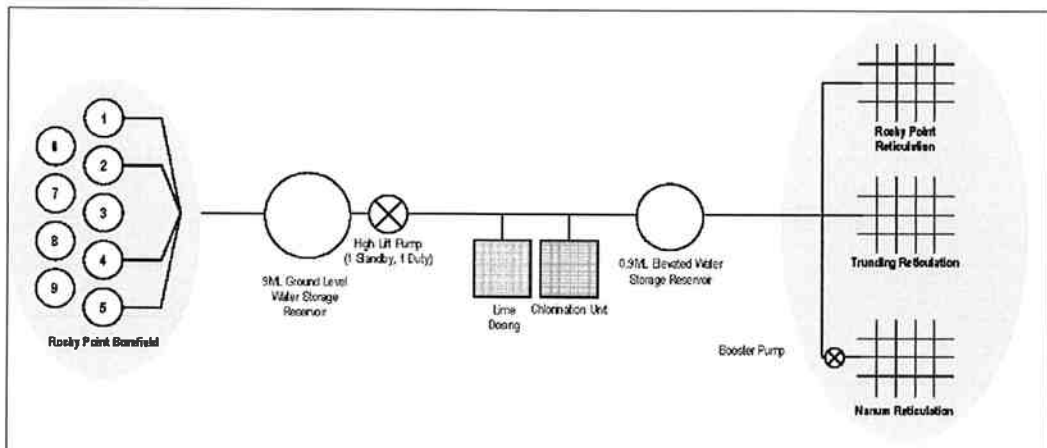


Figure 3 – Rocky Point, Trunding and Nanum Water Supply Scheme

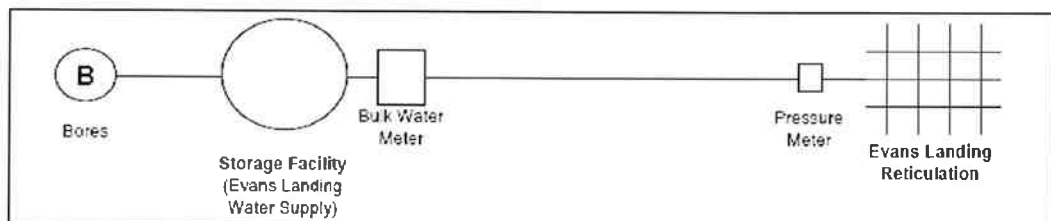


Figure 4 – Evans Landing Water Supply Scheme

4.2 Water Consumption Trends

Water meters have been installed at all bores to measure the volume of water produced on a monthly basis. The average daily water production is then calculated based on the monthly readings. Water consumption readings have been quite irregular as a result of meter malfunctions, and therefore, daily consumption records for each month are unavailable. **Figure 5** provides a summary of the monthly bore readings for January 2006 to April 2007.

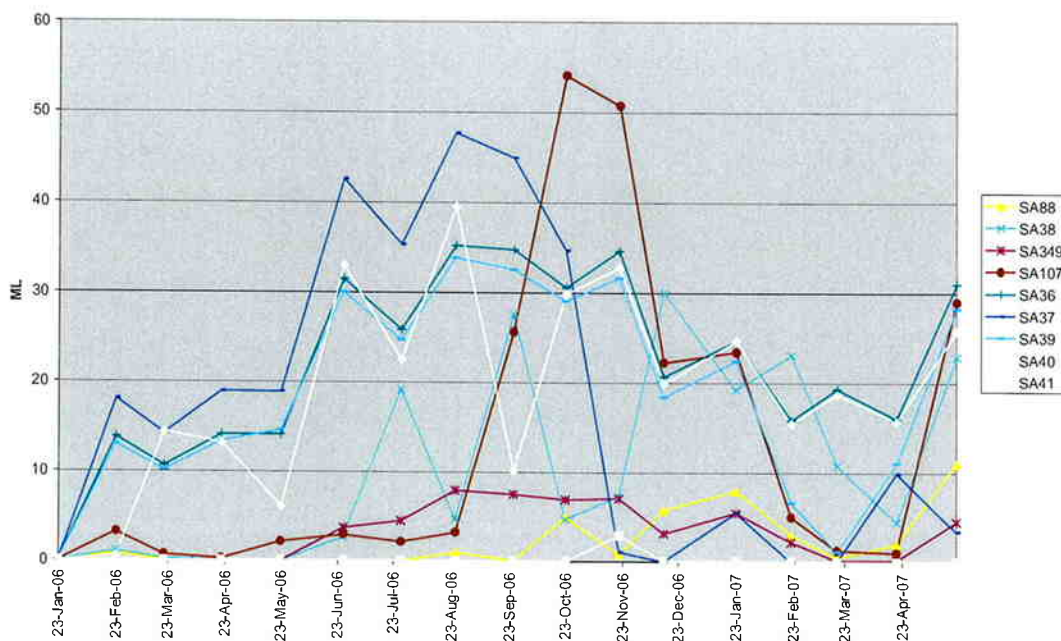


Figure 5 – Monthly Bore Readings

Bore SA41 is to be decommissioned in 2008. The average flow for 8 operational bores was calculated at 150L/s. The current bore production is sufficient if all 8 bores are in operation at all times. It is recommended that a contingency be in place to maintain that the production requirements are met. This would include adding a bore in the future that would produce an effective production capacity of 169L/s.

