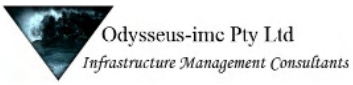
Asset Management System Effectiveness Review

Water Corporation Western Australia

December 2009



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EXECUTIVE SUMMARY

Water Corporation (WaterCorp) is required to undertake an asset management system effectiveness review (AMSER) on a two to three yearly basis. It is understood that this is a requirement of its regulatory license and that similar reviews have been undertaken in the past namely 2002, 2004 and 2006.

The outcomes of the 2009 review are identified in this report outlining the performance of WaterCorp with respect to asset management key processes as well as recommendations for improvement against each process where identified. It is further understood that the outcomes of the review are reported to the Economic Regulation Authority (ERA).

This report is an impartial review of WaterCorp's asset management effectiveness under the ERA guidelines.

The review conducted between September 2009 and November 2009 examined the asset management processes used by the Water Corporation in delivering the services to its customers. These services include lifecycle processes for:

- Asset planning;
- Asset creation/acquisition;
- Asset disposal;
- Environmental analysis;
- Asset operations;
- Asset maintenance;
- Asset management information system (AMIS);
- Risk management;
- Contingency planning;
- Financial planning;
- Capital expenditure planning; and
- Review of the asset management system.

As well as the processes, the asset management supporting systems were tested as to their use and effectiveness. Data used by WaterCorp was also examined with respect to its effectiveness for asset management and the delivery of outcomes.

The recommendations identified in the previous review were examined and the outcomes included in this report.

Tests were undertaken through interviews and investigation of the processes to assess whether they were being performed as documented.

As a result of the 2009 Effectiveness Review the maturity rating for WaterCorp has been updated to reflect the current findings. It is felt that the ratings in the following table are appropriate for Water Corporation. The following changes have been made:

- Asset Disposal has been elevated from 3 to 4.

All other processes are deemed to be stable.

Asset Management System	Maturity Rating					
Process	**0**	**1**	**2**	**3**	**4**	**5**
Asset Planning					X	
Asset Creation/Acquisition					X	
Asset Disposal					X	
Environmental Analysis						X
Asset Operations					X	
Asset Maintenance					X	
Asset Management Information System					X	
Risk Management						X
Contingency Planning					X	
Financial Planning					X	
Capital Expenditure Planning						X
Review of the AMS					X	

TABLE 1 – ASSET MANAGEMENT MATURITY RATINGS

The above ratings are based on the following maturity definitions:

0 – Not performed
1 – Performed informally
2 – Planned and tracked
3 – Well defined
4 – Quantitatively controlled
5 – Continuously improving

As a result of the review, the following recommendations have been identified to address the issues observed.

Asset Management Process	Issue	Recommendation
Asset Planning	The expectations of WaterCorp personnel are that the asset class plans will drive decision making and are seen as important documents.	It is recommended that the program for the production of asset class plans be accelerated as WaterCorp personnel are relying heavily on the outputs from these plans. Alternatively WaterCorp will need to manage expectations because personnel are awaiting plan completion.
	While capital and maintenance programs are developed the impacts	Commence the analysis of the relationship between capital expenditure and maintenance

Asset Management Process	Issue	Recommendation
	of each activity on the other is not assessed at this time.	costs.
	The efficiency of current renewals analysis is limited by the lack of availability of an appropriate tool and the quality of the existing data.	Improve the renewals forecasting by obtaining an appropriate tool to undertake the analysis and feed the asset class plan.
	There is a data quality issue at the strategic level due to the need to collect the right data for renewals analysis.	There is a need for an integrated communications strategy that improves the awareness and understanding of other Branches for the need and use of good quality data.
Asset Creation and Acquisition	While the project files satisfy the QA system, when testing the projects, it was difficult to find the completed forms.	Include a section within the project file specifically for Quality Assurance incorporating all completed forms, checklists and reports. Aligning the hardcopy files to the electronic system in a manner that the project information can be easily found. This will improve the effectiveness of the project management process.
Asset Disposal		No Recommendation
Environmental Analysis		No Recommendation
Asset Operations	Currently, there is a view within OAM that operational asset management capability is inconsistent across that state.	It should be recognised that asset management training, in particular specific accredited asset management training for the water industry is not readily available. Training has been provided in the past by specialist consultants as part of their services. WaterCorp needs to catalogue specific training requirements in asset management as it covers a significant number of functions, separated into internal, external or combined training and seek appropriate bodies to provide training e.g. • ACEAM; • CIEAM; • IPWEA; or • Specialist consultants.
	There is a need to improve the quality of the data to enable improved decision making	To improve the data quality, WaterCorp should continue to place significant effort in data capture to complete the capture of the required

