MIRIAM VALE SHIRE COUNCIL

Registered Water Service Provider No. 87

STRATEGIC ASSET MANAGEMENT PLAN

FOR

WATER SUPPLY AND SEWERAGE SERVICES

Cardno

Engineering the Future

September 2004
Job No. 7700/05

CERTIFICATION

The development of this Strategic Asset Management Plan has been facilitated by Aneurin Hughes and Kevin Atkins of Cardno MBK based on submissions and contributions from the staff of Miriam Vale Shire Council. Components of this Strategic Asset Management Plan have specifically been developed to address the requirements of the Water Act 2000 for a registered Water Service Provider's Strategic Asset Management Plan.

In this regard, the Strategic Asset Management Plan addresses:

- the water supply and sewerage services for which Miriam Vale Shire Council is registered as a services provider;
- the ongoing requirements for operations, maintenance and renewals of the infrastructure used in providing these services; and
- the draft levels of service which are being targeted.

The elements of this Strategic Asset Management Plan that address the statutory requirements are considered appropriate for the service provider's infrastructure, the services for which Miriam Vale Shire Council is registered and in keeping with the current expectations of ratepayers, the constraints of Local Government budgetary allocations, and to the extent possible with regard to the information provided for inclusion in the plan.

In making this Certification, due consideration has been given to:

- the requirements of Section 408 of the Water Act 2000 and the Guideline for preparing Strategic Asset Management Plans (NR&M, February 2002);
- the need for operational, maintenance and renewals strategies, processes, procedures and actions to achieve the target levels of service standards; and
- the need for adequate financial arrangements to implement all the elements of the Strategic Asset Management Plan.

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Senior Principal & Manager
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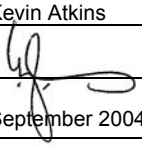
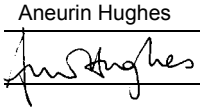
APPENDICES

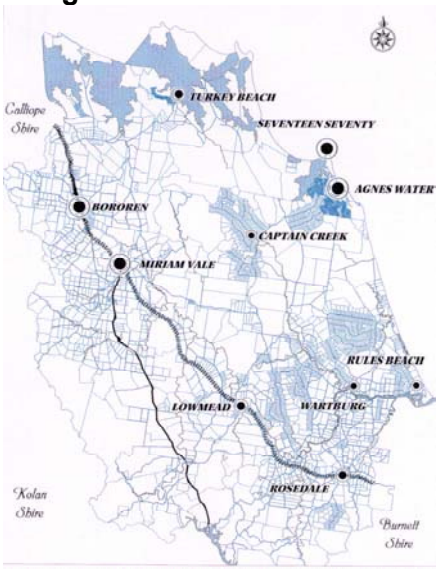
CLIENT	**Miriam Vale Shire Council**			
DOCUMENT NAME	Strategic Asset Management Plan			
	Preliminary		**Author**	Kevin Atkins
	Draft		**Signature**	
	Draft Final		**Date**	September 2004
	Final	✓	**Reviewer**	Aneurin Hughes
	Superseded		**Signature**	
	Other (Specify)		**Date**	September 2004

1.0 OVERVIEW OF REGISTERED SERVICES

1.1 Introduction

Miriam Vale Shire is a small rural Shire approx 60km south of Gladstone. - Figure 1 outlines the Shire limits.

Figure 1 Miriam Vale Shire



Miriam Vale Shire has experienced significant growth over the past decade, particularly in the townships of Agnes Water and Seventeen Seventy. This growth has necessitated Council's attention be focused on the provision of appropriate services to provide an adequate level of service to residents whilst protecting the natural environment. In developing Council's infrastructure, the following issues need to be addressed:

- improving water quality,
- keeping up with growth trends in urban areas,
- having a reliable and economic water supply for ratepayers,
- having environmentally sustainable wastewater disposal systems, and
- encouraging water conservation practices within the shire.

The provision of potable water supplies meeting appropriate standards is one of Councils major initiatives. The rapid development of the Agnes Water/ Seventeen Seventy communities has placed significant pressure on the existing water supply and sewerage systems. With the State Government placing a moratorium on the use of surface waters in the Baffle Creek catchment, the location of suitable new sources to meet the demands of the next 50 years has been given priority. Until a new source can be located and constructed, detailed strategic asset planning is difficult to achieve.

This Strategic Asset Management Plan is the first to be produced by Miriam Vale Shire Council and includes assumptions that will be confirmed over the next 2 years with the conclusion of a number of strategic studies. Council has recognized the need to improve its strategic planning and has allocated additional resources to ensure that appropriate asset management plans are produced and implemented.

1.2 Overview

Miriam Vale Shire operates four separate water supply schemes and two sewerage schemes. The overall annual budget for operating and maintenance of the existing schemes is approximately $500,000 and with over $2.9m of planning and capital development works provided for in the 2004/05 financial year.

Council has a Local Law that specifies the provision of rainwater tanks within Defined Water Areas and a Local Law Policy that specifies requirements for certain classes of buildings in the Defined Water Area at Agnes Water. Although the use of rainwater is relevant in relation to Demand Management it is not a Council provided service

TABLE 1.1 : Type of Services Provided

Type		Scheme Name
Retail water	✓	Miriam Vale, Bororen, Agnes Water, Seventeen Seventy
Sewerage	✓	Seventeen Seventy, Agnes Water

Water Supplies
Agnes Water
The existing Agnes Water water supply scheme comprises:

- Sourcing raw water from an open trench in the sand mass south of the township. The raw water source is supplemented by 6 bores.
- A water treatment plant.
- Pumping treated water into the distribution system with an elevated storage tank serving the Eastern Zone only. No development will be approved in the Western Zone until a water source is secured.
- 19.8 km of trunk and reticulation mains and service connections; and
- 839 water connections

Bororen
The existing Bororen water supply scheme comprises:

- A simple system of 4 bores, chlorinator and elevated reservoir;
- 5.6 km of trunk and reticulation mains and service connections; and
- 85 water connections

Miriam Vale
The existing Miriam Vale water supply scheme comprises:

- Water from Baffle Creek with a small percentage (approximately 10%) of bore water to supplement the system;
- A water treatment plant;
- Pumping treated water into the distribution system with an elevated storage tank in the town;
- 13.1 km of trunk and reticulation mains and service connections; and
- 188 water connections

Seventeen Seventy
The existing Seventeen Seventy water supply scheme comprises:

- Water was drawn from a sand mass south of the town via an open trench to supply Council's Caravan Park, public jetty and a proposed future motel. Bores now exist at the trench site, caravan park & to the west of Seventeen Seventy with further bores planned.
- Chlorination as the only form of treatment
- 1.7 km of Trunk and reticulation mains with 3 service connections

Sewerage Schemes

Seventeen Seventy

The existing Seventeen Seventy sewage scheme comprises:

- A gravity sewer system that serves part of the developed area;
- One sewage pump station that receive all of the sewage flows and transfers them to Seventeen Seventy sewage treatment plant;
- The Seventeen Seventy sewage treatment plant which is a Smith and Loveless package treatment plant and an effluent storage lagoon;
- Discharge of the treated effluent is by infiltration into the ground, absorbtion by the vegetation in the lagoon or evaporation
- 3.3 km of gravity mains, pressure mains and service connections; and
- 11 connections

Agnes Water

The existing Agnes Water sewage scheme comprises:

- A gravity sewer system that serves part of the developed area.. Some of the area serviced (approx 5%) is connected via septic tanks with effluent only transported.
- Seven sewage pump stations that receive all of the sewage flows and transfer them to Agnes Water sewage treatment plant;
- The Agnes Water sewage treatment plant which consists of facultative lagoons and effluent storage ponds;
- 27.5 km of gravity mains, pressure mains and service connections; and
- 376 connections

2.0 NATURE AND EXTENT OF SERVICES

Tables 2.1, 2.2 and 2.3 outline the types of service offered and the scale of the operations. Agnes Water has widespread water and sewer services available in the town. The water service is potable and the sewer service is reliable, attended and developed.

The Bororen and Seventy Seventy water supplies are non potable supplies.

TABLE 2.1: Overview of Schemes

Scheme Name	Communities Served	Service	No. of Connections
Miriam Vale	Miriam Vale	Water Supply	188
Bororen	Bororen	Water Supply	85
Agnes Water	Agnes Water	Water Supply	839
		Sewerage	376
Seventeen Seventy	Seventeen Seventy	Water Supply	3
		Sewerage	11

As at Jun 03

TABLE 2.2: Nature of Service

Water Supply	Nature of Service				
Scheme Name	Potable	Non-Potable	Pressurised On Demand	Constant Flow	Dual Reticulation
Miriam Vale	✓		✓		
Bororen		✓	✓		
Agnes Water	✓		✓		
Seventeen Seventy		✓	✓		

Sewerage	Nature of Service			
Scheme Name	Conventional Gravity	CED	Vacuum	Other
Agnes Water	✓			
Seventeen Seventy	✓	✓		

TABLE 2.3: Projected Demand

Water Supply Services			
Scheme Name	Water Demand Average Day (kL/d)		
	Current	2010	2015
Miriam Vale	100	100	110
Agnes Water	200	To be confirmed once suitable source located.	16000+EP
Seventeen Seventy	26		1500EP
Bororen	40	40	40

Sewerage Services			
Scheme Name	Sewerage Flow (either kL/d or EP)		
	Current	2010	2015
Agnes Water	1000EP		16000+
Seventeen Seventy	400EP	490EP	1500EP

Prediction of demands in Bororen and Miriam Vale are based on historical production figures. Meter readings are taken at some supplies/discharges but are not analised for trends. Note also that detailed planning is underway for the location of a suitable water source for Agnes Water and Seventeen Seventy. Planning includes and allowance for up to 18,000EP in 2015. However the difficulties in locating a suitable source may see this figure revised.

3.0 INFRASTRUCTURE DETAILS

3.1 Water Supply

The tables following outline the infrastructure used for each water supply scheme and the current asset values of water supply infrastructure.