There are no current or accurate water consumption records available, as the flowmeter has been broken for some time and valuable data on the actual water consumption for the town has been lost.

Table 4.1 below shows the theoretical consumption figures, based on flow rates from 2001, assuming that consumption per capita has not increased.

Table 4.1 Theoretical Consumption Figures

	2001	2006	2011
Population	2502	3141	3730
Average Day	3.6 ML/day	4.5 ML/day	5.36 ML/day
Average Day per Capita	1.43 kL/person/day		
Peak Day	7.25 ML/day	9.1 ML/day	10.8 ML/day
Peak Day per Capita	2.89 kL/person/day		

4.3 Water Quality Analysis

The Town of Weipa undertakes water quality testing to ensure compliance against the NHMRC Australian Drinking Water Quality Guidelines. Water samples are collected fortnightly by the Asset Supervisor in three locations within Weipa, including the Cultural Centre, the bore supply line at the reservoir and the town water supply line at the reservoir.

The water is run and sterilised with a heat gun, before the sample is taken by the Asset Supervisor. The samples are packed in ice and sent to Cairns to be tested within 24 hours of the sample being taken.

Water samples are sent to and tested by Cairns Water, who operates a NATA accredited laboratory. Bacterial tests are undertaken on a fortnightly basis and a full chemical analysis is undertaken every six months.

The water source is generally quite corrosive, and as a result, is dosed with lime to reduce the pH levels to meet NHMRC limits. **Tables 4.2** shows a summary of the bacterial water quality test results.

Table 4.2 – Bacterial Water Quality Test Results (January 2008)

Test Type	Guidelines	Sample Location		
		Weipa - Evans Landing	Weipa – Andoom Bores	Weipa – Town Supply
Faecal Coliform	<1 CFU / 100 mL	<1 CFU / 100mL	<1 CFU / 100mL	<1 CFU / 100mL
Standard Plate Count (Undisinfected)	<500 CFR / mL	25 CFU / mL	<1 CFU / mL	>250 CFU / mL
Total coliforms	<1 CFU / 100 mL	<1 CFU / 100 mL	<1 CFU / 100 mL	1 CFU / 100 mL

In any instances where the water quality test results have not complied with test results, a new water sample is collected and retested.

4.4 Water Supply Assets and Infrastructure

Tables 4.3, 4.4 and **4.5** provide a summary of the water assets, owned and operated by Weipa Town Authority.

Table 4.3 – Water Supply Active Assets

Asset Type	Description	Year Constructed
Bores	9 Bores, pipework, switchboard, pumps	1973
	Telemetry at bores	2007
Ground Level Reservoir Elevated Reservoir	9 ML Capacity	1975
	0.9 ML Capacity	1973
	Flow meter	2002
Pumps	Centrifugal duty pump	1997
	Centrifugal standby pump	2003
	Nanum booster pump	2005
Treatment	Lime dosing equipment	1992
	Chlorine injection equipment	2005

Table 4.4 – Water Supply Mains

Scheme	Year Constructed	Pipe Material	Pipe Diameter	Length (m)
Evans Landing	1975 / 2003	AC	100	1,513
			150	1,674
		PVC	100	162
			150	883
Nanum	1990 / 2004	PVC	60	1,580
			100	2,032
			150	2,386
			250	865
		DI	200	55
			250	93

Table 4.4 cont – Water Supply Mains

Scheme	Year Constructed	Pipe Material	Pipe Diameter	Length (m)
Rocky Point	1973 / 2005 / 2007	AC	100	4,413
			150	4,079
			250	1,154
			300	69
			525	197
		PVC	60	417
			100	2,403
			150	525
PE	63	200	475	
		3,759		
Trunding	1975	AC	100	3,470
			150	2,110
			200	3,970
			250	1,188

Table 4.5 – Water Supply Connections (as at 2006)

Scheme	Approximate Number of Connections
Evans Landing	50
Nanum	280
Rocky Point	590
Trunding	305
Total	1,225

Figure 6 shows the proportion of mains by material type.

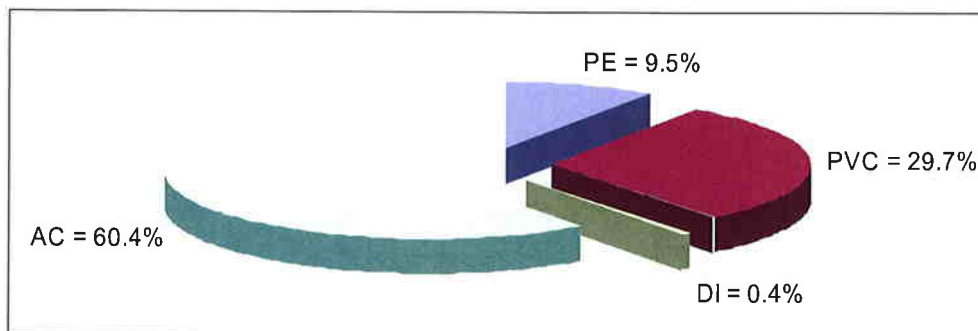


Figure 6 – Length of Mains by Material Type

4.5 Water Supply Asset Valuation

An asset condition assessment and valuation was undertaken by Cardno MBK in 1996 and updated in 2000 and 2003. The asset register has been updated for the purposes of this revised SAMP by:

- Adding assets constructed since the previous SAMP; and
- Substituting current construction rates for the rates previously used to determine replacement costs.

