MorrisonLow

Coffs Harbour City Council

Asset Management Plan for Wastewater Assets

March 2011

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results
in the public sector

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1. INTRODUCTION

1.1 Background

Coffs Harbour currently has the following wastewater reclamation plants serving the following urban areas; Sawtell, Toormina, Boambee, Coffs Harbour, Korora, Sapphire, Moonee Beach, Emerald Beach, Sandy Beach, Woolgoolga, Safety Beach and Corindi.

Coffs Harbour

The Coffs Harbour water reclamation plant (WRP) currently serves Coffs Harbour, Korora and Sapphire and treats approximately 8 million litres of sewage per day during dry weather and up to 95 million litres during peak wet weather events. Excess reclaimed water is discharged to the sea via the 1.5 km long Deep Sea Release on Boambee Beach.

Currently there are 61 pumping stations and 306 km of pipe work in the Coffs Harbour system.

This plant has been sized to accept all flows from the Sawtell WRP, which will be decommissioned in the near future. Future civil works are required to construct a 40 ML storm overflow pond at Coffs Harbour, when Sawtell is connected.

Once the old AC reclaimed water pipeline from Coffs Creek to the Fishing Club area has been renewed, reclaimed water will be able to be pumped up to the northern areas to satisfy increasing demand, for beneficial reuse.

Sawtell

The Sawtell water reclamation plant currently serves Sawtell, Toormina and Boambee areas and treats approximately 3.8 million litres of sewage per day during dry weather and up to 35 million litres per day during large storm events.

Currently there are 21 pumping stations and 145 km of pipe work in the Sawtell system.

The Sawtell plant is planned to be decommissioned in the next 2 years and then all sewage will be pumped to the Coffs Harbour water reclamation plant for treatment.

Woolgoolga

The Woolgoolga water reclamation plant serves Woolgoolga, Mullaway, Arrawarra, Sandy Beach and Safety Beach and treats approximately 2 million litres of sewage per day during dry weather. Reclaimed water is pumped and then stored in a 5 ML reservoir at Morgans Road. Excess reclaimed water is conveyed by the reclaimed water main that connects to the Deep Sea Release on Boambee Beach in Coffs Harbour.

Currently there are 17 pumping stations and 137 km of pipe work in the Woolgoolga system.

It is planned that in the near future part of the Corindi system will be connected to this system, to ensure that the Corindi Plant is not overloaded due to new development in the area.

Moonee

The Moonee water reclamation plant currently serves Moonee and Emerald areas and treats approximately 0.4 million litres of sewage per day during dry weather. Reclaimed water is also pumped and stored in the 5ML reservoir at Morgans Road. Excess reclaimed water is conveyed by the reclaimed water main that connects to the Deep Sea Release at Boambee Beach in Coffs Harbour.

Currently there are seven pumping stations and 29.2 km of pipe work in the Moonee/Emerald system.

Corindi Beach

The Corindi Beach water reclamation plant treats approximately 0.18 million litres of sewage per day during dry weather. Reclaimed water is stored in a 67 ML reservoir. Reclaimed water is irrigated on site, and on an adjoining property. Excess reclaimed water is conveyed by the sewage collection system to Woolgoolga water reclamation plant.

Currently there are 4 pumping stations and 17.1 km of pipe work in the Corindi Beach system. One of these pumping stations will be transferred to the Woolgoolga sewage system in the near future.

Council has acquired the wastewater assets over an extended period by a number of different means. Some assets have been purchased or constructed by Council or its contractors and other assets have been contributed by developers and others. Major projects are also subsidised by State Government.

Council's goal in providing and managing its wastewater assets is to meet the adopted levels of service in the most cost effective manner for present and future consumers by:

- taking a life cycle approach
- developing cost-effective management strategies for the long term
- delivering defined levels of service and monitoring performance
- understanding and meeting changing demands through demand management and infrastructure investment
- managing risks
- using resources sustainably
- continuous improvement in asset management practices.

This Asset Management Plan takes into account Council's Vision, Purpose and Strategic Themes -

Council's Vision is:

> *Coffs Harbour - the Healthy City, the Smart City, the Cultural City for a Sustainable Future*

Council's Purpose is:

> *To make Coffs Harbour a better place to live, as a regional city for present and future communities*

The *Coffs Harbour 2030* Community Strategic Plan identifies five strategic 'themes':

- Looking after our environment
- Learning and prospering
- Places for living
- Moving around
- Looking after our community

1.2 Purpose of this asset management plan

This Asset Management Plan (AMP) provides the framework to ensure that Coffs Harbour City Council's (Council) wastewater assets are; provided, operated, maintained, renewed and upgraded to ensure that Council's wastewater related levels of service are achieved in the most cost effective and sustainable way.

The plan does not contain detailed technical information, but provides the current position regarding Council's wastewater assets and their sustainable provision in the future, and incorporates an asset management improvement plan. Where detailed information is available it is included by reference.

1.3 Relationship with other planning documents

This AMP should to be read in conjunction with the following associated documents:

- Coffs Harbour 2030 Community Strategic Plan
- Coffs Harbour City Council's Delivery Program 2010 - 2014
- Coffs Harbour City Council's Operational Plan 2010 - 2011
- Coffs Harbour City Council's Program Budgets 2010 - 2011
- Coffs Harbour City Council's Asset Management Policy and Strategy

1.4 Scope of this plan

Council provides a range of wastewater related assets representing a community investment of approximately $360 million (2010 estimated replacement value). Details of the assets covered by this AMP are provided in Table 1-1. Proportion of value by asset types is shown in Figure 4.1.