TABLE 3.1 : Summary of Water Supply Infrastructure – Miriam Vale

Scheme Name		Scheme Miriam Vale	
Source		*Name: Baffle Creek (Surface Water)* *Allocation: 72.74ML/yr*	*Name: Bore 1-3* *Capacity: 10 L/S*
Treatment Plant		*Process: Aeration, Clarification, Filtration, Chlorination* *Capacity = 6.55 L/S (1.15 ML/d)*	
Reservoir	**Name**	*1 No - Tower*	*Storage tanks (3) at WTP*
	Capacity	*230 KL*	*60,000 litres Total*
Pump Stations		*Nil – Pump at WTP*	
Length of Mains		*11.7 km*	
Population Serviced		*360 – Source Census 01*	
Annual Water Consumption		*31ML*	
Per Capita Water Consumption		*500 l/EP/d peak*	

TABLE 3.2 : Summary of Water Supply Infrastructure - Bororen

Scheme Name		Scheme Bororen
Source		*Name: Bores 1 -4* *Capacity: 5 L/s*
Treatment Plant		*Process: Disinfection by chlorination only (refer to Section 5.1.2)*
Reservoir	**Name**	*1 No.*
	Capacity	*195 Kl*
Pump Stations		*1 No - 4 pumps give fire fighting capacity*
Length of Mains		*5.6 km*
Population Serviced		*200*
Annual Water Consumption		*15 ML*
Per Capita Water Consumption		*250l/EP/d peak*

TABLE 3.3 : Summary of Water Supply Infrastructure – Agnes Water

Scheme Name		Scheme Agnes Water
Source		*Name: Trench 1 and 2* *Name: Bore 1-6* *Allocation: N/A* *Total Source Capacity -Bores and Trenches: 10 L/S*
Treatment Plant		*Process: Clarification, filtration, and disinfection (chlorination)* *Capacity = 8.5 L/S (7.5 ML/d) (with WTP bypass 15 l/s)*
Reservoir	**Name**	*3 No.*
	Capacity	*4.9 ML*
Pump Stations		*1 No. - Booster at Reservoir (3 pumps)*
Length of Mains		*19.84 km*
Population Serviced		*1000EP*
Annual Water Consumption		*73ML*

TABLE 3.4 : Summary of Water Supply Infrastructure – Seventeen Seventy

Scheme Name		Scheme Seventeen Seventy
Source		*Name: Trench* *Name: Bore 1-3* *Allocation: N/A* *Total Source Capacity -Bores and Trenches: 6 L/S*
Treatment Plant		*Process: Disinfection (Chlorination)*
Reservoir	**Name**	*4 No.*
	Capacity	*144 KL*
Pump Stations		*Pump at borehead.*
Length of Mains		*1.7 km*
Population Serviced		*400EP*
Annual Water Consumption		*9.5 ML*

TABLE 3.5 : Water Supply Asset Values

	2002 Replacement Cost	Accumulated Depreciation at 2002	Annual Depreciation	WDCC at 2002
Miriam Vale	$1,588,807	$723,880	$33,390	$864,927
Bororen	$598,688	$317,814	$12,729	$280,874
Agnes Water/1770	$2,831,061	$840,330	$60,374	$1,990,731
Total	**$5,018,556**	**$1,882,024**	**$106,493**	**$3,136,532**

Note: Valuations are based on the 1999 asset register and valuations undertaken at that time by Cardno MBK Ltd. Additions to the asset valuation have been made at cost as determined by the job costs in Councils financial system. A new valuation is to be undertaken in the 2004/05 financial year.

Figure 3.1 provides a schematic layout of the Agnes Water water supply scheme.

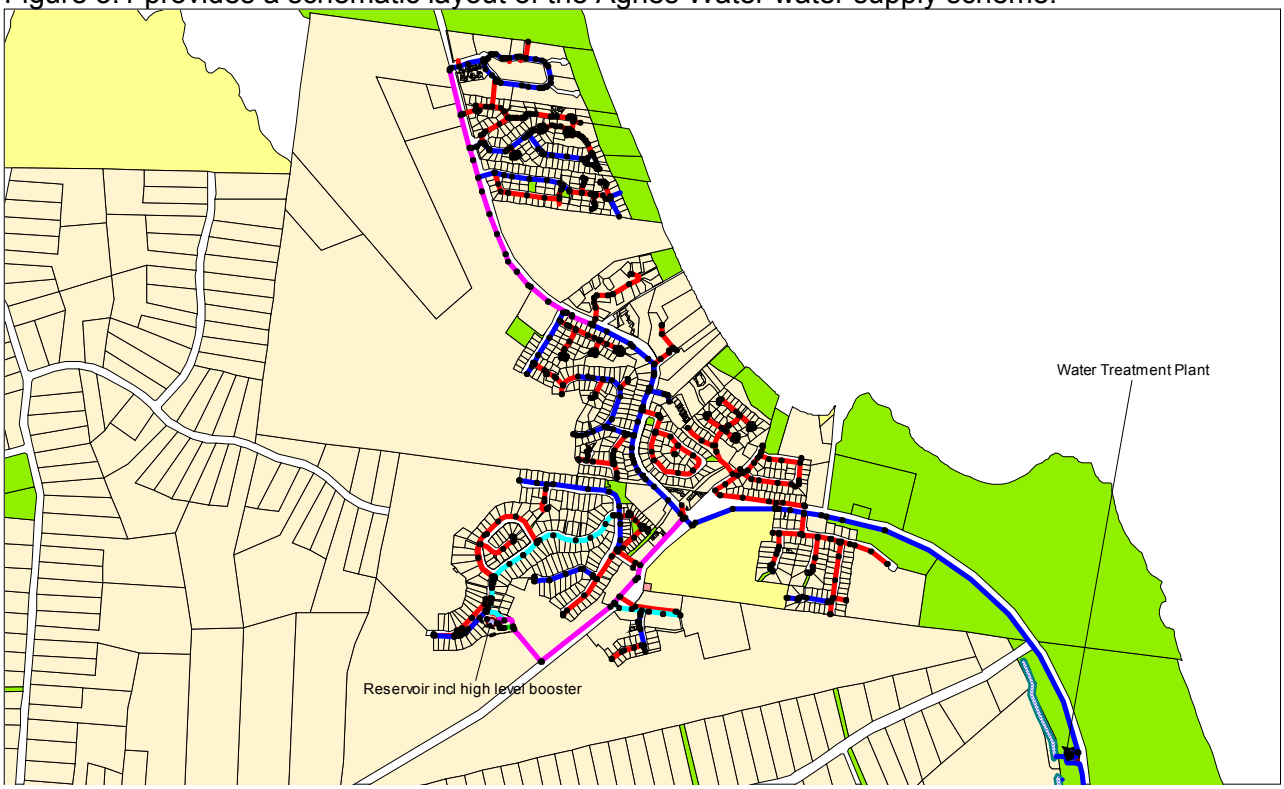


FIGURE 3.1 : Agnes Water Water Supply Schematic Layout

Figure 3.2 provides a schematic layout of the Bororen water supply scheme.

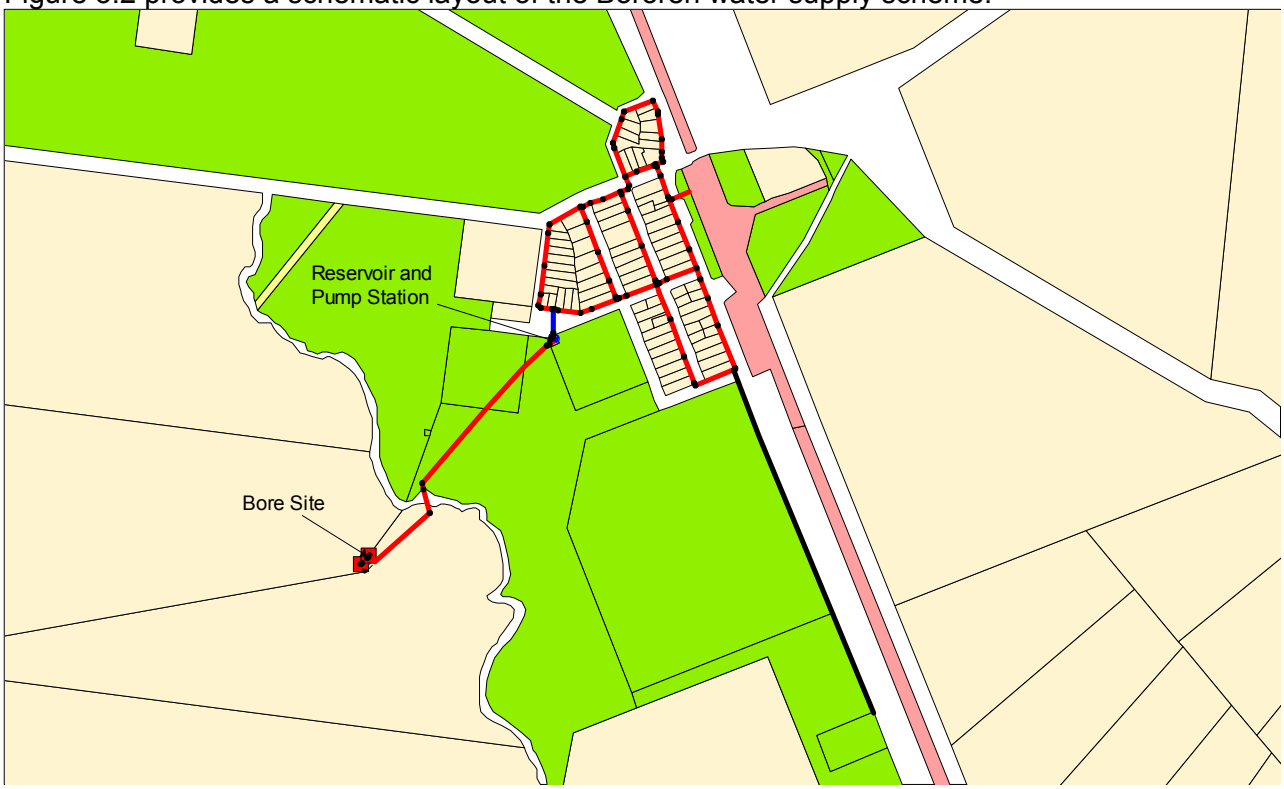


FIGURE 3.2 : Bororen Water Supply Schematic Layout

Figure 3.3 provides a schematic layout of the Miriam Vale water supply scheme.