Tables 4.6 and 4.7 provide a summary of the water supply asset valuation, based on the updated asset register.

Table 4.6 – Summary of Active Water Asset Valuation (as at 2008)

Asset	Replacement Cost	Annual Depreciation	Accumulated Depreciation	Written Down Value
Borehole Pump Stations (9) including telemetry	\$505,000	\$15,668	\$342,458	\$162,542
Bore Rising Mains	\$138,000	\$2,760	\$96,600	\$41,400
9ML Town Ground Level Reservoir	\$470,580	\$11,489	\$228,241	\$242,339
Delivery Pumps to Elevated Reservoir	\$95,910	\$5,562	\$51,984	\$43,926
Elevated 0.9ML Reservoir	\$519,164	\$9,656	\$299,167	\$219,997
Lime Dosing Facility including chlorine injection equipment	\$425,979	\$16,228	\$141,557	\$284,422
Nanum Booster Pump	\$272,606	\$5,452	\$16,356	\$256,250
Total	\$2,427,239	\$66,815	\$1,176,364	\$1,250,875

Table 4.7 – Summary of Passive Water Asset Valuation (as at 2008)

Scheme	Asset	Replacement Cost	Annual Depreciation	Accumulated Depreciation	Written Down Value
Evans Landing	100AC	\$189,125	\$3,787	\$138,582	\$50,543
	150AC	\$294,624	\$5,892	\$210,609	\$84,015
	100PVC	\$20,250	\$405	\$2,025	\$18,225
	150PVC	\$155,408	\$3,108	\$15,541	\$139,867
	Subtotal	\$659,407	\$13,192	\$366,756	\$292,651
Nanum	60PVC	\$143,780	\$2,876	\$11,502	\$132,278
	100PVC	\$254,000	\$5,081	\$38,345	\$215,655
	150PVC	\$419,936	\$8,399	\$116,977	\$302,959
	250PVC	\$217,115	\$4,342	\$78,161	\$138,954
	200DI	\$11,715	\$234	\$4,217	\$7,498
	250DI	\$23,343	\$467	\$8,403	\$14,940
	Subtotal	\$1,069,889	\$21,399	\$257,606	\$812,283
Rocky Point	60PE	\$336,425	\$6,722	\$20,175	\$316,070
	60PVC	\$37,947	\$759	\$12,964	\$24,983
	100AC	\$557,449	\$11,165	\$385,147	\$172,303
	100PVC	\$300,375	\$6,010	\$173,883	\$126,493
	150AC	\$717,904	\$14,357	\$502,533	\$215,371
	150PVC	\$92,400	\$1,848	\$64,680	\$27,720
	200PVC	\$101,175	\$2,2023	\$70,823	\$30,353
	250AC	\$289,654	\$5,794	\$202,758	\$86,896
	300AC	\$24,150	\$483	\$16,905	\$7,245
	525AC	\$124,110	\$2,483	\$86,877	\$37,233
	Subtotal	\$2,581,409	\$51,644	\$1,536,743	\$1,044,666
Trunding	100AC	\$433,750	\$8,678	\$286,275	\$147,475
	150AC	\$371,360	\$7,425	\$245,098	\$126,262
	200AC	\$845,610	\$16,913	\$558,103	\$287,507
	250AC	\$298,188	\$5,964	\$196,804	\$101,384
	Subtotal	\$1,948,908	\$38,980	\$1,286,279	\$662,629
TOTAL		\$6,259,613	\$125,215	\$3,447,384	\$2,812,229

4.6 Water Supply Asset Management System

Asset details relating to the townships' water supply system is documented in a number of spreadsheets. Items recorded include water consumption, laboratory test results, monthly bore readings, as-constructed drawings and number of connections within each water supply scheme, including meter readings.

A comprehensive asset register is maintained for all active and passive assets, such as pump stations and water mains. The registers contain information such as:

- Facility Number;
- Asset Number;
- Description of Asset;
- Location of Asset;
- Type of Asset;
- Year constructed;
- Condition of Asset (as per condition assessment);
- Estimated design and remaining life of asset;
- Replacement year;
- Current cost of asset;
- Depreciation; and
- Drawing reference.

All complaints received regarding the performance of the water supply system is recorded in a complaints register.

5. Sewerage System

5.1 Overview of Scheme

The sewerage system is divided into two separate schemes:

- Rocky Point, Trunding and Nanum are serviced by the Awonga Lagoons, which is located approximately 2km north of Rocky Point and has a capacity of 2,500EP. This scheme is operated by the Weipa Town Authority; and
- Evans Landing, which is treated by the Lorim Point Sewage Treatment Plant. This plant is operated by Rio Tinto Alcan.

Figures 7 and 8 provide a schematic of the Awonga Lagoon and Lorim Point sewerage systems, respectively.