Asset Management Process	Issue	Recommendation
		asset characteristics.
	There is a need to link root cause analysis to incident reporting.	While there is a space in the incident management report for root-cause analysis, it is not filled in. The incident report should document the root-cause analysis completion, the analysis document and the date completed.
Asset Maintenance	Documentation is in the process of being finalised.	Continue to review and complete process documentation including maintenance standards and procedures.
	The maintenance strategies have been developed based on discussions between SAM and TAM and the SAMP as opposed to documented asset class plan output.	Demonstrate alignment between the maintenance strategy and the asset class plans once each plan is completed.
	The G&A region is applying corporate requirements well however, it cannot be assumed that all regions are doing likewise as there is a view within OAM that operational asset management capability is inconsistent across that state.	Review the regions for consistency of application of corporate requirements.
	Improve consistency of application across the Regions.	Implement a formal training program for asset managers specifically designed to improve the skill base.
	It was felt that the condition rating process and gap treatment tended towards capital expenditure as the solution to the asset condition as a first pass while there could be potential for a maintenance solution to provide an appropriate improvement.	Either focussed training or improved treatment options should be identified to provide non-capital solutions as alternatives to capital.
	Activity based planning is also undertaken to refine the maintenance requirements during budget planning. Concern was expressed for additional activity based planning training.	Increase the level of activity based planning training.
Asset management information system	There are data quality issues however it is not clear as to which	Data collection, management and development should be identified as a key process on the

Asset Management Process	Issue	Recommendation
(AMIS)	Manager is responsible.	accountability framework.
	Mobile devices are required to improve the efficiency in data collection.	Data improvement is an ongoing process and while a program is in place to improve asset characteristics it would be better served to assist the data capture through the use of mobile devices and the implementation of Stage 2 mobile applications.
	G&A are using the GIS to produce maps of corrective maintenance along the Kalgoorlie pipeline to assist analysis and demonstrate the usefulness of the data capture in the Districts to local personnel.	A local GIS Strategy within AMD should be developed to identify improved use of the GIS e.g. development of "measle" maps illustrating geographically, areas of poor condition, poor performance assets and localised areas of high risk. This could assist in cost effectiveness reviews and expenditure on improved system performance as opposed to individual asset performance. The use of GIS for displaying time based impacts of the capital program on the local asset profile is another use.
Risk Management	The current 6 monthly risk reviews will capture the changes in risk but not in a timely manner.	When a failure is recorded and subsequently completed the risk review should be undertaken as part of the incident process and identified on the incident form e.g. who reviewed the risk, when it was reviewed and what the outcomes were.
	The application of risk analysis is sometime misinterpreted by the asset managers.	A training program regarding the interpretation of consequences, likelihood of failure and risk should be developed and introduced to the Asset Managers.
Contingency Planning		No Recommendations
Financial Planning	While a definition of capital is defined, there is no clear definition of renewals and upgrades. This has implications with the ability of WaterCorp to understand to what degree they are funding asset consumption also referred to as the "funding gap".	Clear definitions of renewal, upgrades and replacement are required to be defined, implemented across WaterCorp and consistently applied. This will assist the SAM branch with its analysis of the funding gap.

Asset Management Process	Issue	Recommendation
Capital Expenditure Planning	The feeling is that major capital projects are getting priority over smaller projects and as such it may be appropriate to review the parameters and weighting applied and give consideration to cost effectiveness of expenditure e.g. cost/benefit	The business cases as well as including risk mitigation could provide the ability to incorporate other parameters such as carbon emission reduction, social benefits, and environmental benefits etc.
	As above.	An additional analysis could be undertaken to examine an individual high cost project against a group of lower cost projects to determine the cost effectiveness outcomes e.g. where I spend the money for the best outcome.
Review of the Asset Management System		No Recommendations

Odysseus-imc Pty Ltd has completed the 2009 Asset Management Effectiveness Review. The review examined the measures taken by WaterCorp (the licensee) for the proper management of the assets used in the provision and operation of services and where appropriate, the construction or alteration of relevant assets.

Odysseus-imc Pty Ltd believes the findings in this document are an accurate reflection of the outcomes of the review.

Sandy Muir
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Date Signature Attached: 6th November, 2009

INTRODUCTION

BACKGROUND

Water Corporation (WaterCorp) is required to undertake an asset management system effectiveness review (AMSER) on a two to three yearly basis. It is understood that this is a requirement of its regulatory license and that similar reviews have been undertaken in the past namely 2002, 2004 and 2006.