Table 1-1 Council wastewater assets

Asset Category	Quantity	Estimated Replacement Value 2010 $	Total Estimated Replacement Value 2010 $
COFFS HARBOUR			
Rising Mains	53.2km	9,904,723	
Gravity Mains	253.1km	53,157,300	
Pumping Stations	61	24,670,072	
Treatment Plants	1	111,073,405	
Ancillary Items		1,113,029	
Deep Sea Release	1	22,570,520	
Total		**222,489,049**	**222,489,049**
CORINDI			
Rising Mains	3.7km	422,234	
Gravity Mains	13.4km	2,386,432	
Pumping Stations	4	742,946	
Treatment Plants	1	3,409,132	
Ancillary Items		24,103	
Total		**6,984,847**	**6,984,847**
MOONEE			
Rising Mains	9.8km	1,828,298	
Gravity Mains	19.4km	4,078,620	
Pumping Stations	7	2,305,083	
Treatment Plants	1	9,232,325	
Ancillary Items		42,181	
Total		**17,486,508**	**17,486,508**
SAWTELL			
Rising Mains	12.8km	2,388,574	
Gravity Mains	132.7km	27,877,290	
Pumping Stations	18	4,754,801	
Treatment Plants	1	9,310,800	
Ancillary Items		99,805	
Total		**44,431,270**	**44,431,270**
WOOLGOOLGA			
Rising Mains	16.0km	2,975,476	
Gravity Mains	121.5km	25,508,910	
Pumping Stations	25	7,255,038	
Treatment Plants	1	12,542,732	

Asset Category	Quantity	Estimated Replacement Value 2010 $	Total Estimated Replacement Value 2010 $
Ancillary Items		172,642	
Total		**48,454,798**	**48,454,798**
RECLAIMED WATER SYSTEM			
Rising mains	58.7km	17,752,133	
Pumping stations	4	1,186,283	
Reservoir	1	554,143	
Total		**19,492,559**	**19,492,559**
OTHER STORAGE			
Other Storage		**736,663**	**736,663**
TOTAL LENGTH MAINS	694.3km	**OVERALL TOTAL**	**360,076,323**

1.5 Key stakeholders

Key stakeholders in relation to the wastewater assets are detailed in Table 1-2.

Table 1-2 Key stakeholders

Stakeholder	Comment
Council officers	Council officers manage assets to deliver the Levels of Service agreed by Council following consultation with the community, and within agreed budgets. Council officers implement the AMP.
Council	Council sets the Levels of Service taking the expectations of the community, legislative requirements and funding levels into account. They are primarily responsible to ensure that their decisions represent and reflect the needs of the wider community.
NSW Office of Water	NSW Office of Water carry out the performance monitoring and benchmarking as required under *National Competition Policy* and the *National Water Initiative*. Performance monitoring is also a key requirement of the *NSW Best-Practice Management of Water Supply and Sewerage Guidelines.* The NSW Office of Water is responsible for: • management of water resources under the *Water Administration Act 1986*. • sewage works falling under Section 60 of the *Local Government Act 1993*. • managing concurrence to approvals of trade waste discharged into sewer.
Community	The community and visitors are users of infrastructure assets. Their expectations are communicated to Council via consultation.

Stakeholder	Comment
Insurers	Insurers have an interest in the implementation of asset management systems, which allow Council to properly manage the risks associated with the assets.
Department of Environment, Climate Change and Water	DECCW are responsible for licensing of sewerage infrastructure, under the *Protection of the Environment Operations Act. 1997*.
NSW Health	NSW Health are responsible for administration of the *Public Health Act 1991*.
Reclaimed Water Customers	Use of reclaimed water infrastructure assets required to provide reclaimed water to grow crops and for other uses, which need a reliable supply of irrigation and cleaning water.
Biomass	Biomass are contracted to manage all biosolids produced at the WRPs for 20 years, commencing in 2004.

1.6 Organisational structure

The responsibilities in relation to asset management are shown in Table 1-3 below.

Table 1-3 Asset management responsibilities

Role	Position in Council	Responsibility
Asset owner	To be confirmed	Implementation of the strategic AMPs, O&M planning, concept designs and works specifications, works project management, asset performance monitoring and data collection
Service delivery	To be confirmed	Implementing the O&M plans, repairs, renewals and new works construction, and designs
Asset management coordination	Manager Asset Systems	Asset management system, data management
Strategic asset planning	To be confirmed	Preparation of strategic AMPs, long term planning, development management

2. LEVELS OF SERVICE

The objective of asset management is to enable assets to be managed such that agreed Levels of Service are consistently delivered in the most cost effective way. There are two types of Level of Service:

- Customer Levels of Service; are related to the service that the customer receives. The community's expectations with regard to levels of service are communicated to Council via consultation. The levels of service are established by Council taking the communities expectations, legislative requirements and available funding into account.

- Technical Levels of Service; are technical in nature and are the means by which Council officers establish and manage the operation and maintenance required to ensure that the Customer Levels of Service are achieved.

2.1 Customer research and expectations

Extensive community consultation was undertaken during the development of the sewerage strategy in 2000. As part of the strategy, extensive community consultation was also undertaken for the reclaimed water scheme resulting in the implementation of a number of demonstration projects and the establishment of the Morgan Rd Reuse Farm.

A number of community consultation initiatives have been undertaken by Council in the last two - three years to identify some of the aspirations of the community in regard to the services provided by Council. None of these initiatives have identified the customer's views or expectations of the wastewater service.

2.2 Strategic goals and objectives

Coffs Harbour City Council's main purpose is to make Coffs Harbour a better place to live, as a regional city for present and future communities. The values are the underlying principles influencing daily decisions and actions of the councillors and council staff. These values define Council's relationship with the community, customers and suppliers.

The Community Strategic Plan identifies five key strategic 'themes':

- Looking after our environment
- Learning and prospering
- Places for living
- Moving around
- Looking after our community

Each theme is linked to objectives and strategies. The strategies related to wastewater assets are shown in Table 2-1 below.

Table 2-1 Wastewater strategies

Objective	Strategy
We are responsible in the use and management of our natural resources and work to reduce our ecological footprint	Implement total water cycle management practices
Our council organisation supports the delivery of high quality, sustainable outcomes for Coffs Harbour	Ensure Council's administration structure facilitates the efficient and effective delivery of program

2.3 Legislative requirements

Council has to meet many legislative requirements including Commonwealth and State legislation and associated regulations as shown in Table 2-2.