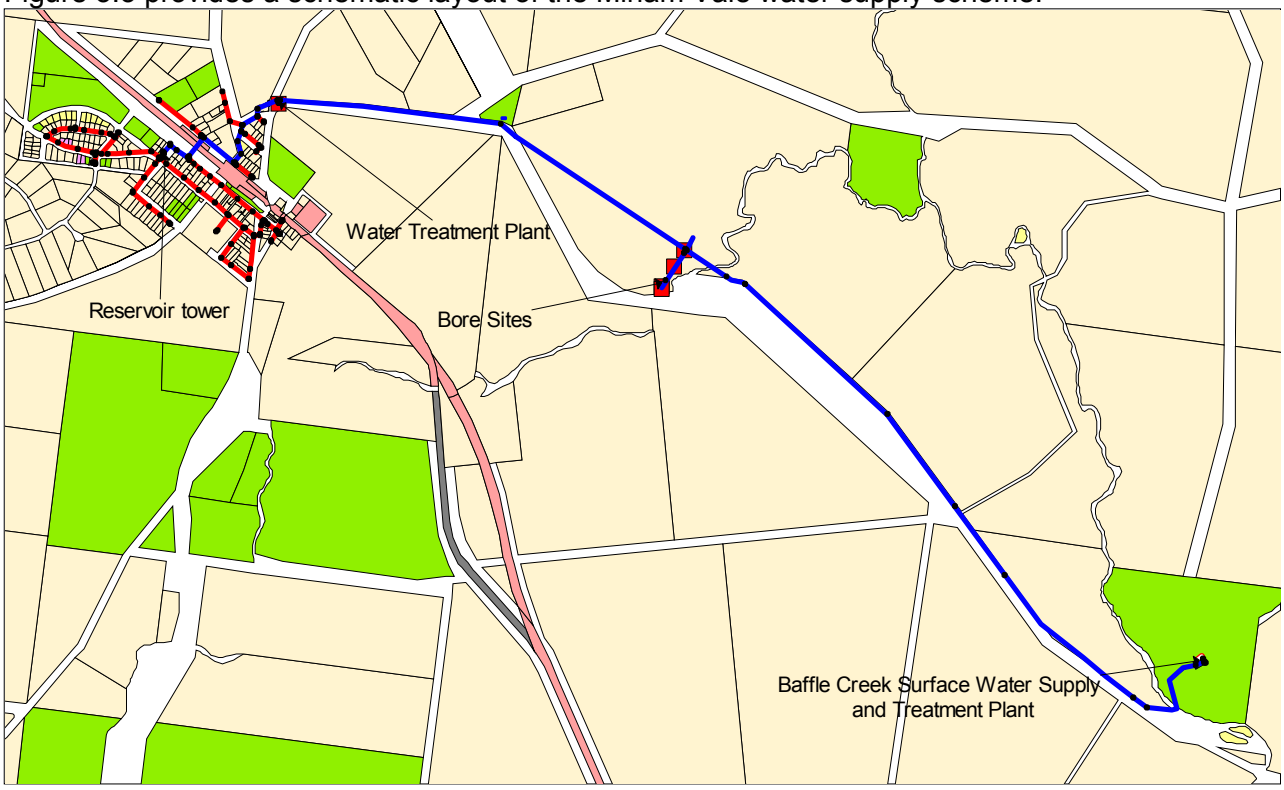


FIGURE 3.3 : Miriam Vale Water Supply Schematic Layout

Figure 3.4 provides a schematic layout of the Seventeen Seventy water supply scheme.

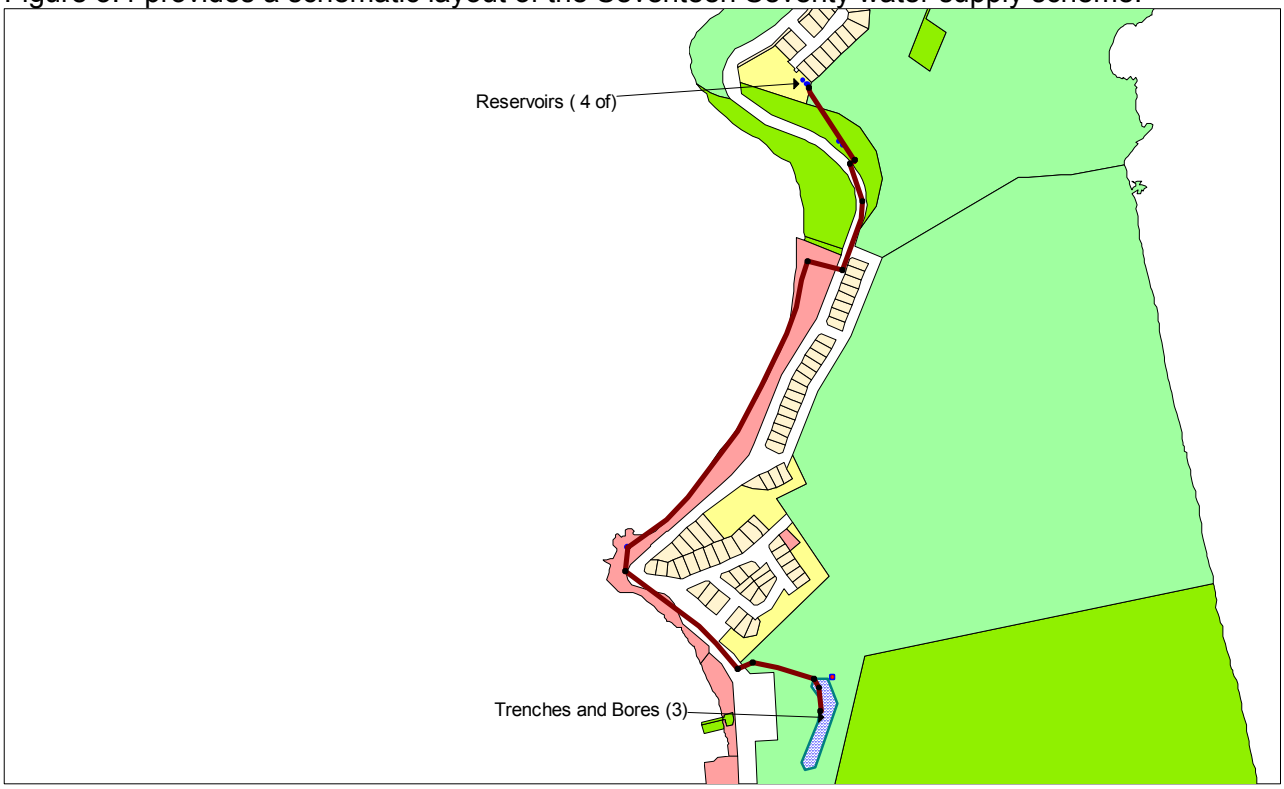


FIGURE 3.4 : Seventeen Seventy Water Supply Schematic Layout

3.2 Sewerage

The following tables outline the sewerage infrastructure for each scheme and the current asset values of sewerage infrastructure.

TABLE 3.6 : Summary of Sewerage Infrastructure- Seventeen Seventy

Scheme Name	Scheme Seventeen Seventy
Population served*	*300EP when caravan park full. Base population 65EP*
Treatment Plant Capacity Process	*Smith & Loveless Package Plant – to be decommissioned in Dec 2004*
Average day flow (KL/d)	*Not metered*
EPA **Effluent Standards**	 *BOD 20mg/l* *SS - Unknown*
No. of Pump Stations	*1*
Length of Mains **Rising mains** **Gravity mains**	 *2.27 km* *0.9 km*

TABLE 3.7 : Summary of Sewerage Infrastructure - Agnes Water

Scheme Name	Scheme Agnes Water
Population served*	*376*
Treatment Plant Capacity Process	*Facultative lagoons (1500 EP)*
Average day flow (KL/d)	*18*
EPA **Effluent Standards**	*Licencing Agreement No IDAS0044* *BOD 20mg/l* *SS – 30 mg/l*
No. of Pump Stations	*9 plus 1 under construction*
Length of Mains **Rising mains** **Gravity mains**	 *9.7 km* *21.6 km*

Table 3.8: Asset Register Summary - Sewerage Assets

	2002 Cost	Accumulated Depreciation. at 2002	Annual Depreciation	WDCC at 2002
Agnes Water Sewerage	$7,325,997	$124,343	$26,000	$7,201,654
Seventeen Seventy Sewerage	$1,020,576	$248,617	$23,000	$186,547
Sub Total	**$8,346,573**	**$372,960**	**$49,000**	**$7,388,201**

Note: Valuations are based on 1999 asset register and valuations undertaken at that time by Cardno MBK Ltd. Additions to the asset valuation have made at cost as determined by the job costs in Councils financial system. A new valuation is to be undertaken in the 2004/05 financial year.

Figure 3.5 provides a schematic layout of the Seventeen Seventy sewerage scheme.

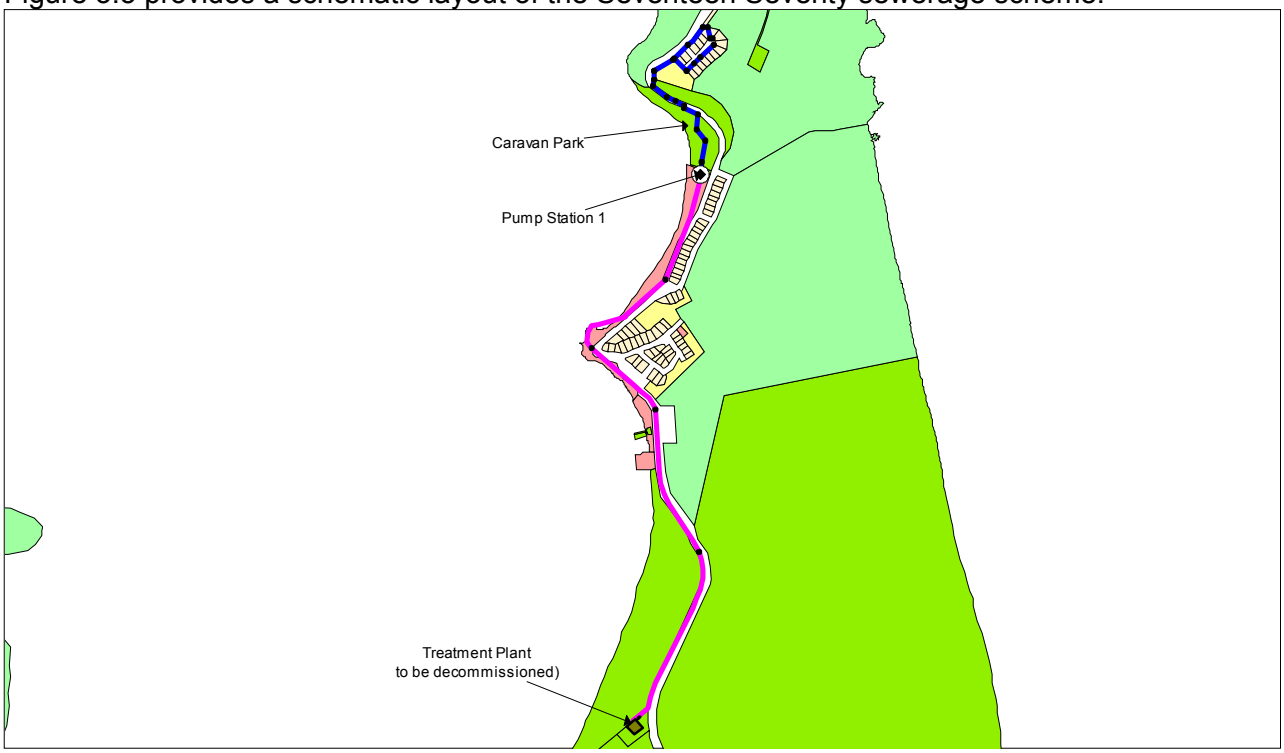


FIGURE 3.5 : Seventeen Seventy Sewerage Schematic Layout

Figure 3.6 provides a schematic layout of the Agnes Water sewerage scheme.