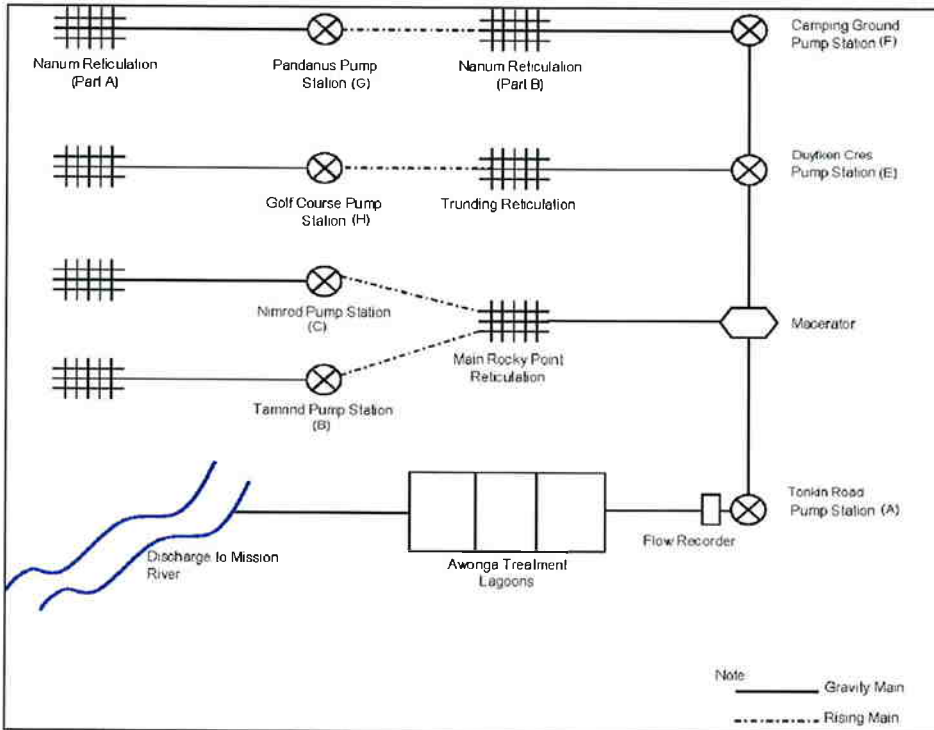


Figure 7 – Schematic of Rocky Point, Trunding and Nanum Sewerage Scheme

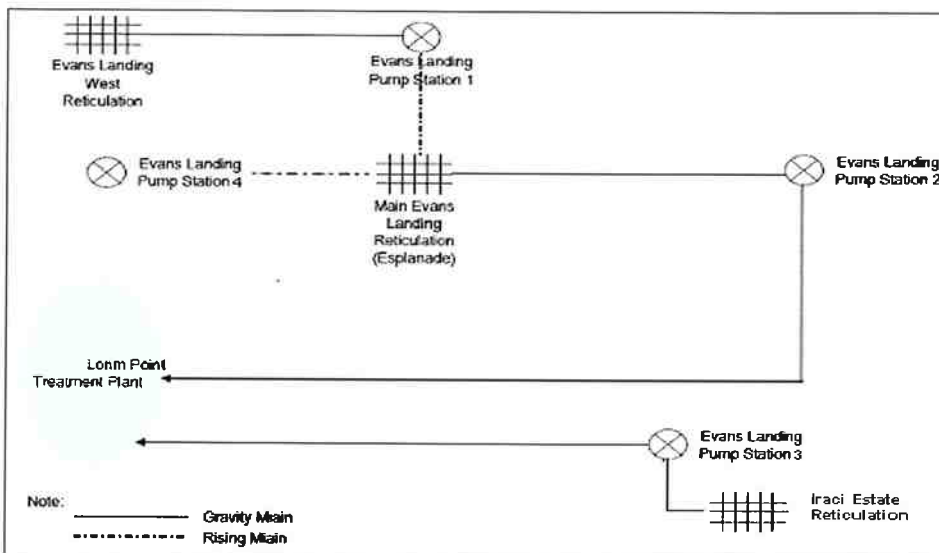


Figure 8 – Schematic of Evans Landing Sewerage Scheme

Due to the relatively flat terrain, the sewerage scheme consists of a number of sewage pump stations. These pump stations utilise float switches and multitrode probes for automatic operation. Alarms are in the form of a flashing red light located above the switchboard at each pump station. The sewage pump stations were connected to a telemetry system in 2007.

The Awonga Lagoons are not automated, however the Awonga WWTP project, which is to be awarded in 2008 will upgrade the existing plant. A new plant which provides an activated sludge process will be constructed on the site of the existing plant to take waste water from the rising man and discharge effluent to the existing outfall, bypassing the existing plant completely. Part of the existing plant will be retained as a temporary storage. Solid waste from the plant will be dewater and removed to landfill.

However, currently water levels are controlled by manually adjusting the stop boards and weirs. Effluent from the plant is discharged via an underwater outfall to Mission River. Discharge from the Awonga Lagoons is currently monitored on a monthly basis. The sewerage system currently provides services to approximately 1,225 connections.

5.2 Projected Sewage Flows

Currently, the Weipa Town Authority does not record the daily sewage flows entering the treatment plant and lagoons. Assuming the average day flow for the community is 250 L/EP/day, **Table 5.1** provides a calculation of the current and projected sewage flows for 2014.