Table 2-2 Legislative requirements

Legislation	Requirement
Local Government Act 1993	Sets out role, purpose, responsibilities and powers of local governments. Draft Bill 2009 includes the preparation of a long term financial plan supported by asset management plans for sustainable service delivery. The purposes of this Act are as follows: a) to provide the legal framework for an effective, efficient, environmentally responsible and open system of local government in New South Wales b) to regulate the relationships between the people and bodies comprising the system of local government in New South Wales c) to encourage and assist the effective participation of local communities in the affairs of local government d) to give councils: – the ability to provide goods, services and facilities, and to carry out activities, appropriate to the current and future needs of local communities and of the wider public – the responsibility for administering some regulatory systems under this Act – a role in the management, improvement and development of the resources of their areas e) to require councils, councillors and council employees to have regard to the principles of ecologically sustainable development in carrying out their responsibilities
Water Act 1912	This Act is being progressively phased out and replaced by the *Water Management Act 2000,* but some provisions are still in force.
Environmental Planning and Assessment Act 1979	An Act to institute a system of environmental planning and assessment for the State of New South Wales. Among other requirements the Act outlines the requirement for the preparation of Local Environmental Plans (LEP), Development Control Plans (DCP), Environmental Impact Assessments (EIA) and Environmental Impact Statements.
Occupational Health and Safety Act 2000 and Rehabilitation Act	Sets out roles and responsibilities to secure the health, safety and welfare of persons at work and covering injury management, emphasising rehabilitation of workers particularly for return to work.

Legislation	Requirement
1987	Council is to provide a safe working environment and supply equipment to ensure safety.
Threatened Species Conservation Act 1995	An Act to conserve threatened species, populations and ecological communities of animals and plants.
Protection of the Environment Operations Act 1997	Council is required to exercise due diligence to avoid environmental impact and among others are required to develop operations emergency plans and due diligence plans to ensure that procedures are in place to prevent or minimise pollution.
Water Management Act 2000	Recognises the need to allocate and provide water for the environmental health of rivers and groundwater systems, while also providing licence holders with more secure access to water and greater opportunities to trade water in particular through the separation of water licences from land. The main tools the Act provides for managing the State's water resources are water sharing plans.
The Water Management (General) Regulation 2004	Assists in implementing the Water Management Act 2000 and contains various procedural matters, specifies exemptions from the need to hold an access licence or an approval in certain circumstances and the changeover formulae applying to the new category of supplementary water access licences (formerly off–allocation water)
Disability Discrimination Act 1992	The Federal Disability Discrimination Act 1992 (D.D.A.) provides protection for everyone in Australia against discrimination based on disability. It encourages everyone to be involved in implementing the Act and to share in the overall benefits to the community and the economy that flow from participation by the widest range of people.
Native Vegetation Act 2003	This Act regulates the clearing of native vegetation on all land in NSW, except for excluded land listed in Schedule 1 of the Act. The Act outlines what landowners can and cannot do in clearing native vegetation.
Public Health Act 1991	The conditions of the licences include notification to Public Health Units of incidents within the sewerage system, which are of public health significance.

2.4 Current levels of service

Levels of service were established in the draft Wastewater Strategic Business Plan 2005/2006.

In order to meet the requirements of the National Competition Policy and the National Water Initiative, the NSW Office of Water requires Council to monitor and report on a number of performance indicators. It should be noted that there are no target performance levels associated with the performance indicators – performance is assessed on a benchmark basis using the performance indicators from the NSW Office of Water, TBL Report for Water, although Council has a target of achieving Ranking 1 in all performance indicators, which equates to being in the top 20% of Council's in NSW.

A number of the performance indicators are asset management related technical levels of service.

This AMP is based on Levels of Service taken from the performance indicators as shown in the table below. Revised specific Levels of Service need to be developed taking into account customer expectations and affordability.

Table 2-3 Levels of service based on performance indicators

Level of Service	Performance achieved 2008/9	NSW Office of Water TBL Report 2008/9 Ranking
Number of connected residential properties	93% of total residential properties	n/a
Compliance with BOD standard in licences	100%	1
Compliance with SS standard in licences	100%	1
Number of complaints about odour per 1000 properties	0.3	2
Number of complaints about wastewater service per 1000 properties	27	4
Average duration of sewerage interruptions	120 minutes	2
Percentage of effluent recycled	23%	2
Percentage of biosolids reused	100%	1
Sewer main breaks and chokes per 100 km of main	103	4
Sewer overflows per 100 km of main	27	4
Total days lost	6.4% of total	5
Compliance with Environmental Protection Licence	100%	n/a
Response to major failure with significant consequences or affecting multiple properties	1 hour	n/a
Response to minor failure affecting a single property	2 hours	n/a
Response to verbal enquiries	2 working day	n/a
Response to written enquiries	10 working days	n/a

Note: the above includes data for all wastewater systems

Historically there have been no separately identified customer levels of service for wastewater assets, apart from Council's customer service policy, which is generally focused on response times to customer enquiries and requests.

2.5 Desired levels of service

Initially, the desired Levels of Service and performance targets are the current performance levels as shown in the table above.

Future customer Levels of Service are to be determined at the next review of the strategic business plan taking customer expectations into account. Future technical Levels of Service will be based on the customer Levels of Service.

3. FUTURE DEMAND

3.1 Demand forecast

Factors affecting demand include; population change, changes in demographics, seasonal factors, consumer preferences and expectations (levels of service), economic factors, agricultural practices, environmental awareness, etc.

The 2009, Coffs Harbour City Population Profile, which is based on the 2006 Census undertaken by the Australian Bureau of Statistics, identifies a number of trends that will impact on service delivery as shown in Table 3-1. The average annual growth rate of Coffs Harbour over the next 10 years is forecast at 1.6%.

Table 3-1 Demand factors, projections and impact on services

Demand factor	Present position (2006)	Projection (2031)
Population	Estimated resident population 64,910	Projected population 98,710
Demographics	Median age 41 % Population older than 45 is 45%	Median age 51 % Population older than 45 is 58%
Increasing operations, maintenance and construction costs	The costs associated with asset construction, operations, maintenance, power consumption, chemicals and renewal is increasing at a greater rate than Council's revenues	Costs increases are forecast to continue
Environment and climate change	Current position is known	Future position is uncertain, but indications are that change, including periods of drought and increased frequency of major storm events is likely

There is currently no formal procedure to take the above into account in determining demand forecasts for the water supply assets.