The outcomes of the 2009 review are identified in this report outlining the performance of WaterCorp with respect to asset management key processes as well as recommendations for improvement against each process where identified. It is further understood that the outcomes of the review are reported to the Economic Regulation Authority (ERA).

This report is an impartial review of WaterCorp's asset management effectiveness under the ERA guidelines.

REVIEW OBJECTIVES

The objective of the asset management review was to assess the measures taken by WaterCorp (the licensee) for the proper management of the assets used in the provision and operation of services and where appropriate, the construction or alteration of relevant assets.

REVIEW PROCESS

The review was conducted between September 2009 and November 2009 examined the asset management processes used by the Water Corporation in delivering the services to its customers. These services include lifecycle processes for:

- Asset planning;
- Asset creation/acquisition;
- Asset disposal;
- Environmental analysis;
- Asset operations;
- Asset maintenance;
- Asset management information system (AMIS);
- Risk management;
- Contingency planning;
- Financial planning;
- Capital expenditure planning; and
- Review of the asset management system.

As well as the processes, the asset management supporting systems was tested as to their use and effectiveness. Data used by WaterCorp was also examined with respect to its effectiveness for asset management and the delivery of outcomes.

Supporting documented procedures were examined to establish availability and use. In addition the understanding of the procedures and their accessibility were tested.

The asset management planning documentation was reviewed as to the content, use and usefulness for planning. The application of the documents and their input into the lifecycle processes above was tested. Operations and maintenance plans were examined in the same vein as the asset management planning documents. Appendix A contains the list of the documents sighted.

The recommendations identified in the previous review were examined and the outcomes included in this report.

Tests were undertaken through interviews and investigation of the processes to assess whether they were being performed as documented.

The licensee's representative who was responsible for managing this project was Mark Malaga – Manager Business Initiatives, Strategic Asset Management Branch.

The Odysseus-imc representative who undertook this review was Sandy Muir who has spent approximately 200 hours on this review.

CORPORATE INVOLVEMENT

The review process adopted was used to assess the:

- Existence and effectiveness of processes;
- Existence of process documentation;
- People's understanding of the availability of documented processes;
- Understanding of the processes themselves; and
- Use of the processes for completeness (total or partial use) and consistency.

The WaterCorp personnel nominated as accountable for the provision, review and implementation of the supporting processes were interviewed. The managers involved are identified in the following table.

Key Processes	Accountable Managers
Asset planning	• Infrastructure Planning, • Strategic Asset Management, • Region
Asset creation and acquisition	• Infrastructure Planning, • Capital Investment, • Project Management
Asset disposal	• Tactical Asset Management, • Operational Asset Management
Environmental analysis	• Strategic Asset Management, • Infrastructure Planning, • Corporate Planning, • Risk & Assurance, • Tactical Asset Management
Asset operations	• Strategic Asset Management, • Tactical Asset Management • Operational Asset Management, • Mechanical & Electrical Services, • Service Delivery,

Key Processes	Accountable Managers
	• Water Production, • Wastewater Treatment, • Region
Asset maintenance	• Strategic Asset Management, • Tactical Asset Management • Operational Asset Management, • Mechanical & Electrical Services, • Region
Asset management information system (AMIS)	• Strategic Asset Management, • Tactical Asset Management, • Information Services, • Various system users
Risk management	• Tactical Asset Management, • Risk Management, • Risk & Assurance
Contingency planning	• Tactical Asset Management • Operational Asset Management, • Region
Financial planning	• Corporate Planning, • Financial Management, • Strategic Asset Management
Capital expenditure planning	• Capital Investment Branch, • Corporate Planning, • Strategic Asset Management
Review of the asset management system	• Strategic Asset Management

TABLE 2 - MANAGERS INVOLVED IN KEY PROCESSES

Appendix B contains the list of interviewees.

Supporting asset management documentation was sighted. In addition the flow of the process was tested from an application perspective.

Key processes were reviewed as identified in the ERA guidelines and were assessed in both Head Office and Goldfields and Agricultural (G&A) region. It is understood however that specific processes such as high level strategy and communications between WaterCorp and the ERA are undertaken corporately while the regions implement processes that impact locally e.g. local planning, capital works and operations and maintenance as well as responding to corporate requirements. This was accounted for during the review.

REGION INVOLVEMENT

This review included a visit to the Goldfields and Agricultural region with the view to identifying the degree to which the asset management system is used; in particular how well processes developed centrally are implemented within the region. In addition interviews were undertaken with select WaterCorp personnel that either implement the central processes or are responsible for development and implementation of regional asset management processes. In reviewing the processes the asset

management relationship between the region and Head Office was explored with respect to the communications and implementation.