Table 5.1 – Projected Sewage Flows

	Current - 2008	Projected - 2018
Population	3,364	4,745
Per capita flow	250 L/EP/day	250 L/EP/day
Average Day Flow	841 kL/day	1,186 kL/day

5.3 Sewerage Asset and Infrastructure

Tables 5.2, 5.3 and 5.4 provide a summary of the sewerage assets, owned and operated by Weipa Town Authority in conjunction with Rio Tinto Alcan.

Table 5.2 – Sewerage Active Assets

Location	Asset Type	Description	Year Constructed
Awonga Point	Awonga Sewage Lagoons	Civil Works	1992
		Retention Baffles	2001
		Waterfall Aerator	2001
		0.91 mm Hypalon Lining	1992
Rocky Point	Sewage Pump Station A (Tonkin Road)	Civil	1972
		Mechanical	1999
		Flow Meter	1990
		Electrical	1999
		Telemetry including new switchboards	2007
		Sewage Storage Tank	2007
	Sewage Pump Station B (Tamrind Road)	Civil	1972
		Fixtures and Fittings	1973
		Mechanical	1988
		Electrical	1983
		Telemetry including new switchboards	2007
	Sewage Pump Station C (Nimrod Road)	Generator	2007
		Civil	1972
		Fixtures and Fittings	1973
		Mechanical	1999
	Macerator, Trunk Sewer to Pump Station A	Electrical	2003
Telemetry including new switchboards		2007	
Electrical		1995	

Table 5.2 cont – Sewerage Active Assets

Location	Asset Type	Description	Year Constructed
Trunding	Sewage Pump Station E (Duyfken Cres)	Civil	1972
		Mechanical	1995
		Electrical	1983
		Telemetry including new switchboards	2007
		Generator	2007
		Sewage Storage Tank	2007
	Sewage Pump Station H (Golf Course/Regen)	Civil	1990
		Fixtures and Fittings	1990
		Mechanical	1990
		Electrical	1990
Telemetry including new switchboards Generator		2007 2007	
Nanum	Sewage Pump Station G (Pandanus Road)	Civil	1990
		Fixtures and Fittings	1990
		Mechanical	1990
		Electrical	1990
		Telemetry including new switchboards	2007
		Generator	2007
	Sewage Pump Station F (Camping Grounds)	Civil	1990
		Fixtures and Fittings	1990
		Mechanical	1990
		Electrical	1990
Evans Landing	Sewage Pump Station EL1	Telemetry including new switchboards	2007
		Generator	2007
		Civil	1990
		Fixtures and Fittings	1990
		Mechanical	1990
		Electrical	1990
	Sewage Pump Station EL2	Telemetry including new switchboards	2007
		Generator	2007
		Civil	1990
		Fixtures and Fittings	1990
		Mechanical	1990
		Electrical	1990
	Sewage Pump Station EL3	Telemetry including new switchboards	2007
		Generator	2007
		Civil	1990
		Fixtures and Fittings	1990
Mechanical		1990	
Electrical		1990	
Sewage Pump Station EL4	Sewage Storage Tank	2007	
	Civil	2007	
	Fixtures and Fittings	2007	
	Mechanical	2007	
	Electrical	2007	
	Telemetry including new switchboards	2007	

Table 5.3 – Sewerage Rising Mains

Scheme	Asset Type	Description	Material Type	Length (m)	Year Constructed
Rocky Point	Sewage Pump Station A	Mains to Awonga Lagoons	250uPVC	1,450	2006
	Sewage Pump Station B (Tamrind Road)	100mm AC main	100AC	180	1972
	Sewage Pump Station C (Nimrod Road)	100mm AC, lift station to MHS501	100AC	2	1972
Trunding	Sewage Pump Station E (Duyfken Cres)	To Rocky Point MHS416 Extension to Rocky Point MHS400	250AC 250uPVC	1,380 1,065	1975 1990
	Sewage Pump Station H (Golf Course/Regen)	Delivery into Trunding MHS113-3	63HDPE	443	1990
	Sewage Pump Station G (Pandanus Road)	Delivery into Nanum MH	150uPVC	480	1990
Nanum	Sewage Pump Station F (Camping Grounds)	Delivery to Pump Station E	150AC	780	1985
	Sewage Pump Station EL1	Delivery to Evans Landing MHS205	100uPVC	904	1990
Evans Landing	Sewage Pump Station EL2	Delivery to Lorim Point WPC	100uPVC	435	1990
	Sewage Pump Station EL3	Delivery to Lorim Point WPC	150AC	2,000	1972
	Sewage Pump Station EL4	Delivery to MH	80uPVC	72	2007

Table 5.4 – Sewerage Gravity Mains

Scheme	Year Constructed	Material	Diameter	Length
Evans Landing	1990 / 2007	uPVC	150	2,749
			100	37
Nanum	1990 / 2005	uPVC	150	5,438
			225	614
Rocky Point	1973 / 2005 / 2006	AC	100	43
			150	9,493
			225	1,124
			300	92
			375	1,000
			450	256
		uPVC	100	46
			150	792
			225	728
			300	125
Trunding	1975	AC	150	6,852
			225	1,048

Figure 9 shows graphically the proportion of mains by material type.