3.2 Changes in technology

The main areas where technology changes may affect the delivery of services are in the areas of condition monitoring, trenchless technology, SCADA technology, water reclamation processes and construction.

Changes in demand may occur as a result of growth in population, changes in the local economy, customer education and climate change.

3.3 Demand management plan

A demand management plan does not currently exist. A demand management plan is required to cover the management of demand changes by:

- managing existing assets
- upgrading existing assets
- providing new assets to meet demands
- managing the demand including consideration of non-asset solutions such as customer education.

3.4 New assets from growth

Growth forecasts indicate that new infrastructure assets will be required to meet future growth. Council will acquire these assets from private land development activities and from its own construction works.

Acquiring these new assets will commit council to fund ongoing operation and maintenance costs for the assets for the period that the service provided from the assets is required. These future costs are identified and considered in developing financial forecasts.

4. LIFECYCLE MANAGEMENT PLAN

The lifecycle management plan details how Council intends to manage and operate the assets at the agreed levels of service while optimising life cycle costs.

4.1 Background data

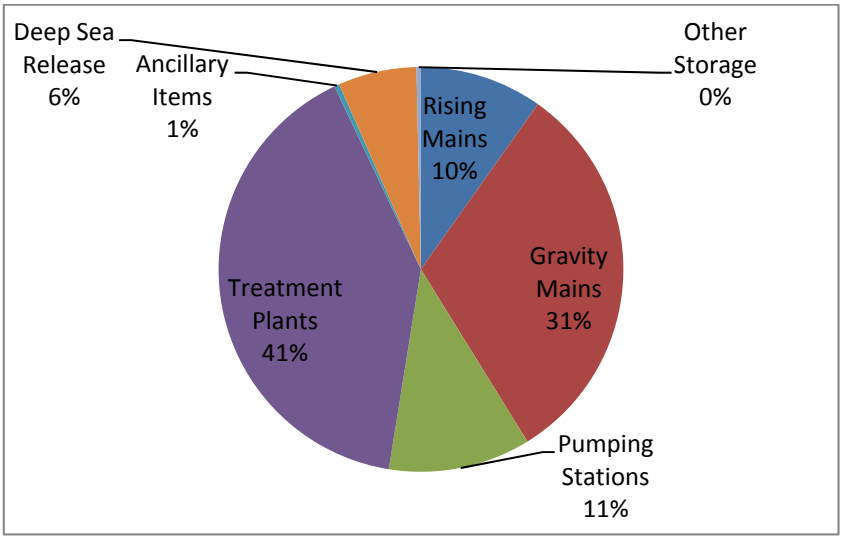
4.1.1 Asset value

A summary of the assets covered by this asset management plan is provided in Section 2.4. The figures provided are based on the best currently available information. An indication of the relative values of assets which make up Council's wastewater assets in each system is shown in Table 4-1 and Figure 4.1.

Table 4-1 Proportion of value by asset types

	Percentage of value of asset class for each system				
	Coffs Harbour	Corindi	Moonee	Sawtell	Woolgoolga
Rising Mains	4.5%	6.0%	10.5%	5.4%	6.1%
Gravity Mains	23.9%	34.2%	23.3%	62.7%	52.6%
Pump Stations	11.1%	10.6%	13.2%	10.7%	15.0%
Treatment Plant	49.9%	48.8%	52.8%	21.0%	25.9%
Deep Sea Release	10.1%	n/a	n/a	n/a	n/a
Ancillary Items	0.5%	0.4%	0.2%	0.2%	0.4%

Figure 4-1 Proportion of value by asset types (overall)



4.1.2 Asset material and age

The age profile of Council's wastewater pipework assets for each material is shown in table 4.2. The profile has been developed based on current information.

Table 4-2 Trunk main and reticulation pipe materials and ages

Material	more than 50 years	40-49 years	30-39 years	20-29 years	9-19 years	less than 9 years
uPVC	0.0%	0.1%	0.3%	29.0%	36.0%	34.6%
AC	0.0%	17.5%	61.9%	20.6%	0.0%	0.0%
CI	0.0%	83.4%	8.5%	8.1%	0.0%	0.0%
Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
DI	0.0%	0.0%	0.0%	2.1%	6.4%	91.4%
HDPE	0.0%	0.0%	0.0%	0.0%	30.2%	69.8%
VC	0.0%	22.5%	45.2%	28.9%	3.3%	0.1%
Unknown	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Overall	0.0%	11.7%	23.4%	27.5%	18.2%	19.2%

Note that the percentages are based on a detailed asset data set which requires to be verified.

Based on this data set, the age profile indicates that 64.9% of wastewater pipeline assets are less than 30 years old. The system is therefore relatively young.

4.1.3 Asset Condition

There is no direct data on the condition of rising and gravity mains system. The condition is informed by the frequency of chokes in different parts of the system. Information on the location of chokes is being collated at present.

Other isolated asset condition information is available from pipe monitoring databases, CCTV inspections and manhole inspections carried out on RAIN Survey information.

The condition of pumping stations and Corindi, Woolgoolga, Moonee and Coffs Harbour treatment plants, are assessed informally by Council staff as being satisfactory. Sawtell treatment plant is in poor condition, and will be decommissioned in the near future.

4.2 Asset maintenance

4.2.1 Maintenance plans

The following maintenance plans are utilised by Council:

- Water Reclamation Plants
  - Servicing of plant, equipment and instrumentation in accordance with equipment manufacturers requirements,

- Inspections of electrical switchboards
- Annual thermographic surveys of electrical switchboards
- Pest control maintenance
- Monthly test running of all generators

- Pumping stations
  - Servicing of equipment and instrumentation in accordance with equipment manufacturers requirements
  - Annual and weekly maintenance and inspection schedules
  - Weekly inspection of dosing systems
  - Inspections of electrical switchboards
  - 2 yearly Thermographic surveys of electrical switchboards
  - Pest control maintenance
  - Periodic inspection and mowing of rising main easements
  - Periodic inspection of above ground rising mains
- Reticulation Systems
  - Yearly inspection of trade waste systems
  - Maintenance of repeat choke register
  - Manhole maintenance schedule
- Periodic inspection and mowing of trunk main easements
- CCTV Inspections to address repeat chokes
- Periodic Jetting Program to address repeat chokes

All other maintenance is unplanned.