The regions are heavily involved in asset management processes such as operations, maintenance and capital works planning and delivery. As such personnel within the region were interviewed against these processes. Sample testing was undertaken to test the application of processes and availability of supporting documentation. In addition the use of documentation such as asset management plans and maintenance plans were reviewed for application.

WATER CORPORATION POST 2006 REVIEW ACTIVITY

The 2006 Asset Management Effectiveness Review identified 36 actions to be addressed. The actions were scheduled for completion between 2007 and 2012. The following statistics and comments relate to the progress identified up to July 2009 which was documented in the AMSER 2006 Post Review Implementation Plan.

Of the 36 actions:

- 25 actions have been completed; and
- 11 actions are on track for completion.

Of the 11 actions:

- 4 actions are due for completion this year;
- 3 actions are due to be completed in 2010;
- 2 actions are due to be completed in 2011; and
- 2 actions to be completed in 2012.

The following table documents the 2006 improvements actions aggregated by key process. As can be seen by the results, the most actions were defined in asset disposal, asset operations and maintenance. The processes with the largest number of completed actions are asset disposal and asset maintenance. The status of the post 2006 activity is documented in Appendix C.

Key Processes	Actions Identified	Actions Completed	Actions On Track
Asset planning	3	3	
Asset creation and acquisition	3	3	
Asset disposal	7	5	2
Environmental analysis	1	1	
Asset operations	5	2	3
Asset maintenance	7	4	3
Asset management information system (AMIS)	1	1	
Risk management	2	2	
Contingency planning	3	1	2
Financial planning	0		
Capital expenditure planning	2	2	
Review of the asset management system	2	1	1

TABLE 3 – STATUS OF 2006 IMPROVEMENT ACTIONS

PERFORMANCE SUMMARY

As a result of the 2009 Effectiveness Review the maturity rating for WaterCorp has been updated to reflect the current findings. It is felt that the ratings in the following table are appropriate for Water Corporation. The following changes have been made:

- Asset Disposal has been elevated from 3 to 4.

All other processes are deemed to be stable.

Asset Management System	Maturity Rating					
Process	**0**	**1**	**2**	**3**	**4**	**5**
Asset Planning					X	
Asset Creation/Acquisition					X	
Asset Disposal					X	
Environmental Analysis						X
Asset Operations					X	
Asset Maintenance					X	
Asset Management Information System					X	
Risk Management						X
Contingency Planning					X	
Financial Planning					X	
Capital Expenditure Planning						X
Review of the AMS					X	

TABLE 4 – ASSET MANAGEMENT MATURITY RATINGS

The above ratings are based on the following maturity definitions:

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ASSET MANAGEMENT AT WATER CORPORATION

This section of the report provides an indication of the capability of WaterCorp in asset management by highlighting key areas of strength as well as activities that require additional effort.

ASSET MANAGEMENT STRUCTURE

WaterCorp is well structured to apply asset management across the business. Its philosophy is based on the International Infrastructure Management Manual regarded as the principle guidelines document in Australia, New Zealand, United Kingdom and South Africa.

The structure adopted in 2005 greatly increases the capacity to apply the asset management key processes as identified within this review. The Asset Management Division has in place a Strategic Asset Management (SAM) branch, Tactical Asset Management (TAM) branch, Operational Asset Management (OAM) branch and a Mechanical and Electrical Services (MES) branch.

The SAM branch provides the strategic direction on behalf of the Division to the Corporation e.g. production of the Strategic Asset Management Plan and Asset Class Plans. Significant effort is made to ensure the work undertaken within the Asset Management Division is aligned to corporate and regulatory requirements.

The strategic direction is communicated via the SAMP to the TAM branch for the production of the tactical maintenance strategy and supporting maintenance standards. This also includes the production and implementation of the risk based capital framework and supporting processes e.g. condition assessments used in the identification asset condition.

The OAM branch is charged with providing operational asset management support to the Regions, Water Technology Division, Wastewater alliances and Asset Delivery. This is undertaken by having the asset managers representing the Corporation in the Regions and working with the branches to manage the infrastructure with respect to operations and maintenance.

The TAM branch supports the OAM branch and the regions by improving asset management capability, managing the risk based capital process, developing the maintenance standards and providing guidance to the regions in the operations and maintenance of the infrastructure.