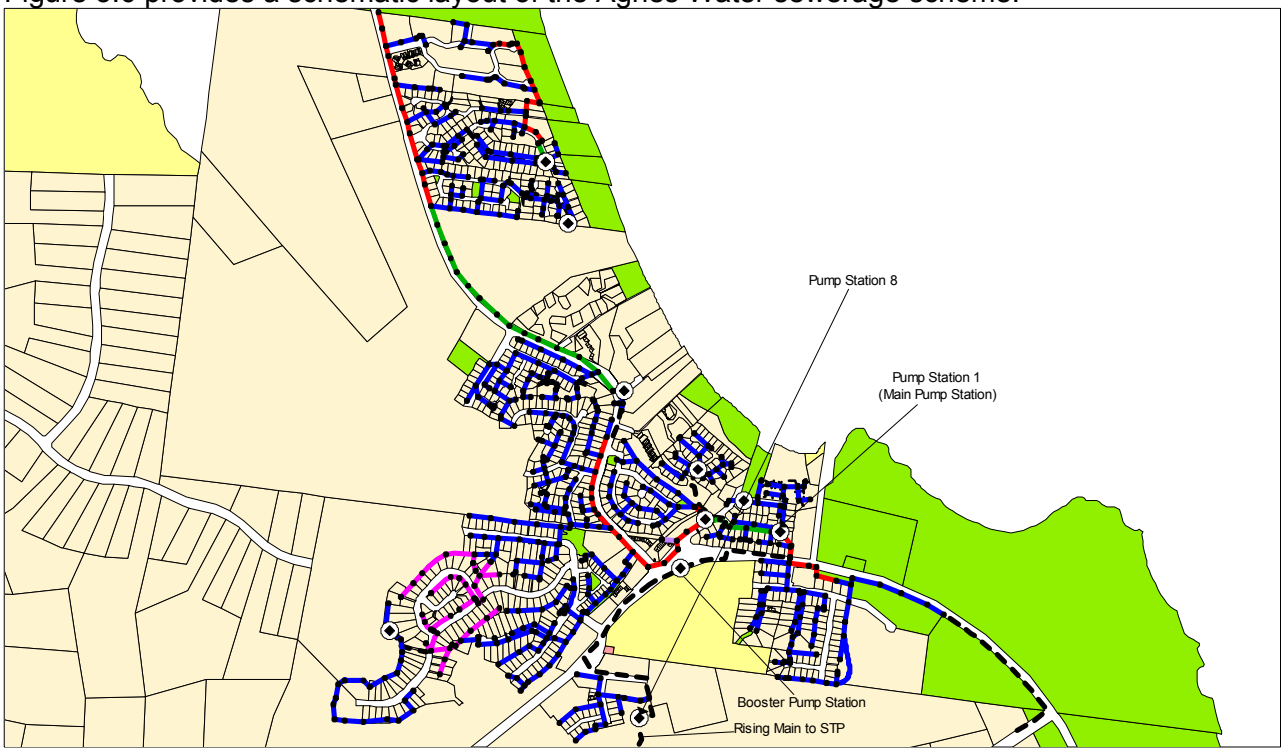


FIGURE 3.6 : Agnes Water Sewerage Schematic Layout

4.0 STANDARDS OF SERVICE

Table 4.1 indicates the levels of service set by Council. These levels of service have been set through:

- Historical events known and where possible recorded
- Discussions with field staff
- Assessment of Total Management Plan (2003)

TABLE 4.1 : Adopted Performance Indicators and Targets

Performance Indicators (PI)	Target			
	Seventeen Seventy	**Bororen**	**Miriam Vale**	**Agnes Water**
Water Supply – Continuity				
Unplanned interruptions per 1000 connections/year	1500	60	27	10
Restoration of services due to unplanned interruptions	90% restored within 5 hours	90% restored within 5 hours	90% restored within 5 hours	90% restored within 5 hours
Ratio of unplanned to planned interruption incidents	3	3	3	3
Response time to all events	90 % responded to within 3 hours	90 % responded to within 3 hours	90 % responded to within 3 hours	90 % responded to within 3 hours
Adequacy and Quality of Normal Supply				
Minimum water pressure and/or flow expectation at boundary	12 metres	22 metres	22 metres	22 metres
Compliance with NHMRC Guidelines				
- microbiological	Not a Potable supply	Not a Potable supply	>90%	>90%
- physical/chemical			>90%	>90%
Drinking water quality complaints per 1000 connections/ year	2000	180	50	12
Drinking water quality incidents/year	6	15	10	10
Effective Transport of Waste Effluent (sewage only)				
Total sewage overflows per 100km/ year	100			10
Sewage overflows to customer property per 1,000 connections/year	100			13
Odour complaints per 1,000 connections/year	100			13
Response time to all events	3 hours			4 hours
Continuity in the Long-Term				
(a) Water				
Water leaks/breaks per 100 km mains/year	300	90	17	25
System water loss (l/connection/day)	Unknown	Unknown	Unknown	Unknown
(b) Sewerage				
Sewer main breaks and chokes per 100 km/year	4			10
Sewer inflow/infiltration – ratio of peak day flow to average day flow	1			2

Note: Performance indicators which are not required until October 2007 have been excluded.
Performance targets for some measures appear distorted due to the low number of connections and the small mains lengths

The Miriam Vale Shire Council Information System is used to measure the following Service Levels:

- Customer Complaints
- Interruptions in Water and Sewerage Services
- Sewer and Water System Failures
- Operational data

Council accepts that there is a need to improve data management to allow for improved planning and reporting. It has commissioned a review of its current data management practices with a view to implementing a suitable and appropriate asset management system.

Any occurrence of these events requires the filling out of the standard complaint/request for service form (see Appendix A2) and the service disruption form (see Appendix A3). This allows the timely checking of the information and the cross referencing of the data.

The data from the information is incorporated into a monthly report to Council. This report compares the actual performance with the service levels. An Annual Report is prepared July each year which is a collation of the previous 12 monthly reports.

The level of service requirements are detailed in the Customer Service Standard Document.

5.0 SYSTEM OPERATION AND MAINTENANCE – WATER SUPPLY

5.1 System Operation – Water Supply

Staff under the management of the Director Engineering Services undertake the maintenance and operational activities.

The following outlines the operational aspects of each of the systems.

5.1.1 Agnes Water

Bores along the side of Springs Rd are the primary water source. The bores supply raw water as initiated by the water treatment plant which operates until the clear water reservoir is full.

An alternative source is the trenches adjacent to the water treatment plant (see Figure 3.2). The trenches are only used in emergency situations as the raw water requires additional treatment.

At the water treatment plant, the raw water undergoes clarification (removing of suspended particles), filtration, and chlorination to ensure that the water is a drinkable quality. The High Lift Pumps then transfer the treated water to the Town Water Reservoirs until they are full.

A single 150/200 mm diameter water main conveys water to the town under the pressure of the Town Water Reservoir level. At the reservoirs a small booster pump station maintains water pressure and fire fighting capacity to high locations

5.1.2 Bororen

The 4 Bororen bores are located at the rear of the main township. The bores supply raw water to the reservoir. Prior to entering the reservoir, chlorine is injected into the delivery line.

At the reservoirs a booster pump station maintains water pressure and fire fighting capacity to the village. During power failures there is sufficient pressure available from the reservoirs to maintain an base flow to consumers.

The Bororen water supply is listed as being a non-potable supply even though the water is chlorinated. The raw water has a high iron content and no treatment for iron removal is carried out. As complaints are regularly received about the iron content and its effects, Council sees the improvement of the final water quality at Bororen as an important issue that needs addressing in the near future.

5.1.3 Miriam Vale

Baffle Creek is the primary water source with water from bores along the side of Fingerboard Rd providing a supplementary supply as necessary. Water is pumped from Baffle Creek as initiated by the water treatment plant which operates until the clear water reservoir is full.

An alternative source is 2 surface water wells.

At the water treatment plant, the raw water undergoes coagulation and settlement (to remove suspended particles), filtration, ph adjustment and chlorination to ensure that the water is a drinkable quality.

Treated water from the Clearwater storage tanks is pumped to the Miriam Vale Tower through a 150 mm diameter pumping main. The main has 100mm off-takes to supply the township.

5.1.4 Seventeen Seventy

The water is pumped from 3 bores and one trench through a polyethylene pipeline to 4 storage tanks to the north of the Seventeen Seventy Camping Grounds. Bores along the side of Captain Cook Drive are the primary water source and are supplemented by a trench as required.

Controls for the pumping are through a float and pressure switch at the storage tanks. When the pump is operating, chlorine is injected. The reduced pressure of 12m head is sufficient for the operations of the Camp and ablution facility.

No water is supplied to any households with the primary consumer being the Seventeen Seventy Camping Grounds. The Camp can swell to 5 times the base population during summer and holiday periods and this population explosion places additional demands on the system.

5.2 System Monitoring and Control

5.2.1 Agnes Water

All system controls are located at the water treatment plant and consist of level probes in tanks with a radio link between remote sites. The plant start-up is initiated from the clearwater tank at the treatment plant to each of the bores via a radio link. Pumping to the town reticulation is based on the reservoir level which initiates the pumps at the treatment plant.

After-hours call-outs are to the treatment plant operator who alerts specialists for electrical, mechanical or plumbing faults of they cannot be readily rectified.

Standby facilities are available for:

- Dosing pumps
- Dam Supply Pumps
- Electrical supply to Treatment Plant by Generator

The control system provides alarms for pumps and reservoir levels. Communication with the plant operator is by mobile phone The reservoirs have visual level indication and no telemetry is installed at present.

5.2.2 Bororen

The bore pump start-up is initiated from the reservoir by a radio link A magflow meter at the bore records the flow to the reservoir.

After-hours call-outs are to the maintenance staff who alert specialists for electrical, mechanical or plumbing faults if they cannot be readily rectified.

An alarm dialer is installed at the reservoir and alerts operators of alarms for pumps and low flow levels. The reservoirs have visual level indication and no telemetry transmitting information back to a central base station is installed at present.

5.2.3 Miriam Vale

The Treatment plant start-up is initiated by the level in the reservoir which is communicated via a radio link. The pump start sequence at the bores and surface intakes is initiated from the Miriam Vale WTP by a radio link

After-hours call-outs are to the maintenance staff who alert specialists for electrical, mechanical or plumbing faults if they cannot be readily rectified.

An alarm dialer is installed at the reservoir and alerts operators of alarms for pumps and low flow levels .The reservoirs have visual level indication and no telemetry transmitting information back to a central base station is installed at present.

5.2.4 Seventeen Seventy

Control of the system is via a pressure switch and float valves at the reservoirs Chlorine is injected only when the pump is operating.

No telemetry or warning devices are installed.