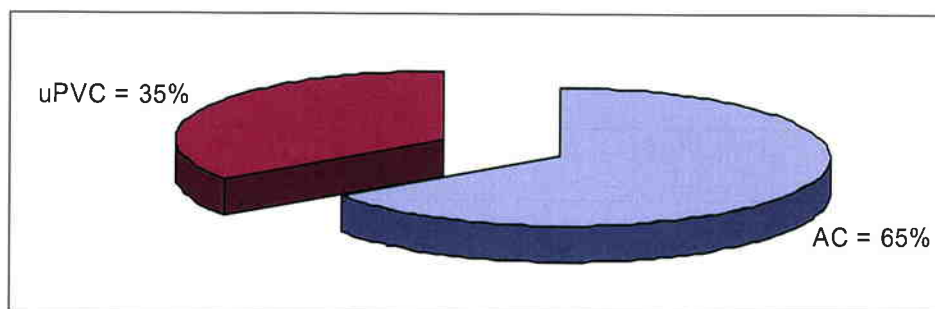


Figure 9 – Gravity Mains Material Type by Length

5.4 Sewerage Asset Valuation

An asset condition assessment and valuation was undertaken by Cardno MBK in 1996 and updated in 2000 and 2003. The asset register has been updated for the purposes of this revised SAMP by:

- Adding assets constructed since the previous SAMP; and
- Substituting current construction rates for the rates previously used to determine replacement costs.

Tables 5.5, 5.6 and 5.7 provide a summary of the sewerage asset valuation, based on the updated asset register.

Table 5.5– Summary of Active Sewerage Asset Valuation (as at 2008)

Asset	Replacement Cost	Annual Depreciation	Accumulated Depreciation	Written Down Value
Awonga Sewage Lagoons	\$959,100	\$22,414	\$303,080	\$656,020
Sewage Pump Station A (Tonkin Road)	\$1,381,363	\$34,845	\$1,127,101	\$254,263
Sewage Pump Station B (Tamrind Road)	\$158,240	\$6,623	\$80,924	\$77,316
Sewage Pump Station C (Nimrod Road)	\$102,730	\$3,847	\$38,730	\$64,000
Macerator, Trunk Sewer to Pump Station A	\$69,161	\$3,671	\$23,768	\$45,393
Sewage Pump Station E (Duyfken Cres)	\$1,008,137	\$24,802	\$842,029	\$166,108
Sewage Pump Station H (Golf Course/Regen)	\$153,691	\$6,845	\$69,601	\$84,090
Sewage Pump Station G (Pandanus Road)	\$207,009	\$8,508	\$96,346	\$110,663
Sewage Pump Station F (Camping Grounds)	\$207,009	\$8,508	\$96,346	\$110,663
Sewage Pump Station EL1	\$219,130	\$9,022	\$101,677	\$117,453
Sewage Pump Station EL2	\$230,866	\$9,374	\$106,379	\$124,487
Sewage Pump Station EL3	\$809,033	\$20,964	\$658,063	\$150,970
Sewage Pump Station EL4	\$170,622	\$6,530	\$5,001	\$165,620
Total	\$5,676,090	\$166,019	\$3,549,046	\$1,471,024

Table 5.6– Summary of Sewerage Rising Mains (as at 2008)

Rising Mains	Replacement Cost	Annual Depreciation	Accumulated Depreciation	Written Down Value
Sewage Pump Station A	\$425,946	\$8,519	\$17,038	\$408,908
Sewage Pump Station B (Tamrind Road)	\$26,438	\$755	\$26,438	\$0
Sewage Pump Station C (Nimrod Road)	\$294	\$8	\$294	\$0
Sewage Pump Station E (Duyfken Cres)	\$718,233	\$17,839	\$494,844	\$223,389
Sewage Pump Station H (Golf Course/Regen)	\$22,816	\$456	\$8,214	\$14,602
Sewage Pump Station G (Pandanus Road)	\$99,250	\$1,985	\$35,730	\$63,520
Sewage Pump Station F (Camping Grounds)	\$161,281	\$4,608	\$105,984	\$55,296
Sewage Pump Station EL1	\$132,778	\$2,656	\$47,800	\$84,978
Sewage Pump Station EL2	\$63,892	\$1,278	\$23,001	\$40,891
Sewage Pump Station EL3	\$413,540	\$11,815	\$413,540	\$0
Sewage Pump Station EL4	\$10,575	\$212	\$212	\$10,364
Total	\$2,075,042	\$50,131	\$1,173,095	\$901,948

Table 5.7 – Summary of Sewer Gravity Mains Asset Valuation (as at 2008)