The relationship between the asset managers in OAM and the regions and branches will need to be closely monitored to avoid the culture whereby the asset manager believes they have two masters rather than representing the OAM branch in the field e.g. providing direction and support. Avoiding this culture will assist the regions to be closely aligned with corporate objectives. This will require training and mentoring of the asset managers and clear responsibilities assigned.

STRENGTHS

Key strengths of WaterCorp include:

- Accountabilities framework and understanding of personnel;
- Awareness between branches of each other's roles and responsibilities;
- Focussed commitment and application to continuous improvement;
- Systems regarded as best practice e.g. SAP, PRMS, SCM, ARA;
- Appointment of Commissioning managers to manage asset handover and commissioning;
- Availability of documentation and information across the business;

- Use of Waternet;
- Project planning process;
- Business Performance Reporting System; and
- Understanding of personnel of processes across the business.

POTENTIAL IMPROVEMENTS

Notwithstanding the findings of the WSAA asset management benchmarking process and internal reviews following the 2006 asset management system effectiveness review the following activities could be subject to further improvement:

- Completion of Asset Class Plans;
- Completion of a new generation of maintenance standards;
- Improvement to supporting data e.g. additional characteristics, data cleansing, education;
- Recognition of data on the accountability framework;
- Commence the analysis of the relationship between capital expenditure and maintenance costs;
- Development of an integrated communication strategy;
- Implementation of stage 2 of mobile devices;
- Further training in activity based planning;
- Implementation of cost effectiveness reviews;
- Expansion of risk to accommodate benefits e.g. carbon reduction;
- Incident management – identification and documentation of root cause analysis against the incident;
- Aligning the hardcopy files to the electronic system in a manner that the project information can be easily found. This will improve the effectiveness of the project management process; and
- Improve the renewals forecasting by obtaining an appropriate tool to undertake the analysis and feed the asset class plan.

OBSERVATIONS AND RECOMMENDATIONS

This section outlines the observations resulting from the tests applied during the review. The recommendations result from the observations and are focussed on providing clear direction to WaterCorp over the next few years.

1. Asset Planning

Key Process	Outcomes	Effectiveness Criteria
Asset planning strategies are focused on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).	Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised	• Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning • Service levels are defined • Non-asset options (e.g. demand management) are considered • Lifecycle costs of owning and operating assets are assessed • Funding options are evaluated • Costs are justified and cost drivers identified • Likelihood and consequences of asset failure are predicted • Plans are regularly reviewed and updated

Testing	Observations	Recommendations
Identification and inspection of planning process documentation	The Planning Process Manual is the high level document that describes Water Corporation's infrastructure planning process including the responsibilities of Water Corporation stakeholders. It is supported by many documents within the total planning process including: • Statewide Planning Program (SWPP); • Strategic Asset Management Plan; • Capital Investment Program; • Asset Acquisition Guidelines;	No Recommendations

Testing	Observations	Recommendations
	• Asset Commissioning Guidelines; and • Asset Disposal Guidelines.	
Assessments of sample projects and walk through processes. Is there a manual? Review availability and awareness in relation to manual.	An assessment of the following projects was undertaken: • Broome Water Supply Scheme Planning Review; • Flora Street Pumping System Review; and • Flora Street Wastewater Pump Station – Review pumping capacity and investigate contingencies for emergencies. The assessment found that each project followed the guidelines and procedures outlined in the planning process manual. This document is available on WaterCorp's document management system, "AquaDoc". People interviewed were aware of the manual and its contents.	No Recommendations
Random inquiry of staff as to the knowledge of staff of the processes.	During the review, planning personnel in water and wastewater were questioned about the planning processes. This was achieved by assessing existing planning projects through each stage of the planning phase. It was concluded that personnel were very knowledgeable about the processes they undertake and the relationships between those processes and other corporate processes either following or preceding planning.	No Recommendations
Assess the adequacy of the asset management plans w/r to the planning process. Are the capital works and maintenance budgets aligned to the asset management plans?	The content of asset management plans is identified electronically and accessed through hyperlinks within the WaterNet intranet to the relevant documents. The information accessible includes: • Maintenance; • Asset performance; • Demand projections; and • Capital investment. This content is updated as part of the Statewide planning process. It is the	It is recommended that the program for the production of asset class plans be accelerated as WaterCorp personnel are relying heavily on the outputs from these plans. The expectations of WaterCorp personnel are that these asset class plans will drive decision making and are seen as