5.3 Maintenance Strategies – Water Supply

Maintenance is carried out on plant and reticulation as required to maintain service.

Maintenance on the reticulation system has been reactive except for meter replacement and installation.

Key water supply maintenance strategies that are undertaken on a regular basis are outlined in Table 5.1.

TABLE 5.1 : Water Supply Maintenance Activities

Asset Group	Maintenance Activity	Frequency	Comments
Mains	Repair leaks and bursts	As required	
	Pipe inspection underground main	When appropriate	When opportunity arises (eg, main break or connection to existing main).
	Swabbing, air scouring or pigging.	As required	Depends on: • energy consumption (kWh/Ml) for pumping mains; • levels of service; or • operational problems. Minimum frequency – 20 years – dependent on situation.
Valves	Exercising valves >250 mm diameter, valves with gears or critical valves.	Annually	Fully close valve, open until quarter open to remove debris in seating then re-close valve
	Scour valves	Monthly Bororen - weekly	Depends on water storage levels and demand
	Other valves	12 monthly	For non-critical valves the maintenance frequency depends on corrosiveness of water, rate of sand deposition, etc. A system of identifying direction of valve opening/closing should be developed.
Air Valves	Inspection and test	Annually	
PRV's and other specialist valves	Inspection and adjustment	As per manufacturer's instructions	Specialist valves located at treatment plants
Hydrants	Exercise	2 years – average	Flow pressure test on critical hydrants. Pigging of mains complete and new hydrants installed
	Flushing	As required	Depends on service levels, deterioration of water quality in dead ends or other operational problems
Valve & Hydrant boxes & markers	Inspection	2 years (max)	Inspect for damage. Inspection can be in conjunction with valve/hydrant maintenance Currently being reviewed.
Backflow prevention device	Annual	Refer requirements of AS 3500.	
Services	Inspection	As required (when meters read)	Undertaken in conjunction with meter readings
Meters (bulk)	Inspection	As required (when read)	Inspect meter.
Meters (domestic)	Repair/replace	As required (when read)	When unusual readings are observed or after consumer complaints.
Reservoirs	Desludging Inspection (structural)	3 – 5 years Annually	Depending on level of sediment

Asset Group	Maintenance Activity	Frequency	Comments
Intake	Inspection	Weekly	
Pumps	Standby-duty reversal	Weekly or as required	
	Detailed pump check	Annually	Undertaken on a 12 month rolling basis. Refer to maintenance manual
Motors	Standby-duty reversal	Weekly or as required	
	Detailed motor check	Annually	Refer to maintenance manual
Switchboards	Detailed Inspection by electrician	Annually	Most less than 2 years old
Treatment Plant	Chlorination	Daily	Undertaken on weekdays
Bores	Surface inspections	Daily	Undertaken on weekdays
Structures	Inspection of critical structures	Annual	Inspect and report areas of maintenance

Specific maintenance strategies for the water treatment plants have been developed.

5.4 Documented Procedures – Water Supply System Operation & Maintenance

Whilst some documentation/schedules exist for operational practices/requirements they are not complete. Council has in place a programme for the preparation of comprehensive operation and maintenance manuals for all asset groups. Documentation will be developed that is appropriate, user-friendly and suitable for incorporation into a Quality Management System and/or Maintenance Management System. Much of the information will be in tick box format to act as prompts rather than any verbose instructions. Flow charts will be used where appropriate.

Generic Operation and Maintenance procedures such as those produced by the LGAQ have been considered and are being implemented.

Full documentation of the Water Supply Maintenance and Operations procedures will be completed by 1 October 2006

5.5 Procedure Review

Procedures are authorised by the Director Engineering Services. Once the processes have been established, a review will be undertaken to identify more cost-effective approaches (i.e., predictive rather than preventive maintenance). This review should be undertaken every 3 years. This review will involve field staff who will be in a position to provide feedback and ideas.

Staff undertake procedural reviews to assess the following:

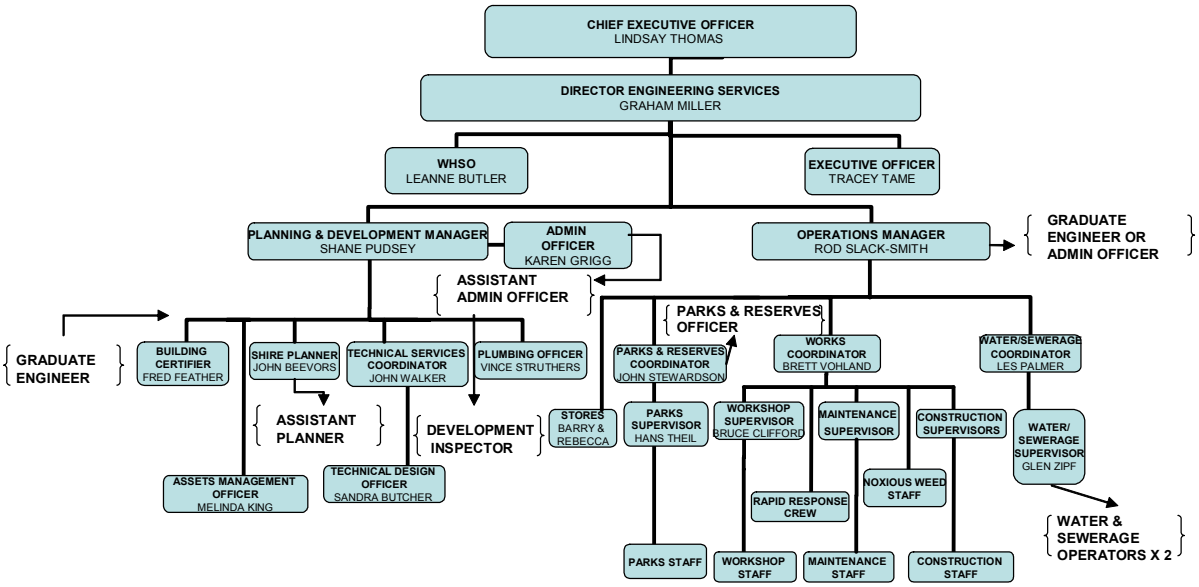
- Effectiveness of the procedure to achieve the objective;
- Resource availability; and
- Workplace Health and Safety

The results of the review are written on a copy of the procedure and submitted to the Director Engineering Services. Changes may be incorporated and the procedure is reissued and re-implemented as required.

5.6 Staffing

The Chief Executive has the overall responsibility to provide the water and sewer services. The Director Engineering Services manages this function. Activities, budgets and performance indicators are notified via the Council Operational Plan.

To achieve these aims the Director Engineering Services has technical and support staff located at the Council Offices in Roe Street Miriam Vale. The current staff structure of Miriam Vale Shire Council Engineering department is as follows.



CORPORATE STRUCTURE – ENGINEERING

JUNE 2004

Council has adopted policies for:

- Workplace Health and Safety Policy December 2002
- Quality Assurance Policy April 1999
- Equal Employment Opportunity Policy September 1997
- Code of Conduct July 1997
- Staff – Official Misconduct Policy Feb 1994

Position descriptions are reviewed annually as part of staff performance appraisals and contain reference to position competency requirements.

5.7 Performance Monitoring

Data for each of the performance indicators in Table 4.1 is collected on an ongoing basis and the performance of the systems assessed. These indicators are mirrored in the Customer Service Standard.

If variations to the declared levels of service are noted the data is assessed to find if:

- Any form of maintenance could have cost effectively prevented failures effecting service level;
- The variation is a statistical aberration; and/or
- Be considered for replacement and inclusion on the capital works program.

Appropriate changes to procedures and are considered for adoption. Any change in Service Levels are considered on the basis that a change in the Customer Service Standard needs to be approved by the regulatory body and then advised to each customer.

6.0 SYSTEM OPERATION AND MAINTENANCE - SEWERAGE

6.1 System Operation – Sewerage

6.1.1 Seventeen Seventy

One local catchment pump station services the caravan park and approx 20 properties at the end of Orton Court. Treatment is at a small package plant with effluent disposal to an unlined lagoon in sandy soils adjacent to the Round Hill Estuary.

Effluent discharge is basically to the groundwater immediately alongside the estuary. This has raised environmental concerns and Council is addressing these by undertaking the design of a pipeline to connect to Agnes Water. It is expected that the treatment plant will be decommissioned in December 2004.

6.1.2 Agnes Water

Six local catchment pump stations collect and pump sewage to the main town pump station. This main station has insufficient capacity and is supplemented by a booster station adjacent to Roundhill Road. A further small pump station servicing the Tavern Rd area pumps directly into the main rising main. A new pump station is being constructed to service a subdivision to the North of the town.

The raw sewerage is pumped from the township approx 10km to Lot 21 where it is treated using lagoons and settlement. The treatment facility includes 35ML of treatment and wet weather storage lagoons and a 35 hectare irrigation area.

Sewer reticulation faults and overflows are rare.



6.2 System Monitoring and Control

6.2.1 Seventeen Seventy

Pumps stations are level controlled with sufficient capacity for normal operations. Wet weather does not appear to increase operation. However population increases at the Camping Ground over holiday and summer periods cause additional demands on the system.

Pump Stations are visited daily so that each pump is test-run and run-hours are checked.

6.2.2 Agnes Water

Pumps stations are level controlled with sufficient capacity for normal operations. Infiltration is a significant problem with the Agnes Water reticulation. Council has carried out smoke testing of sewers and issued remedy notices where required. Pipeline defects are being remedied as time permits. Population increases over holiday and summer periods cause additional demands on the system.

Pump Stations are visited daily so that each pump is test-run and run-hours are checked.

Major pump stations are connected via radio to a central telemetry base station at the water reservoir. Alarms are monitored and operators advised by telephone of faults.

6.3 Maintenance Strategies - Sewerage

Key sewerage maintenance strategies that are undertaken on a regular basis are summarised in Table 6.1.

TABLE 6.1 : Sewerage Maintenance Activities

Asset Group	Maintenance Activity	Frequency	Comments
Gravity Mains	Clear blockages	As required	
	Sewer flushing / jetting	Every 2 years	Focussed on older mains suffering tree root intrusion
	CCTV inspection	As required	Focussed on older mains > 50 yrs old
	Pipeline Inspection	When appropriate	When opportunity arises (eg, main break).
House Connections	Clear blockages	As required	
Manholes	Inspections	5 years	Manholes susceptible to corrosion or infiltration/ inflow. Inspected more frequently
Rising Mains	Pipeline Inspection	When appropriate	When opportunity arises (eg, main break).
Valves	Exercising	Annually	
Air Valves	Inspection	Annually	Minimum frequency – 12 monthly.
Backflow Valves	Inspection/Test	6 – 12 monthly	Refer requirements of AS 3500.
Flow Meter	Inspection/Flow Test	As recommended by manufacturer	Calibrate meter as recommended
Pump Station Wet Wells	Visual Inspection	Daily	Inspection
	Maintenance Checks	Weekly	Hosing down when not automatic
Structures	Inspection	Annual	
Pumps	Standby-duty reversal	Weekly or as required	
	Detailed pump check	Annually	Undertaken on a 12 month rolling basis.
Motors	Standby-duty reversal	Weekly or as required	
	Detailed motor check	Annually	Refer to maintenance manual
Switchboards	Detailed Inspection by electrician	Annually	Most less than 2 years old
Lagoons	Grass cutting	As required	
	Inspections	Weekly	
	De-sludging	As required	Depending on level of sludge deposition

A specific maintenance and operation regime has been developed for Lot 21 which contains the treatment lagoons and discharge areas for Agnes Water/Seventeen Seventy. The requirements of

the Operating Licence for the site are stringent and detailed reporting and operational parameters have to be met.