Risk based maintenance management plans, taking the above plans into account, are included in the Pollution Reduction Program, PRP100, for Coffs Harbour, Sawtell and Corinda.

4.2.2 Current and forecast operations and maintenance expenditure

Maintenance expenditure on wastewater assets over the past three years is shown in Table 4-3.

Table 4-3 Operations and maintenance expenditure trends for wastewater assets

	2007/8	2008/9	2009/10
Treatment Works	$2,415,938	$2,795,508	$3,226,187
Sewers	$789,139	$734,934	$772,045
Reuse Pipework	$51,697	$29,735	$21,522
Pumping Stations and Rising	$2,027,031	$2,068,061	$2,206,374

	2007/8	2008/9	2009/10
Mains			
Telemetry	$23,113	$38,850	$32,326
Reuse Management			$5,361
Ocean Outfall			$50,824
Total	$5,306,919	$5,667,089	$6,314,639

Current maintenance expenditure levels are considered to be adequate to maintain the current condition and to meet the current Levels of Service. The maintenance costs of treatment plants will reduce when Sawtell WRP is decommissioned, but pump station costs may increase due to pumping from Sawtell WRP to Coffs Harbour WRP .

There are likely to be changes in demand for the services provided by wastewater assets into the future. Additional assets to meet these demands will be acquired through development activities and by council funded works.

Over recent years, the length of Council's wastewater pipework system has been growing at a rate of about 1.5%, although this varies among the various asset types. It is anticipated that the trend will continue.

It has been assumed that the annual growth in population served is 1.6% in accordance with the 2009, Coffs Harbour City Population Profile forecast.

The forecast of operations and maintenance expenditure is shown in table 5-2.

4.3 Renewals

In the absence of condition assessments for wastewater assets, renewals forecasts for trunk mains and the reticulation system have been based on the following:

a) Pipeline assets that are currently assessed as having no remaining useful life, or that will have no remaining life within the next ten years, will be renewed within the ten year period

b) Forecast cash flow for pipeline renewals is equalised over the ten year period. The renewal of the telemetry system will take place progressively from 2014/15

c) Unit rates for renewals work are based on the NSW Reference Rates Manual for Valuation of Water Supply, Sewerage and Stormwater Assets

Pipe rehabilitation, which extends the life of existing pipes, has been included in the renewals forecast as contained in the current long term financial plan.

Renewals of pumping stations and treatment plant units have been forecast on the basis of remaining useful life as contained in the current long term financial plan.

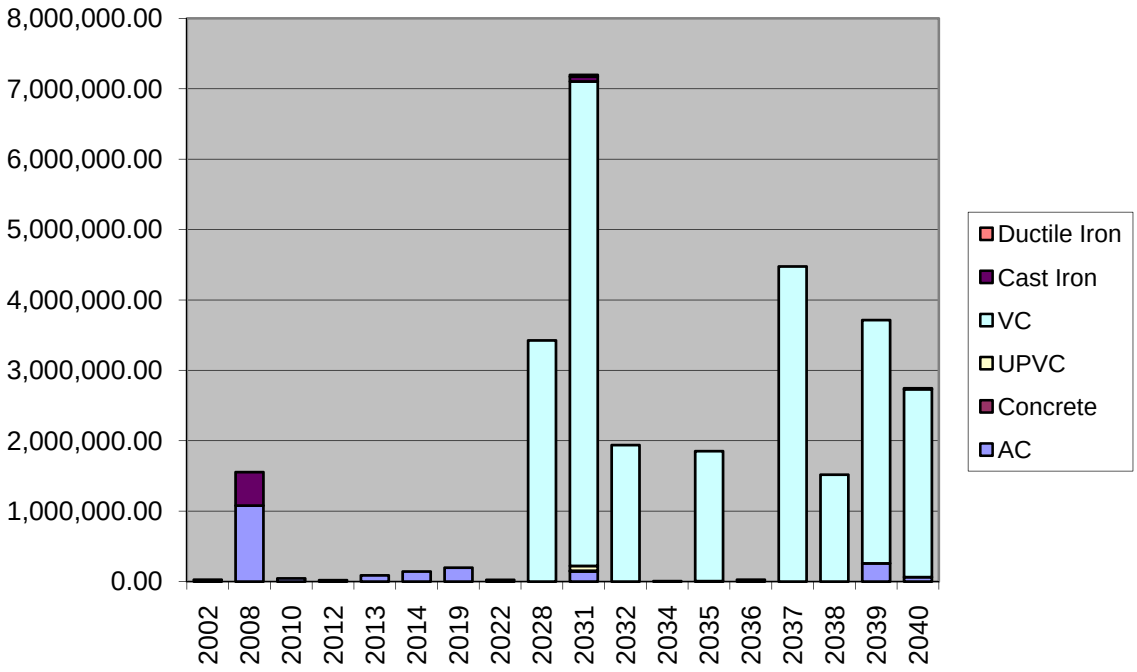
The renewals forecast will be refined on the basis of improved information about asset condition and a risk assessment taking into account pipeline burst frequencies, sewer

choke frequencies asset condition and consequences of failure. The development the MIKE Urban hydraulic model will enable the present and future operational performance characteristics of the five sewerage systems and the risks that may be associated with their operation to be determined. From the assessed risks, the most cost effective, long term renewal and augmentation strategies may be determined.

The forecast of renewals expenditure over the next 10 years is shown in table 5-3.

The level of pipe renewals is forecast to increase significantly after 2025 to an average of approximately $3,000,000 per year as shown in figure 4-2 below.

Figure 4-2 Pipeline renewals based on pipe age



4.4 Acquisition procedures and forecasts

Acquisitions create a new asset that did not previously exist, or increase the capacity of or improve the quality of an existing asset. They may result from growth, social or environmental needs. Assets may also be acquired by Council from land development activities.