Testing	Observations	Recommendations
	responsibility of each Branch associated with an element of the plans to keep information current. Asset management plans are no longer assembled as single documents as the content is being incorporated into asset class plans. The information that is incorporated within an asset management plan is still used. An asset management plan can still be assembled if required. Asset Class Plans (ACPs) have been adopted more recently as a more focussed way of addressing asset management. While more traditional asset management plans have had a strong capital focus the ACPs clearly look at maintenance and condition assessment strategies as well as renewal strategies for existing assets. The ACPs focus on management of existing assets. New assets required for growth or changes in standards are dealt with through other processes such as System Risk and System Capability Forecasting tools, and system planning work. Collectively the ACPs and the growth/standards tools can be used to form broader asset management plans. While Water Corporation already has a range of asset management tools in place the concept of the ACPs is to review each of the key asset management elements across the key asset categories (e.g. water mains, sewer mains, pumps etc) to try to optimise how they are managed. They are fundamentally a way of ensuring efficiency and effectiveness for each asset class. In the interim, while asset class plans are being developed, the content of the asset management systems currently in place are being used for infrastructure monitoring and planning of each scheme: • Asset condition is monitored;	important documents. Alternatively WaterCorp will need to manage expectations because personnel are awaiting plan completion. Commence the analysis of the relationship between capital expenditure and maintenance costs. Improve the renewals forecasting by obtaining an appropriate tool to undertake the analysis and feed the asset class plan. There is a need for an integrated communications strategy that improves the awareness and understanding of other Branches for the need and use of good quality data.

Testing	Observations	Recommendations
	• Asset risk is identified; • Maintenance is planned; • Capital works are planned; and • Levels of service are monitored and reported. The assets not covered by asset class plans (e.g. specific treatment plant) will have their own facility plan (asset management plan equivalent) that will focus on the management of the plant. Facility plans will draw on relevant asset class plans for the management of aspects such as: • Pumping equipment; • Switchboards; and • SCADA etc Operations plans for water and wastewater schemes will also be produced. The asset management plan first produced in 1994 by the G&A region is actively monitored. As an example, the asset management plan within G&A region was one of the drivers behind the refurbishment program (cement lining) of the main conduit. The asset management plan is also used to support and provide input to the region's business plan. While capital and maintenance programs are developed the impacts of each activity on the other is not assessed at this time. Asset class plans are currently in development with the intent of providing strategic direction for the management of the asset class. It is intended that approximately 20 asset class plans are to be produced. It is further intended that the renewals analysis will be undertaken and the outcomes	

Testing	Observations	Recommendations
	incorporated in the asset class plans. Initially the following draft asset class plans are planned to be produced for the 2009/10 financial year: • Water reticulation; • Farmland mains; • Meters; • Trunk & distribution mains; • Wastewater reticulation; and • Main sewers. As of this review the following class plans are in draft form: • Water reticulation; and • Farmland mains.	
Assess asset management plans for evidence of appropriate content and evidence of updating.	The asset class plans have a similar structure to the previous asset management plans being: • Levels of Service; • State of the Assets; • Lifecycle management; • Emerging risks; • Financial summary; and • Improvement planning. The supporting data to the above sections of the asset class plans is updated on an ongoing basis e.g. Condition assessments of assets are updated through the ACA process implemented by the SAM branch and undertaken by the Regions, Risk assessments are undertaken within the regions as part of the capital planning process for projects, while levels of service are monitored and reported against within the reporting	No Recommendations

Testing	Observations	Recommendations
	framework. To date 2 of the proposed 20 asset class plans have been produced.	

Documents sighted

- Planning Process Manual, 13 May 2009
- Strategic Asset Management Plan 2009
- PM#2255647v2 – Water reticulation asset class plan
- Broome Water Supply Scheme Planning Review, May 2009
- Flora Street Pumping System Review, 2006
- Flora Street Wastewater Pump Station – Review pumping capacity and investigate contingencies for emergencies, Nov 2006

2. Asset Creation and Acquisition

Key Process	Outcomes	Effectiveness Criteria
Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.	A more economic, efficient and cost-effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.	• Full project evaluations are undertaken for new assets, including comparative assessment of non-asset solutions • Evaluations include all life-cycle costs • Projects reflect sound engineering and business decisions • Commissioning tests are documented and completed • Ongoing legal/environmental/safety obligations of the asset owner are assigned and understood

Testing	Observations	Recommendations
Identification and inspection of policies and process documentation.	The Planning and Infrastructure Division Capital Investment Branch developed the Asset Acquisition guidelines released in November 2006. These guidelines identify the processes involved in undertaking asset acquisition and infrastructure delivery. They also describe the interrelationships between Water Corporations core infrastructure processes. The guidelines include discussion on the following: • Asset acquisition framework; • Asset acquisition business requirements; • Capital investment processes; • Program management; and • Infrastructure delivery. The guidelines are supported by policies, standards, manuals, procedures and templates.	No Recommendations