Scheme	Asset Type	Replacement Cost	Annual Depreciation	Accumulated Depreciation	Written Down Value
Evans Landing	150uPVC	\$428,844	\$8,579	\$118,051	\$310,793
	100uPVC	\$5,476	\$110	\$100	\$5,366
	Subtotal	\$434,320	\$8,689	\$118,161	\$316,159
Nanum	150uPVC	\$848,328	\$16,970	\$185,122	\$663,206
	225uPVC	\$119,019	\$2,281	\$28,879	\$90,140
	Subtotal	\$967,347	\$19,351	\$214,000	\$753,346
Rocky Point	100AC	\$6,334	\$181	\$6,334	\$0
	150AC	\$1,480,861	\$42,317	\$1,480,861	\$0
	225AC	\$218,056	\$6,229	\$218,056	\$0
	300AC	\$23,241	\$664	\$23,241	\$0
	375AC	\$315,000	\$9,000	\$315,000	\$0
	450AC	\$96,256	\$2,750	\$96,256	\$0
	100uPVC	\$6,808	\$136	\$272	\$6,536
	150uPVC	\$123,490	\$2,471	\$6,274	\$117,216
	225uPVC	\$141,310	\$2,828	\$8,479	\$132,831
	300uPVC	\$31,826	\$637	\$1,910	\$29,917
	Subtotal	\$2,443,182	\$67,213	\$2,156,682	\$286,499
Trunding	150AC	\$1,068,928	\$30,546	\$1,007,846	\$61,082
	225AC	\$203,254	\$5,808	\$191,639	\$11,615
	Subtotal	\$1,272,181	\$36,354	\$1,199,485	\$72,696

5.5 Sewerage Asset Management System

The Town Authority maintains a spreadsheet of all as-constructed drawings of the sewerage asset management system. A comprehensive asset register is also maintained for all active and passive assets, such as pump stations and water mains. The registers contain information such as:

- Facility Number;
- Asset Number;
- Description of Asset;
- Location of Asset;
- Type of Asset;
- Year constructed;
- Condition of Asset (as per condition assessment);
- Estimated design and remaining life of asset;
- Replacement year;
- Current cost of asset;
- Depreciation; and
- Drawing reference.

All complaints received regarding the performance of the water supply system is recorded in a complaints register.

6. Operations and Maintenance

The following sections detail the current operations and maintenance strategies that have been adopted by the Town of Weipa.

6.1 Water Supply

6.1.1 Staff Resources

The Asset Supervisor manages the operation and maintenance of the water supply system and telemetry. The Building Certifier, Building Inspector and Town Planner assist the Asset Supervisor with the management of the water supply system.

The Weipa Town Authority is reviewing opportunities for all field staff to become certified to operate and maintain the water supply system.

Operations and maintenance tasks are undertaken by field staff with licensed sub-contractors engaged to undertake some activities on behalf of the Weipa Town Authority.

To ensure the system is maintained continuously, procedures have been developed for completing the in-house operations and maintenance activities and these are available as a reference tool for all staff when the Asset Supervisor is on leave. A mobile contact number is also available for emergency purposes.

6.1.2 Operations and Maintenance Schedule

The Weipa Town Authority currently does not maintain formal operational and maintenance management policies for the water supply system. Preventative maintenance activities are undertaken on some water supply assets and these tasks are overseen by the Asset Supervisor. Some maintenance activities are undertaken by the Weipa Town Authority and where necessary, outsourced to local contractors.

The Weipa Town Authority currently records the volume extracted from each bore on a monthly basis. Water quality test results are also recorded on a monthly basis in an excel spreadsheet. Where excessive water consumption is identified, the system is investigated for any leaks or breakages in the mains.

Currently the Weipa Town Authority is in the process of having the flowmeter at the water tower replaced, to ensure that daily consumption rates can be recorded in the future.

Table 6.1 provides a summary of the status of current preventative maintenance and scheduled servicing activities undertaken on the various water supply assets operated by the Weipa Town Authority.

Table 6.1 – Water Supply Operations and Maintenance Activities

Water Supply Asset	Current Status	Recommended Strategy
Telemetry	<ul style="list-style-type: none"> No preventative maintenance currently carried out. 	<ul style="list-style-type: none"> Implement a preventative maintenance schedule including inspections and testing of equipment.
Bore Pumps	<ul style="list-style-type: none"> No preventative maintenance currently carried out. 	<ul style="list-style-type: none"> Implement a reporting program for telemetry data for volume of water pumped from each bore.
Bore Rising Mains	<ul style="list-style-type: none"> Flushing mains undertaken by local plumbing contractors annually. 	<ul style="list-style-type: none"> Continue with current maintenance program.

Table 6.1 cont. – Water Supply Operations and Maintenance Activities

Water Supply Asset	Current Status	Recommended Strategy
Town Dam	<ul style="list-style-type: none"> • Surface aerator currently requires motor to be replaced every two years. • No preventative maintenance is currently carried out. • Routine operational checks performed on town dam. 	<ul style="list-style-type: none"> • Review aeration system selection and operation. • Implement a re-coating schedule for the inlet structure, and other metal structures.
High Lift Pumps	<ul style="list-style-type: none"> • High lift pumps are serviced on a regular basis with one pump serviced every four months. • Routine operational checks undertaken on high lift pumps. 	<ul style="list-style-type: none"> • Continue with rotational pump servicing strategy.
Lime Dosing and Chlorine Injection Facility	<ul style="list-style-type: none"> • Preventative maintenance of lime dosing facility and chlorine injection facility carried out by contractor. 	<ul style="list-style-type: none"> • Review and update current preventative maintenance schedule based on operations and maintenance manual.
Elevated Reservoir	<ul style="list-style-type: none"> • Informal preventative maintenance program carried out. Outcomes of maintenance program not documented. Tank, tower, inlet/outlet/scour pipes are all constructed from mild steel. 	<ul style="list-style-type: none"> • Formalise preventative maintenance program and documentation process. • Implement a monitoring program for the external and internal condition of the infrastructure. • Routine operational checks undertaken on elevated reservoir.
Water Mains	<ul style="list-style-type: none"> • Flushing of water mains undertaken by local plumbing contractors annually. • Lime dosing and chlorine injection carried out continuously to increase pH levels. Ongoing maintenance program implemented to reduce corrosion in the water mains. 	<ul style="list-style-type: none"> • Continue with current maintenance program. • Flow tests.
Nanum Booster Pump	<ul style="list-style-type: none"> • Pump is serviced on a regular basis. • Routine operational checks undertaken on booster pump. 	<ul style="list-style-type: none"> • Continue with pump servicing strategy.