6.4 Documented Procedures – Sewerage System Operation & Maintenance

Whilst some documentation/schedules exist for operational practices/requirements they are not complete. Council has in place a programme for the preparation of comprehensive operation and maintenance manuals for all asset groups. Documentation will be developed that is appropriate, user-friendly and suitable for incorporation into a Quality Management System and/or Maintenance Management System. Much of the information will be in tick box format to act as prompts rather than any verbose instructions. Flow charts will be used where appropriate.

Generic Operation and Maintenance procedures such as those produced by the LGAQ have been considered and are being implemented.

Full documentation of the Sewerage System Maintenance and Operations procedures will be completed by 1 October 2006

6.5 Procedure Review

The procedure reviews for the sewerage assets is the same as the water assets and is covered in Section 5.5

6.6 Staffing

Council staff manage the water and sewerage assets on a consistent basis. The staffing requirements are covered in Section 5.6.

7.0 RENEWALS STRATEGY – WATER SUPPLY

The following Table 7.1 outlines Council approach to the renewal of the water supply system assets.

TABLE 7.1 : Asset Condition/Performance & Renewals Strategy

Asset Group	Age of Assets	Condition/Performance of Assets	Renewals Strategy
Mains	20-50 years	Mains performance satisfactory Most mains new	Documented historical record of repair location for deriving failure trends to be developed
Valves	Varies – Most <5yrs old	Adequate	Replace on failure or in conjunction with mains upgrades
Hydrants	Varies – Most <5yrs old	Adequate	Replace on failure or in conjunction with mains upgrades
Services		Adequate	Replace on failure or in conjunction with mains upgrades
Meters (bulk)	Varies – Most <5yrs	Adequate	Repair on failure
Meters (domestic)		Adequate	Replace on failure or in conjunction with mains upgrades
Reservoirs	Varies – Most >10yrs	Good	Repair as faults identified.
Pumps	5-15 years	Adequate	Repair on fault
Motors	5-15 years	Adequate	Propose documented historical record of maintenance to derive failure trends Repair on fault
Switchboards	5-15 years	Good	Propose annual inspection by electrician Repair on fault
Treatment Plant • Structures • Electrical/Mechanical	Varies	 Adequate Good	Adequate for current demands.
Bores • Casing/screen • Electrical/Mechanical	Varies	 Adequate Good	Repair on fault

At present Council does not have in place a formal renewals strategy. As part of the re-valuation of assets being undertaken in 2004, a policy for the condition and performance assessment of asset based on their economic life is being prepared. Once complete the policy will be applied to the 2004 asset register and a renewals program formulated.

7.1 Process for Developing and Updating a Renewals Strategy – Water Supply

Council has experienced significant growth over the past decade particularly in the Agnes Water and Seventeen Seventy township. This growth has placed pressure on the existing infrastructure As a result some of the existing water supply sources such as trenches will not be renewed and alternative sources are currently being located. In the case of the Seventeen Seventy water source, consideration is being given to linking Seventeen Seventy township to the Agnes Water Scheme.

The strategy is to assess assets on their ability to provide a level of service (as defined by the Customer Service Standards). On a case-by-case basis an asset considered for replacement will be assessed as to whether that asset contributes to the level of service. Consideration will be made of:

- Customer Service Standards;
- System capacity requirements; and
- Contingency Assets – requirement for use in emergency.

A review is undertaken in September of each year including:

- asset performance over the past year;
- any asset condition reports;
- asset maintenance records; and
- overall system performance against standards of service.

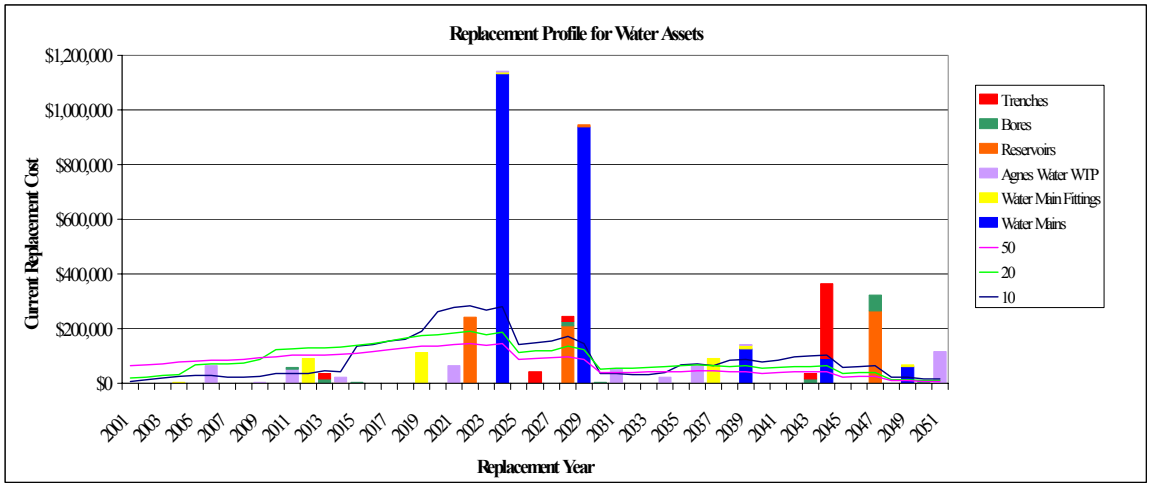
At the present time Councils asset register is going through a number of changes. The updating includes the identification of key attribute data, confirmation of the locations together with the current economic life as determined by Council staff included in the register. Council has sought external advice for:

- Revaluing of assets
- How assets are performing
- Determination of likely service potential remaining in current assets.

At the conclusion of the asset register updating and the asset performance/remaining life study, Council staff will be preparing a full renewal profile for all assets. Annually a review of the replacement profile will be undertaken for input into the forward works programme. This process will include annual updating of the water supply asset register

The most recent replacement profile is from the 2001 TMP undertaken by Cardno MBK. Note this profile is based on the 1999 Asset Register1999 Asset Register which does not include such assets as:

- The Miriam Vale Water Treatment Plant – installed in 2000



7.2 Donated Assets – Water Supply

As indicated in Section 1.1 Miriam Vale Shire is undergoing a period of significant growth. Associated with this growth is the expansion of the water supply infrastructure which is to be provided by developers. At present this is the major method of Council expanding its asset base.

The biggest single issue faced by Council staff is the validation of standards. This is largely due to:

- Inadequate QA or checking of construction
- Insufficient resources available to undertake subdivision or development completions.

This often results in Council receiving water supply assets that are substandard which frequently requires an input of resources to bring them up to the required standards. This places additional pressure on staff and the existing financial budgets. At present Council is developing suitable internal processes to ensure that all donated assets are adequately verified before passing to Council control.

Council has in place a suitable code of practice for water standard for new works. As technologies are rapidly changing Council must ensure that these “development standards” are reviewed and updated as required.

8.0 RENEWALS STRATEGY - SEWERAGE

Council is expecting its asset base to increase with the addition of further sewerage networks completed by subdividers in the Seventeen Seventy and Agnes Water townships. No allowance has been made for these quantities in the renewals strategy as these assets are likely to have a useful life in excess of 15 years (electrical/mechanical) and 50 years (mains)

The following Table 8.1 outlines Council approach to the renewal of the sewerage system assets.

TABLE 8.1 : Asset Condition/Performance & Renewals Strategy

Asset Group	Age of Assets	Condition/Performance of Assets	Renewals Strategy
Gravity Mains	5 - 25 years	Structurally OK	Repair and record failure position and mechanism
House Connections	5 - 25 years	Good	
Manholes	5 - 25 years	Good	Repair and record failure position and mechanism
Rising Mains	10 - 15 years <5 years Agnes Water main	Good	Repair and record failure position and mechanism
Valves	5 - 15 years	Good	
Flow Meters	5 - 15 years	Good	
Pump Station Wet Wells	5 - 15 years	Good	Maintain, condition assess on cleaning
Pumps • Motors • Switchboards	5 - 15 years	Good	Repair and record failure mechanism
Tanks	Approx 10 years	Good	Maintain, condition assess on cleaning
Lagoon	< 5 years	Adequate	Maintain

At present Council does not have in place a formal renewals strategy. As part of the re-valuation of assets being undertaken in 2004, a formal policy for the condition and performance assessment of asset based on their economic life is being prepared. Once complete the policy will be applied to the 2004 asset register and a renewals program formulated.

8.1 Process for Developing and Updating a Renewals Strategy – Sewerage

Council's approach for renewing sewerage assets is the same as the water supply renewals approach.

As indicated significant growth has occurred over the past decade in the Agnes Water and Seventeen Seventy townships A pipeline to link the Seventeen Seventy Sewerage reticulation to the Agnes Sewerage Scheme has been designed and is being considered by Council for implementation in the near future.