Testing	Observations	Recommendations
Test whether processes cover project evaluation and approval including non-asset options, life cycle cost considerations, engineering and business decisions, and commissioning of assets.	The capital Investment process is supported by the Asset Acquisition guidelines and supporting documents. The guidelines outline the asset acquisition framework incorporating the capital investment and program management processes. Business cases are the key tools used to assess all capital projects funded by the capital budget. Business cases used include: • Infrastructure planning business case; • Program business case; or • Individual project planning business case. The implementation business case incorporates project evaluation incorporating: • Planning scope; • Key stakeholders; • Planning considerations; • Conceptual options; • Preferred option; • Estimated capital costs; • Operating and maintenance costs; • Duration of works; • Timing of works; and • Risk mitigation. During the conceptual planning phase, non asset solutions are assessed. Lifecycle cost considerations are assessed over 15 years and incorporate capital, operations and maintenance, revenue and present value costs. Project management processes are extensive and located on the	No Recommendations

Testing	Observations	Recommendations
	intranet. They are supported by forms, check lists and reports. The processes include: • Risk assessments; • Project scope; • Planning business case; • Project prioritisation; • Implementation business case; • Project startup; • Project delivery; • Portfolio reporting; • Post implementation reviews; • Asset commissioning; • Asset handover; and • Project closeout. Project Management is undertaken by the Project Management Branch and the Regions. Project delivery is a co-operative process that includes representation of the operating group, the designers and the project managers, and asset handover at meetings. These sessions are used to inform representatives of the progress of projects and to discuss issues. Asset commissioning and handover is a recognised key process in the completion of the project. As such personnel are specifically identified to assist the Project Manager to complete the project. A commissioning management plan is produced for each project. The commissioning management plan (sighted) recognises legal, environmental and safety (OS&H), operational risks with the	

Testing	Observations	Recommendations
	equipment.)	
Assess sample jobs and walk through processes. Is there a manual? Review availability and awareness in relation to manual.	Project management and contract management processes are certified to AS/NZS ISO 9001:2008 by Bureau Veritas and have been since 2005. The processes are supported by checklists and reports that are assigned to each project. Bureau Veritas undertake a re-certification every 3 years and a review every 6 months. An action team has been established to discuss and review processes. The internal audit schedule includes: • Project Management; • Procurement and administration; and • Processes required by the adopted standards. A review of 101 projects is about to commence focusing on the primary documents incorporating checklists and project management plans. Completed projects are scanned as PDF files and stored in the document management system, AQUA. An assessment of the Spearwood 27A PS & PM project was undertaken. The project file was hardcopy and resides with the Project Manager until completion of the project. While the project files contained all documents as identified in the audit checklist, finding the documents within the project file was difficult due to their location being scattered across the file.	Include a section within the project file specifically for Quality Assurance incorporating all completed forms, checklists and reports. Aligning the hardcopy files to the electronic system in a manner that the project information can be easily found. This will improve the effectiveness of the project management process.

Testing	Observations	Recommendations
Observation of documentary evidence of processes applied to completed projects (Walk through samples of creation since last review).	Project close out reports are produced as part of project management processes. These reports focus on project delivery and the lessons learnt from the process. The closeout report (Sighted) is undertaken within 3 months of practical completion and is the responsibility of the Project Manager. The closeout report is supported by the closeout checklist (Sighted) that provides guidance to the Project Manager for completing the remaining procedures.	No Recommendations
Review evidence of commissioning tests, documentation and completion of testing.	Asset commissioning is managed by the commissioning managers who are usually appointed as part of the project definition phase. This provides the commissioning manager with the opportunity to be involved in the projects from start to completion and as such provides them the capacity to stipulate the requirements for commissioning and handover. The commissioning manager is supported by the asset acquisition guidelines and asset commissioning guidelines. Two random projects were assessed as part of this review being: 1. 11Mile Booster Pump Station; and 2. Broome Increase in Borefield Capacity. The asset handover process was implemented 6 months prior to this review. An asset handover certificate was sighted for both projects. This process is reviewed for each project as part of a service delivery report to the client representative and includes a compiled package incorporating: • Operations and maintenance manuals; • As constructed plans; • Field testing reports including pump data sheets; and • Any software required to operate the assets e.g. PLC	No Recommendations

Testing	Observations	Recommendations
	programs. A complete set of the above documents were sighted for project number two above while the collation of the documents was in progress for project number one above (sighted). On completion of the asset handover process, the project is closed off and the Region accepts the handover for the operations of the assets.	