There is no written procedure in place for the process of adding new assets to the asset management or financial systems; however there is a process in place for transfer of responsibility for maintenance to Council. The present unwritten process comprises a Council inspector checking the construction work against the construction drawings. Once the construction has been signed off by the subdivision engineer the asset information is passed on to the Asset Systems branch. In-house and contract works follow a similar process and data on new assets is captured within the asset system.

The forecast of acquisition expenditure is shown in table 5-4.

4.5 Risk management

Council has a corporate risk procedure.

An initial assessment of risks associated with the wastewater assets has been undertaken as shown in Table 4-4 below

Table 4-4 Critical risks and treatment plans

Risk	Consequence	Risk Rating	Risk Treatment Plan
Overall condition of assets decreases due to inadequate renewal and maintenance programs	Levels of Service not achieved	High	Improve data, determine priorities based on lifecycle costs, service and risk criteria
Changes in legislation affect the responsibilities of Council	Changes in costs and resource requirements	Low	Monitor legislative changes
Resource constraints affect the management of the assets	Levels of Service not achieved, condition of assets deteriorates	High	Establish clear management plans, with forecast costs, to maintain Levels of Service and debate with Council
Unforeseen increases in fuel, plant and materials costs	Increased costs of carrying out repairs and renewals	High	Monitor costs
Increases in power costs	Increased operational costs	High	Monitor costs and optimise use
Increase in chemical costs	Increased operational costs	High	Monitor costs and optimise use
Failure of materials supplies	Delays to repairs and renewals and increased materials costs	Medium	Ensure alternative supply arrangements are in place for critical materials
Flooding/storms	Loss of short term functionality of asset, damage to asset causing cost increases	High	Implement flood management program
OH&S incident whilst working on assets causes fatality or serious harm injury	Prosecution risk	Low	Ensure Council has OH&S procedures and staff are trained in them. Ensure all contractors have OH&S policy and procedures and they are complied with
Drought	Increased sewage strength (and increased demand for reclaimed water)	Medium	Monitor sewage strength and adjust treatment levels where practicable.
Power failure	Loss of or restrictions to pumping and treatment capacity, may lead to overflows	Medium	Ensuring standby power generation is available to maintain pumping and treatment capacity
Unexpected growth in	Upgrades needed of	Low	Monitor growth patterns

Risk	Consequence	Risk Rating	Risk Treatment Plan
demand	components of system		
Sewage Overflows	Contamination of watercourses, public health risk	High	Telemetry alarms, storage capacity at key pumping stations, containment procedure
Biosolids Management	Loss of re-processor may cause storage and environmental problems at WRPs	Medium	Monitor risk by communicating with re-processor and regulatory bodies. Prepare contingency plan, covering: • Additional treatment options; • Storage options; • Alternative re-processors.

4.6 Disposal plan

Disposal includes any activity associated with disposal of a decommissioned asset including sale, demolition or relocation.

Sawtell Sewage Treatment Plant and 4 pumping stations on the Sawtell system may be disposed of when the Treatment Plant is decommissioned. Council may decommission 3 to 5 pumping stations, and construct 1 new one. One of the decommissioned pump wells may be used as emergency storage for the new pumping station. Sewage pump station No. 30 is identified for disposal within the next two years.

These have been identified in Council's works programs which include the proposed timing of replacements and the estimated cost.

State Government funding may be available to gravitate sewage from SPS 30 (Wongala) to SPS 17 (Park Beach). If this funding is obtained, SPS 30 will be decommissioned.

Council does not have a disposal procedure.

5. FINANCIAL SUMMARY

This section contains the financial forecasts resulting from the information presented in previous sections of this asset management plan and based on the information available.

Inflation is based on the forecasts given in the *Access Economics Business Outlook, September 2010* as follows:-

2010/11	2.9%
2011/12	3.0%
2012/13	2.9%
2013/14	2.5%
2014/15	2.4%

And 2.4% per year thereafter.

5.1 Depreciation

Depreciation of assets is undertaken on a straight line basis. Standard asset lives are shown in the Table 5-1.

Table 5-1 Standard asset life for depreciation purposes

Asset Class	Asset material	Standard asset life (years)
Gravity Pipelines and Rising Mains	Asbestos Cement	70
	uPVC	70
	Vitrified Clay	70
	Ductile Iron	70
	Unknown material	70
M&E plant and equipment		25
Telemetry		15
Other structures		50

5.2 Cost forecasts

The forecasts for operational and maintenance costs, renewals and acquisitions are shown in the tables below.

Operational and maintenance costs include all labour, plant, materials and consumables required to operate and maintain the assets.

The acquisition forecast is in accordance with Council's current long term financial plan.

The total expenditure forecast for the wastewater assets is shown in Figure 5.1.