At the present time Council's asset register is going through a number of changes. The updating includes the identification of key attribute data, confirmation of the locations together with the

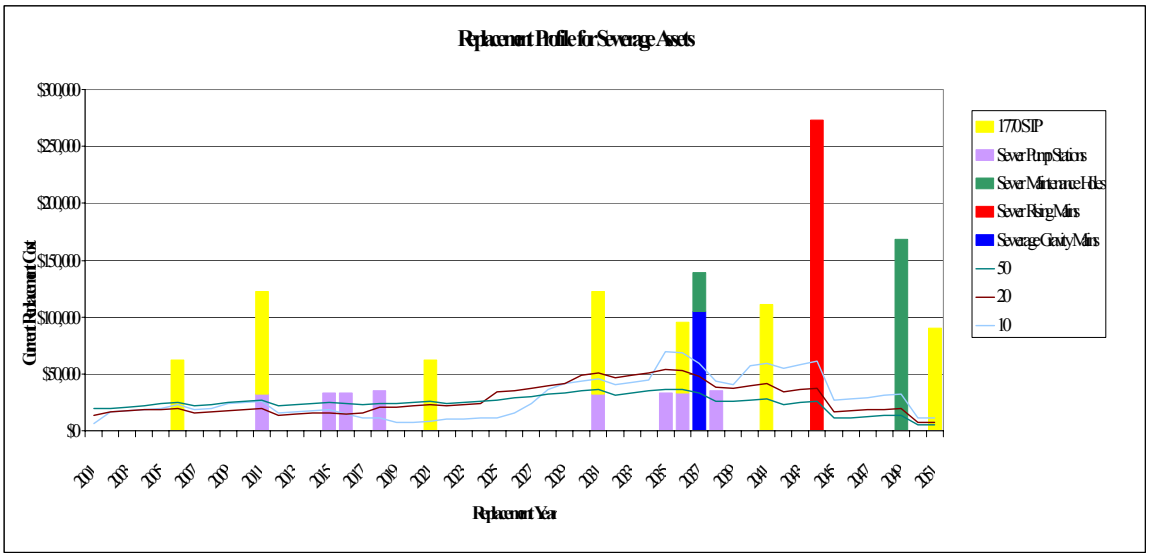
current economic life as determined by Council staff included in the register. Council has sought external advice for:

- Revaluing of assets
- How assets are performing
- Determination of likely service potential remaining in current assets.

At the conclusion of the asset register updating and the asset performance/remaining life study, Council staff will be preparing a full renewal profile for all assets. Annually a review of the replacement profile will be undertaken for input into the forward works programme. This process will include annual updating of the sewerage asset register

The most recent replacement profile is from the 2001 TMP prepared by Cardno MBK. This profile includes the Seventeen Seventy Sewerage Treatment Facility which is to be decommissioned. Note it is based on the 1999 Asset Register which does not include such assets as:

- Completion of the Agnes Water Sewerage Scheme reticulation and pump stations (completed late 2001), and
- The Agnes Water Treatment and Effluent Disposal Area (completed mid 2000)



8.2 Donated Assets – Sewerage System

As indicated in Section 1.1 Miriam Vale Shire is undergoing a period of significant growth. Associated with this growth is the expansion of the sewerage system infrastructure which is to be provided by developers. At present this is the major method of Council expanding its asset base.

The biggest single issue faced by Council staff is the validation of standards. This is largely due to:

- Inadequate QA or checking of construction
- Insufficient resources available to undertake subdivision or development completions.

As with the water supply, these issues must be addressed urgently commencing with the updating of the development standards and the implementation of internal processes to ensure that all donated assets are adequately verified before passing to Council control.

9.0 OPERATIONS, MAINTENANCE AND RENEWALS PROGRAM

9.1 Water Supply

Table 9.1 summarises the key actions to be carried out as part of the water operations, maintenance and renewals strategy.

TABLE 9.1 : Water Supply Operations, Maintenance and Renewals Strategy

Category	Action	Target Date	Responsibility	Budget PA
Operation and Maintenance	Operate and Maintain Storage Provide water treatment	Ongoing	DES	$313,000
	Maintain for operation Town Bore backup supply	Ongoing	DES	
	Operate reticulation	Ongoing	DES	
Renewal	Valve Replacement	Ongoing	DES	Renewals costs not separately identified Operations Plan
	Hydrant Replacement	Ongoing	DES	
	Mains Replacement	Ongoing	DES	
	Meter Replacement	Ongoing	DES	
Documentation	Operational Procedures – develop existing procedures into framework, identify new procedures required, delegate development	1 July 2007	DES	
	Maintenance Procedures - develop existing procedures into framework, identify new procedures required, delegate development	1 July 2007	DES	
	Updating and implement appropriate documentation for subdivision development (design standards). Implement internal procedures to ensure standards are met.	1 July 2005	DES	
Record Keeping	Implement and manage electronic records: • Service Level Monitoring • Asset Maintenance and Renewals • System Failures (pipe, pump, etc.) location and maintenance • Asset Register Updating • Operational Reporting	1 July 2005	DES	

Agnes Water Water and Seventeen Seventy Water	Operation and Maintenance	Ongoing	*DES*	*$175300*
Miriam Vale Water Water	Operation and Maintenance	Ongoing	*DES*	*$108,000*
Bororen Water	Operation and Maintenance	Ongoing	*DES*	*$29,000*

DES – Director Engineering Services
Operational Plan 2003-2004

9.2 Sewerage

Table 9.2 summarises the key actions to be carried out as part of the sewerage operations, maintenance and renewals strategy.

TABLE 9.2 : Sewerage Operations, Maintenance and Renewals Strategy

Category	Action	Target Date	Responsibility	Budget
Operation and Maintenance	Operate and maintain reticulation, pump stations and treatment facilities	Ongoing	DES	$ 180,000
Renewal	Pump Replacement	Ongoing	DES	Renewals costs not separately identified Operations Plan
	Mains (including manholes and connections) Replacement	Ongoing	DES	
Documentation	Operational Procedures – develop existing procedures into framework, identify new procedures required, delegate development	1 July 2007	DES	
	Maintenance Procedures - develop existing procedures into framework, identify new procedures required, delegate development	1 July 2007	DES	
	Updating and implement appropriate documentation for subdivision development (design standards). Implement internal procedures to ensure standards are met.	1 July 2005	DES	
Record Keeping	Implement and manage electronic records: • Service Level Monitoring • Asset Maintenance and Renewals • System Failures (pipe, pump, etc.) location and maintenance • Asset Register Updating • Operational Reporting	1 July 2005	DES	
Agnes Water Sewerage	Operate and maintain reticulation, pump stations and treatment facilities	Ongoing	DES	$167,700
Seventeen Seventy Sewerage	Operate and maintain reticulation, pump stations and treatment facilities	Ongoing	DES	$12,635

DES – Director Engineering Services
Operational Plan 2003-2004

Operation and Maintenance is provided to achieve the levels of service laid down in Section 2.0 the Customer Service Standards document.

10.0 FINANCIAL ARRANGEMENTS

10.1 Water Supply Funding Arrangements

Tables 10.1 provides a summary of the 3-year planned operations, maintenance and renewals expenditure for water supply and the anticipated funding sources. As indicated in Section 1.0, Council is undertaking a major investigation into the location of suitable water supplies for the Seventeen Seventy and Agnes Water townships. At this present time it is not known what the outcome of those investigations will be so it is not possible to determine the future operations/maintenance costs.

As such this section only gives maintenance/operational estimates for the next 3 financial years at which time it is expected that new facilities will be in place.

Minor renewals are proposed for the next 2 years with :

- a reservoir refurbishment at Bororen in 2004/05
- a backwash pump replacement at Miriam Vale in 2004/05
- water pipeline renewals at Agnes Water in 2005/06

No renewals projects are planned for the following 8 year forecast period ie 2006/07 to 20013/14. Pipeline assets are relatively new with no renewals required in the period – refer to Section 7.1.

Budget estimates are derived from the 2004-2005 MVSC Operations Plan.

TABLE 10.1 : 10-Year OM&R Water Supply Expenditure and Anticipated Funding Sources

Year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
OPERATING REVENUE										
Fees And Charges	$ 783,735	$ 804,555	$ 826,135	$ 826,135	$ 826,135	$ 826,135	$ 826,135	$ 826,135	$ 826,135	$ 826,135
Other Sources of Funding	$ 2,195	$ 2,241	$ 2,289	$ 2,289	$ 2,289	$ 2,289	$ 2,289	$ 2,289	$ 2,289	$ 2,289
Captal Works Subsidy	$ 74,900	$ 44,000	$ 44,000	$ 44,000	$ 44,000	$ 44,000	$ 44,000	$ 44,000	$ 44,000	$ 44,000
Loans	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
General Revenue	$ 149,888	$ 96,327	$ 96,366	$ 96,366	$ 96,366	$ 96,366	$ 96,366	$ 96,366	$ 96,366	$ 96,366
Total Operating Revenue	$ 1,010,718	$ 947,123	$ 968,790	$ 968,790	$ 968,790	$ 968,790	$ 968,790	$ 968,790	$ 968,790	$ 968,790
OPERATING EXPENDITURE										
Operations	$ 195,025	$ 199,875	$ 204,925	$ 204,925	$ 204,925	$ 204,925	$ 204,925	$ 204,925	$ 204,925	$ 204,925
Maintenance Cost	$ 161,370	$ 166,215	$ 171,200	$ 171,200	$ 171,200	$ 171,200	$ 171,200	$ 171,200	$ 171,200	$ 171,200
Management and Administration	$ 220,315	$ 218,252	$ 214,771	$ 214,771	$ 214,771	$ 214,771	$ 214,771	$ 214,771	$ 214,771	$ 214,771
Renewal	$ 53,500	$ 120,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

NOTE : Operational estimates for 2007/08 to 2013/2014 are to be confirmed at the conclusion of the Water Source Study

10.2 Sewerage Funding Arrangements

Tables 10.2 provide a summary of the 3-year planned operations, maintenance and renewals expenditure for sewerage and the anticipated funding sources.

As indicated in Section 1.0, Council is undertaking a major investigation into the location of suitable water supplies for the Seventeen Seventy and Agnes Water townships which will have an overall impact on the development of these townships.. At this present time it is not known what the outcome of those investigations will be so it is not possible to determine the future operations/maintenance costs. It is expected that there will be some development the sewerage treatment and disposal facility to cater for the additional population.

No renewals projects are planned for the coming 10 year forecast period. Pipeline assets are relatively new with no renewals required – refer to Section 8.1. The Seventeen Seventy STP was identified for renewal in 2006 as part of the 1999 Valuation but this is to be decommissioned in 2004.

Budget estimates are derived from the 2004-2005 MVSC Operations Plan.