6.2 Sewerage

6.2.1 Staff Resources

The operation and maintenance of the sewer treatment plant, pump station, rising mains and overflow tanks is managed by the Sewer Service Provider with assistance provided by the Civil Infrastructure Section of Rio Tinto Alcan.

The operation and maintenance of the sewer gravity mains and telemetry is managed by the Sewer Service Provider with assistance provided by the Civil Infrastructure Section of Rio Tinto Alcan.

The Weipa Town Authority is reviewing opportunities for all field staff to become certified to operate and maintain the sewerage system. Operations and maintenance tasks are undertaken by licensed sub-contractors and overseen by the Asset Supervisor.

When the Assets Supervisor is on leave, the Assistant Assets Supervisor takes over the role. Generic procedures have been developed and are available to the staff for referral while the Asset Supervisor is not on-site. A mobile contact number is also available to staff when the Asset Supervisor is on leave.

6.2.2 Operations and Maintenance Schedule

Currently, the Weipa Town Authority does not have any formal policies relating to the operations and maintenance of the sewerage system. Responsibility for the operation and maintenance of the sewerage system is shared between the Weipa Town Authority and Rio Tinto Alcan.

Rio Tinto Alcan currently monitors the effluent quality from the Awonga Sewage Treatment Plant on a monthly basis in accordance with the environmental authorities. Breakdown maintenance and emergency repairs are out-sourced to local plumbing contractors under standing offer arrangements. These contracts are generally awarded to local contractors. Currently, there is no monitoring or recording of effluent flows to the sewage lagoons undertaken.

Operation and routine maintenance procedures for all sewage pump stations and the Awonga Sewage Treatment Lagoons are documented in the contractor documentation for Waste Sewage Treatment and Liquid Waste.

Table 6.2 provides a summary of the status of current preventative maintenance and scheduled servicing activities undertaken on the various sewerage assets operated by the Weipa Town Authority (WTA) and Rio Tinto Alcan (RTA).

Table 6.2 – Sewerage Operations and Maintenance Activities

Asset	Asset Type	Activity	Frequency
Awonga Sewerage Lagoons (RTA)	Lagoons and Aerator Pit	<ul style="list-style-type: none"> Clear weeds at the edge of the pond and aerator pit. Remove rubbish from the edge of the pond. Draw off surface scum and remove trash. Adjust weir plates as required to maintain correct water levels and prevent embankment erosion. 	Fortnightly Fortnightly Fortnightly Fortnightly
	Treatment Plant Compound	<ul style="list-style-type: none"> Maintain grounds, fences and gates. Clear weed growth and ensure stormwater in access tracks are kept clear of silt. Remove grass and weeds from baffles. Check operation and free all gate boards, baffle boards, stop gates and weir plates. Check and adjust operation of inlet and outlet structures. Check operation and grease all penstocks. Check for ingress of groundwater and report to RTA. 	Fortnightly Six Monthly Six Monthly Six Monthly Annually Annually
Pump Stations (RTA) Note: Not all asset types will be applicable to every Pump Station. This will be determined by the configuration of each particular pump station.	Main Sewer Pumps	<ul style="list-style-type: none"> Run pumps separately on manual and check that motor amps and rising main pressure are within range. 	Twice weekly
		<ul style="list-style-type: none"> Check pressure gauge in valve chamber to ensure operational pressures for each pump are within range indicated. 	Twice weekly
		<ul style="list-style-type: none"> Report current ranges in excess or well below currents indicated. 	Twice weekly
		<ul style="list-style-type: none"> Check wet well level drops as each pump is separately run, for pump stations with two pumps. 	Twice weekly
		<ul style="list-style-type: none"> Check the level in the well is lowering to determine if pumps are operational. 	Twice weekly
		<ul style="list-style-type: none"> Check stop and run indicating lights on the control panel operate. 	Twice weekly
		<ul style="list-style-type: none"> Test flood alarm for operation of flashing light, if fitted. 	Twice weekly
		<ul style="list-style-type: none"> Leave selector switch in automatic position after checking operation of pumps. Report blockages and faults to RTA. 	Twice weekly
		<ul style="list-style-type: none"> Clear pump blockages when detected and report to RTA. 	Twice weekly
		<ul style="list-style-type: none"> Report motor or electrical faults immediately to the RTA. 	Twice weekly
		<ul style="list-style-type: none"> Change over duty/standby switch. 	Fortnightly
	Motor Sewer Pumps	<ul style="list-style-type: none"> Hose down build-up on floats or multirodes. 	Twice weekly
	Vent Fan	<ul style="list-style-type: none"> Check motor is running and belts have not broken. 	Twice weekly