Figure 5-1 Proposed total operating, maintenance and capital costs

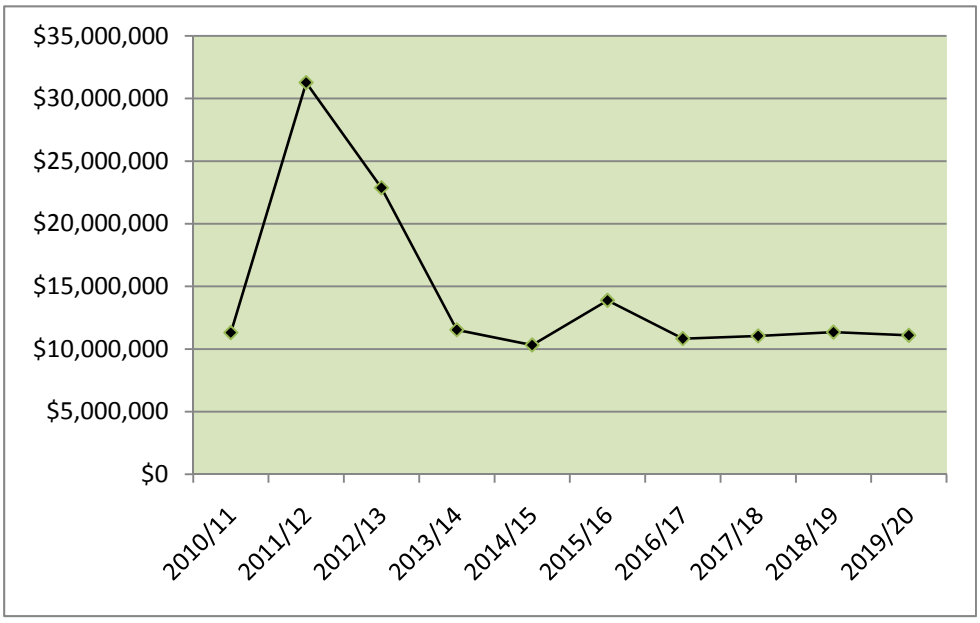


Table 5-2 Operational and maintenance expenditure forecasts

$,000	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Treatment works	3,386	3791*	4,153	4,230	4,332	4,435	4,542	4,651	4,763	4,877
Sewers	830	855	880	907	929	951	974	997	1,021	1,046
Reuse pipework	24	25	25	26	27	27	28	29	29	30
Pumping stations and rising mains	2,018	2201*	2,334	2,476	2,535	2,596	2,659	2,722	2,788	2,855
Telemetry	56	58	59	61	62	64	65	67	69	70
Ocean outfall	50	52	53	54	55	57	58	59	61	62
Total	6,364	6,982	7,504	7,754	7,940	8,131	8,326	8,526	8,730	8,940

*assumes that Sawtell Treatment Plant is decommissioned in 2011/12

Table 5-3 Renewals expenditure forecasts

$,000	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	total
Pipe renewal	234	241	248	254	260	267	273	280	286	293	
Pipe rehabilitation	1,000	1,030	318	326	334	342	350	358	367	376	
Mechanical and electrical equipment renewal/upgrade	3,020	3,327	2,713	2,607	1,240	4,500	1,236	1,236	1,315	839	
Telemetry renewal	0	0	0	0	55	55	56	56	57	57	
Total	4,254	4,598	3,279	3,187	1,790	5,163	1,915	1,930	2,025	1,565	

Table 5-4 Acquisition projects expenditure forecasts

$,000	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	total
Minor sewer extensions	40	40	40	40	40	40	40	40	40	40	400
Telemetry	100	100	0	0	0	0	0	0	0	0	200
Reclaimed water pipeline stage 2	0	0	1,258	0	0	0	0	0	0	0	1,258
Reclaimed water pipeline stage 3	0	0	2,742	0	0	0	0	0	0	0	2,742
Minor treatment works	50	50	50	50	50	50	50	50	50	50	500
Sawtell PS and pipework	0	19,000	7,500	0	0	0	0	0	0	0	26,500
S64 works general	500	500	500	500	500	500	500	500	500	500	5,000
Total	690	19,690	12,090	590	590	590	590	590	590	590	36,600

5.3 Funding strategy

The funding strategy is detailed in Council's 10 year long term financial plan.

5.4 Valuation forecasts

Asset values are forecast to increase as additional assets are added to the asset stock from construction and acquisition by Council and from assets constructed by land developers and others and donated to Council. The projected replacement cost asset values over the planning period is predicted to grow by 3% annually.

6. ASSET MANAGEMENT PRACTICES

6.1 Financial systems

Coffs Harbour City Council uses Finance One software for the management of its financial information. This system is managed by Council's Finance Department.

Financial reporting must comply with the following Australian Accounting Standards:

- AASB 5 Non-current Assets Held for Sale and Discontinued Operations
- AASB 116 Property, Plant and Equipment
- AASB 136 Impairment of Assets
- AASB 138 Intangible Assets
- AASB 140 Investment Properties
- AASB 1051 Land Under Roads

The guidelines provided by the Department of Local Government are also complied with.

Items of infrastructure, property, plant and equipment are not capitalised unless their cost of acquisition exceeds $2,000.

6.2 Asset data

Council is in the process of implementing AssetMaster as its corporate asset management system. At present asset data for infrastructure asset is held in a number of systems including Council's GIS, access data bases and excel spreadsheets.

It is anticipated that AssetMaster will be fully implemented prior to the end of the 2010/11 financial year and will include integration between the asset system and Council's financial system.

6.3 Asset management gap analysis

An asset management gap analysis covering all asset classes was undertaken in August 2010. The results of the gap analysis for wastewater are shown in the table below. The desired score for each component is 6. The findings of the gap analysis form the basis of the improvement plan.

Table 6-1 Findings from gap analysis assessment

Water & Sewerage Assets	Current Score	Desired score 3yrs	Priority (1-3)	1	2	3	4	5	6	7	8	9	10
Asset Knowledge / Data	**5.0**	**6.0**											
Asset Classification / hierarchy	4	6											
Physical attributes and location	6	6											
Operational / Maintenance data	6	6											
Condition data	5	6											
Performance utilisation data	6	6											
GIS / spatial data	4	6											
Lifecycle cost data	4	6											
Valuation, depreciation and effective life data	5	6											
Data processes / techniques	**2.1**	**6.0**											
Asset identification / clarification processes	2	6											
Data capture strategies and processes	2	6											
Condition assessment processes / rating systems	2	6											
Performance utilisation processes	2	6											
Asset GIS mapping systems	2	6											
Asset handover procedures	3	6											
Data management processes	2	6											
Strategic Asset Planning Processes	**2.9**	**6.0**											
Levels of service	3	6											
Demand forecasting	4	6											
Risk management	3	6											
Optimised decision making / predictive modelling	2	6											
Lifecycle planning and funding projections	3	6											
Financial planning and capital investment	3	6											
Asset capital processes	3	6											
Asset management plans	2	6											
Operations Maintenance and Work Processes	**3.7**	**6.0**											
Maintenance strategies	2	6											
Emergency response plans	3	6											
Contract administration	4	6											
Maintenance management	5	6											
Design / construction strategies	6	6											
Critical assets	2	6											
Information Systems	**3.8**	**6.0**											
Asset register	3	6											
Asset costing systems	3	6											
Plans & records	4	6											
Works / maintenance management	5	6											
GIS	4	6											
Asset management system / modules	3	6											
Systems integration	4	6											
Availability / user friendly	4	6											
Organisational / Commercial Context	**2.3**	**6.0**											
Organisational strategy	2	6											
Asset management review / improvement	2	6											
Commercial tactics	4	6											
Corporate sponsorship / commitment	2	6											
AM roles and responsibilities	2	6											
Training and awareness	2	6											

6.4 Asset data

Condition, attribute and spatial data exist for some wastewater assets and are currently stored in the AMS database, the GIS database and various other datasets.