TABLE 10.2 : 10-Year OM&R Sewerage Expenditure and Anticipated Funding Sources

Year	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
OPERATING REVENUE										
Fees And Charges	$ 616,745	$ 623,478	$ 630,241	$ 630,241	$ 630,241	$ 630,241	$ 630,241	$ 630,241	$ 630,241	$ 630,241
Other Sources of Funding	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282	$ 1,282
Captal Works Subsidy	$ 290,000	$ 62,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Loans	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000	$ 540,000
General Revenue	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Total Operating Revenue	$ 1,448,027	$ 1,227,260	$ 1,171,523	$ 1,171,523	$ 1,171,523	$ 1,171,523	$ 1,171,523	$ 1,171,523	$ 1,171,523	$ 1,171,523
OPERATING EXPENDITURE										
Operations	$ 133,175	$ 124,795	$ 124,150	$ 124,150	$ 124,150	$ 124,150	$ 124,150	$ 124,150	$ 124,150	$ 124,150
Maintenance Cost	$ 50,150	$ 51,100	$ 51,860	$ 51,860	$ 51,860	$ 51,860	$ 51,860	$ 51,860	$ 51,860	$ 51,860
Management and Administration	$ 77,347	$ 79,511	$ 84,591	$ 84,591	$ 84,591	$ 84,591	$ 84,591	$ 84,591	$ 84,591	$ 84,591
Renewal	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

NOTE : Operational estimates for 2007/08 to 2013/2014 are to be confirmed at the conclusion of the Water Source Study

APPENDIX A

Service Level Monitoring Information Sources

APPENDIX A : Service Level Monitoring – Information Sources

Level of Service Performance Indication	Source of Information
Water Supply Continuity	
Unplanned interruptions per 1000 connections/year	Service Complaints/Action Request Form (sample) – Appendix B1
Restoration of services - unplanned interruptions	Service Complaints/Action Request Form (sample) – Appendix B1 Unplanned - from Service Complaints/Action Request Form (sample) – Appendix B1
Ratio of unplanned to planned interruption incidents	Planned - from Planned Interruption Record (sample) – Appendix B2
Response time to all events	Service Complaints/Action Request Form (sample) – Appendix B1
Adequacy and Quality of Normal Supply	
Minimum water pressure and/ or flow at boundary	Service Complaints/Action Request Form – Appendix B1
Compliance with NHMRC Guidelines	Microbiological - summary microbiological quality – Appendix B3 Physical/Chemical – Summary Physical/Chemical Water Quality – Appendix B3
Drinking water quality complaints per 1000 connections/year	Service Complaints/Action Request Form - Appendix B1
Drinking water quality incidents/year	Service Complaints/Action Request Form - Appendix B1
Effective Transport of Water Effluent (sewage only)	
Total sewage overflows per 100km/year	Service Complaints/Action Request Form (sample) – Appendix B1
Sewage overflows to customer property per 1000 connections/year	Service Complaints/Action Request Form (sample) – Appendix B1
Odour complaints per 1000 connections/year	Service Complaints/Action Request Form (sample) – Appendix B1
Response time to all events	Service Complaints/Action Request Form (sample) – Appendix B1
Continuity in the long term (a) Water	
Water leaks/breaks per 100km mains/year	Service Complaints/Action Request Form (sample) – Appendix B1
Rate of system water loss **(l/connection/day)**	Total of water volume into system per day Minus metered consumption volume day Minus estimated non-metered volume per day Divided by number of connections
Continuity in the long term (b) Sewerage	
Sewer main breaks and chokes per 100km/year	Service Complaints/Action Request Form (sample) – Appendix B1
Sewer infiltration/inflow – ratio of peak day flow to average day flow	Sewage treatment plant daily flow records
Sewer infiltration/inflow – ratio of peak day flow to average day flow	Sewage treatment plant daily flow records

APPENDIX B

Sample Forms for Service Level Monitoring

B1 Service Complaints/Action Request Form

B2 Planned Service Interruption Record – Water Supply (sample)

B3 Summary Physical/Chemical Water Quality

B4 WTP Maintenance Checks

APPENDIX B1 : Service Complaints/Action Request Form

MISC WORKS NO _____

MIRIAM VALE SHIRE COUNCIL

MISCELLANEOUS WORKS FORM

NAME _____

PHONE NO _____

ADDRESS _____

_____

RPD Lot _____ on RP _____

Parish of _____

ROAD NAME _____ ROAD NO _____

LOCATION _____

FULL DESCRIPTION OF WORK/PROBLEM

_____

_____

_____

_____

_____

Taken By: _____ **Date:** ____/____/____

ACTIONING OFFICER _____

URGENCY Very Urgent - Urgent - Normal Priority - Low Priority

BRIEF DESCRIPTION _____

_____

_____

DATE ENTERED ____/____/____

DATE COMPLETED ____/____/____ **SIGNATURE**_____

APPENDIX B1 : Maintenance Form

MM2 - MAINTENANCE ACTIVITY REPORT

Date Commenced: Time Commenced: Private Works: Y/N

Date Completed: Time Completed: Customer Complair Y/N

House No.: Street: Town:

Chainage (Trunk mains only): Facility (if PS, Treatment Plant, reservoirs)

ASSET TYPE (tick one)

☐ Sewerage Effluent Reuse	☐ Sewerage Manhole	☐ Water Hydrant	☐ Water Other Assets
☐ Sewerage House Con.	☐ Sewerage PS/Treat Plant	☐ Water Main	☐ Water PS/Reservoir
☐ Sewerage House Drain	☐ Sewerage Rising Main	☐ Water Meter and Service	☐ Water Service (pipe only)
☐ Sewerage Main	☐ Sewerage Septic Tank	☐ Water Meter (only)	☐ Water Valve

FAILURE TYPE / WORK TYPE (tick one)

☐ Blockage	☐ Investigation/Inspection	☐ New Works	☐ Sewer Overflow (wet weather)
☐ Dirty Water	☐ Location of Asset	☐ Odour/Taste	☐ Sprinkler Inspection
☐ Failure Fittings	☐ Maintenance (planned)	☐ Relocation	☐ Upgrade/Replacement
☐ Failure Pipe	☐ Manhole Raising	☐ Root Cutting	☐ Water Pressure High
☐ Flushing/Bleeding	☐ Miscellaneous	☐ Root Foaming	☐ Water Pressure Low

CAUSE OF FAILURE (tick one)

☐ Age	☐ Damage Vandalism	☐ Foreign Object	☐ Mushroom Failure
☐ Air in Line	☐ Damage Vehicular	☐ Gas Attack	☐ Negative Grades
☐ Corrosion	☐ Debris	☐ Ground Movement	☐ Poor Installation
☐ Cracking/Splitting	☐ Fat Build-up	☐ Infiltration/Inflow	☐ Root Intrusion
☐ Damage Box/Lid	☐ Faulty Ferrule Cock	☐ Loose Fittings	☐ Scouring
☐ Damage Construction	☐ Faulty Main Cock	☐ Meter Malfunction	☐ Too Deep

ACTION TAKEN (tick more than one if required)

☐ Clean Line	☐ New Main Connection	☐ Replace Ferrule Cock	☐ Replace Pipe
☐ Internal Fault	☐ New Service Connection	☐ Replace Jumper Valve	☐ Serve Notice
☐ Loam Up/Reinstatement	☐ Repair Fitting	☐ Replace Jump up	☐ Tighten/Pack Gland
☐ Meter Below Ground	☐ Repair Pipe	☐ Replace Main Cock	☐ Other – Details Below
☐ Sewerage House Drain	☐ Replace Ball Valve	☐ Replace Meter	
☐ Meter to Existing Service	☐ Replace Body Washer	☐ Replace Meter Box	

Additional Comments/Sketch:

Reported by: Date:

Office Use Only

Input into GIS by ……. Date: ……

Input into Customer Complaint Module (if complaint) by ……. Date: ……

Based on 'Gang Report' Developed by Ipswich Water 1998

APPENDIX B2 : Planned Service Interruption Record – Water Supply (Sample)

1. Date _____

2. Location: **Street** _____

Town _____

Other Location Details: _____

3. Activity: _____

a. Main maintenance (eg flushing/swabbing, hydrant or valve maintenance)
b. Main replacement/renovation
c. Service maintenance/replacement
d. Meter work (routine)
e. Meter work (non-routine)
f. Other

4. Customers Advised at least 24 hours prior to interruption: Yes/No

5. Duration of Interruption:

Advised
_____ hours _____ minutes

Actual
_____ hours _____ minutes

6. Confirmed Interruption Category: Planned/Unplanned (refer definition 2)

7. No. of Connections Affected: _____ * optional (until 2007)

Definitions

1. An interruption commences when water is no longer available at the customer's first cost water tap and ceases when "normal" service is restored to all customers (ie, "no" water available).
2. A "planned" interruption is when the customer received at least 24 hours notification of the interruption AND when the duration does not exceed that originally notified – otherwise the interruption is unplanned. Does not included planned interruptions caused by routine meter work.

APPENDIX B3 : Summary Physical/Chemical Water Quality[1]

Scheme Name	Sample Date	No. of Samples[2]	No. of Samples exceeding Guideline Value (or Standard of Service)														
			Parameter	PH	Colour (Hazen)	Turbidity (NTV)	Hardness as CaCO3 (mg/L)	TDS (mg/l)	Sodium (mg/l)	Chloride (mg/l)	Sulphate (mg/l)	Chloride (mg/l)	Aluminium (mg/l)	Iron (mg/l)	Manganese (mg/l)	Boron (mg/l)	Fluoride (mg/l)	Nitrate (mg/l)
			Standard of Service	6.5 - 8.5	15	5	200	500	180	250	250	250	0.2	0.3	0.1	0.3	1.5	50
xxxx	3/10/03	4						1									

Note:
1. Standard of Service may vary from NHMRC Drinking Water Guidelines
2. Reticulated water only

APPENDIX B4 : WTP Maintenance Records

WATER TREATMENT PLANT MAINTENANCE CHART
MIRIAM VALE/BORDREN

M T W T F S S	M T W T F S S	DATE	DATE	DATE	CHECKED
ITEM	DAILY	WEEKLY	MONTHLY	ANNUALLY	
Raw Water Pumps Baffle Ck, House Ck, Thornes Rd			Change Over & Check Flow Rate	Check Bearings & Operation	
Clear Water Pumps	No 1 No 2	Visual Check	Change Over	Check Bearings & Operations	
Air Compressors	Visual Check	Draw Condensate Check/Oil		Clean Filters Change Oil	
Air Blower		Visual Check	Grease bearings	Check Belts, Filters & Bearings	
Poly Pump	Visual Check	Check Dose Rate	Check Non Return Valves	Check Motor Bearings	
Alum Pumps	Visual Check	Check Dose Rate	Check Non Returns, Valves	Check Motor Bearings	
Soda Ash Pumps	Visual Checks	Check Dose Rate	Check Non Returns, Valves	Check Motor Bearings	
Chlorine Pump	Check Dose	Check Dose Tate	Check Non Return Valves	Check Motor Bearings	
Chemical Vats	Visual Check				
		Visual Check		Completely Drain & Clean	
Roller Door		Visual Check		Maintenance Service	
Chemical Storage Room	House Keeping	Visual Check		Report on Condition	
Raw Water Pump Line			Visual Check		
Chemical Pump Lines	Visual Check		Flush Lines With Acid	Check & Replace as Needed	
Metering Points				Calibrate	
Sedimentation Basin	Visual Check			Clean Out & Check	
Plant Grounds		Mow as Needed			
Filters	Backwash as Required	Clean Walls		Scrap & Replace Sand	
Sludge Bleed Valves	Visual			Clean & Service	
Sludge Removal	Visual	Desludging			
Chlorinators	Visual			Overhauled Twice a Year	
Electrical Control Equipment	Visual			As Required	
Electronic Control Equipment	Visual			Services Twice a Year	
Sampling Pump		Visual		Checked & Serviced	
Plant Buildings	House Keeping	As Required			