7. IMPROVEMENT PLAN

7.1 General areas for improvement

The gap analysis identified areas for improvement across all asset classes. These are termed general areas for improvement, and are listed in table 7-1. The highest priority tasks are:

1. Finalising and implementing the Improvement Plan
2. Establishing Levels of Service that are linked to the community plan to enable activities and expenditure to be established in accordance with the wishes of the community
3. Clearly identifying responsibilities and roles within the organisation in relation to asset management
4. Confirming corporate sponsorship of and commitment to asset management across the organisation
5. Preparation of written procedures for data and information collection

The improvement plan with tasks specifically related to wastewater assets is shown in Table 7-2.

Note that, unless otherwise stated, responsibilities and resource requirements are to be confirmed.

7.2 Performance measures

The effectiveness of this asset management plan can be measured:

- by monitoring actual expenditure for capital and operational and maintenance against forecast expenditure
- by monitoring compliance with Level of Service performance targets
- by monitoring performance in relation to the improvement plans included in the asset management plan.

Table 7-1 General improvement plan

Task No.	Task	Priority	Responsible Officer	Resources Required
1	Develop Customer and Technical Levels of Service in conjunction with consultation on the next Strategic Business Plan	1		
2	Clearly define Asset Management responsibilities for the organisation and communicate across organisation	1		
3	Prepare first cut AMPs for each asset class/group based on current data and Initial Technical Levels of Service. AMPs to include asset specific improvement plans	1		
4	Regular confirmation of corporate support communicated all staff	1		
5	Review current condition assessment processes and consolidate into condition assessment procedures for water, wastewater and general fund assets (see asset specific improvement plans) that covers all asset classes	2	Manager Asset Systems	
6	Review current data management processes and consolidate into single data management procedure that covers all asset classes	2	Manager Asset Systems	
7	Establish criteria for critical assets. Then critical assets identified and recorded and included in risk management plan and emergency response plan	2		
8	Review current data capture processes and consolidate into single data capture process across all asset classes	2	Manager Asset Systems	
9	Develop asset hierarchy with intelligent IDs	2	Manager Asset Systems	
10	Develop risk assessment procedure and then undertake risk assessments for all asset classes. Needs to be linked to the corporate risk procedure	2		
11	Update emergency response Plan, taking into account critical assets.	2		
12	Establish and implement training program across the organisation	2		
13	Develop written processes for demand forecasting, taking into account the 2030 Community Plan	2		
14	Prepare procedure for asset management audit and review	2	Manager Asset Systems	

Task No.	Task	Priority	Responsible Officer	Resources Required
15	Prepare written asset GIS mapping procedure	2	Manager Asset Systems	
16	Prepare maintenance Strategies linked into Levels of Service, critical assets and condition assessments	3		
17	Develop asset hierarchies in accordance with the procedure	3	Manager Asset Systems	
18	Update valuation, depreciation and effective life data to take condition data into account	3		
19	Develop asset cost system to allocate operation and maintenance and renewals costs to specific assets	3		
20	Prepare procedures for managing planned and unplanned maintenance in accordance with the maintenance strategy. Prepare and implement maintenance specifications	3		
21	Review current performance utilisation processes and consolidate into performance measurement procedures	3		
22	Prepare written asset handover procedure. Needs to include for handover of developer as well as Council generated assets	3		
23	Develop and implement guidelines/processes for lifecycle planning and funding projections, including operating, maintaining, renewals, development and disposal of assets	3		
24	Complete GIS data input and audit current data quality after procedure implemented	3	Manager Asset Systems	
25	Prepare procedure to ensure plans and records properly managed	3	Manager Asset Systems	
26	Prepare written capital investment procedure, to include asset risk assessments	3		
27	Ensure linkages between planning/community plan and asset management are in place and prepare a process to convert strategies into actions.	3		
28	Prepare procedures for project initiation and asset reviews	3		
29	Review existing procedures and update if required	3		
30	Collect performance data following completion of data capture and management procedures	4		

Task No.	Task	Priority	Responsible Officer	Resources Required
31	Life cycle costs to be collated following collection of maintenance data and changes to cost recording system	4		
32	Undertake review to ensure contract administration is consistent with other procedures and legislative requirements	4		
33	Optimised decision making may be deferred until basic asset management functioning properly	5		
34	Complete installation and development of AssetMaster.	on going	Manager Asset Systems	
35	Undertake condition assessments of some asset classes in accordance with procedure. Update condition data for other asset types in accordance with procedure.	on going		
36	Operations and maintenance data currently collected in water/wastewater, some data in other asset types. Audit data quality after procedure implemented	on going		
37	Works / maintenance cost management to be included in development of AssetMaster. Note that water/wastewater have own system	on going		
38	Continue with integration of systems	on going		
39	Review availability/user friendliness of system when Asset Master fully implemented	on going		
40	Continue with loading data onto GIS. Data quality to be audited after procedure implemented	on going	Manager Asset Systems	
41	No immediate action regarding design/construction strategies, other than regular reviews	on going		
42	Development of asset register to continue. Will need to be updated for asset hierarchy etc	on going	Manager Asset Systems	

Table 7-2 Wastewater asset improvement plan

Task No.	Task	Priority	Responsible Officer	Resources Required
1	Develop revised Levels of Service	1		
2	Establish procedure for risk based renewals prioritization based on asset condition, choke frequencies, age of pipe etc	1		
3	Create and maintain GIS layer showing location of chokes	1		
4	Carry out an asset risk assessment for wastewater assets	1		
5	Develop maintenance management plans based on the asset risk assessment	2		

7.3 Monitoring and review procedures

This asset management plan will be reviewed during annual budget preparation and amended to recognise any changes in service levels and/or resources available to provide those services as a result of the budget decision process.

This asset management plan has a life of four years and is due for review in 2014.

8. REFERENCES

IPWEA, 2006, 'International Infrastructure Management Manual', Institute of Public Works Engineering Australia, Sydney.