Documents sighted

- Asset acquisition guidelines, November 2006
- Asset commissioning guideline, August 2009
- Asset handover checklist, revised August 2009
- 11Mile Booster Pump Station Commissioning Management Plan Project No. CW-00392 Rev - 2.1
- E2E Asset creation – User Requirements (joint briefing to AMD/P&ID Lead Teams, August 2009
- Southern Seawater Desalination Project IWSS Integration User Requirements Version 3, March 2009
- AS/NZS ISO 9001:2008 certification, Project Management and Contract Management services for Water Industry Infrastructure Projects, Bureau Veritas, February 1995
- Audit Checklist
- Project Closeout Report, G&AWS West Northam 30ML Storage Tank, Project Number: C-W01549, December 2008
- Project Start-Up Checklist, McNeill Road Sewer Pump Station Type 4C, , Project Number C-S01278, March 2004 2008
- Project Closeout Checklist, McNeill Road Sewer Pump Station, Project Number C-S01278, January 2008
- Infrastructure Planning Business Case, Mundaring WW Treatment and Treated WW Management, May 2009

3. Asset Disposal

Key Process	Outcomes	Effectiveness Criteria
Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets. Alternatives are evaluated in cost-benefit terms.	Effective management of the disposal process will minimise holdings of surplus and under-performing assets and will lower service costs.	• Under-utilised and under-performing assets are identified as part of a regular systematic review process • The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken • Disposal alternatives are evaluated • There is a replacement strategy for assets

Testing	Observations	Recommendations
Identification and inspection of disposal and replacement processes documentation.	Disposal process documentation is provided on the intranet under the following documents: • PM#367588v4 – S087 Disposals Standard, October 2008 • PM#364856v3 – PCY233 Disposals, October 2008 • Decommission & Dispose Assets – Context Model • Decommission & Dispose Assets – Main Process Model • PM#2492016v3D – Decommission & Dispose Assets, July 2009 • Asset Decommission and Disposal Guideline; and • Decommission and Dispose Assets Core Process. Replacement process documentation is also included on the intranet under a number of documents including Guidelines for Plan, Monitor & Assess Asset Performance, Condition and Risk Process.	No Recommendations
Identify replacement strategies and how	The Asset Condition Assessment (ACA) process is in place to guide the	No Recommendations

Testing	Observations	Recommendations
they are developed and reviewed.	capture of asset condition. It has been in place for a number of years and is currently being refined. The latest refinements are centred around reducing the size of the asset base being assessed based on risk. In addition to the ACA, the following are also used to assess replacement: • Asset failures and trends; • Actual levels of service versus planned; • Results of key performance indicators; and • Asset Risk Assessment (ARA). The above activities are also important for forward planning; renewal needs; operations and maintenance planning and identifying assets to be disposed.	
Identify and review evidence related to performance of assets and reporting on underperforming assets. Determine the frequency of these reviews.	The performance of the assets and associated reporting is undertaken at a number of levels and frequencies being: • Strategic Asset Management Plan (3 yearly plus 6 to 12 month review); • Asset class plans (Yearly); • Executive performance report (Yearly); • Operations centre (Daily); • Customer requests (Daily); and • Incident management reporting (fortnightly/monthly/quarterly). Lead teams from regions and business units meet monthly to discuss asset performance and identify actions.	No Recommendations

Testing	Observations	Recommendations
Assess sample assessments and walk through processes. Is there a manual? Review availability and awareness in relation to the manual.	The primary manuals used are the: • Asset Decommission and Disposal Guideline; and • Decommission and Dispose Assets Core Process. In the regions asset disposal usually follows commissioning of new assets. G&A region have a number of stranded assets that been removed from the functional location equipment register on SAP. Corporate program funding is based on liability risk. In discussing disposal with personnel, it was clear they were aware of the documentation, the processes and the location of the document.	No Recommendations
Random inquiry of staff as to their knowledge of the procedures.	Water Corporation personnel in head office and G&A were tested with respect to their understanding of disposal procedures and identification of assets to be disposed. It was found that personnel have access via the intranet to the documentation and involved in any discussions on the processes and assets to be disposed. As such they were able to demonstrate a sound understanding and knowledge of disposal procedures.	No Recommendations
Observation of the documentary evidence of disposal processes being applied to a sample of assets.	A list of assets that were disposed of since July 2008 was obtained from the SAP system. This list included 173 assets of various types including: • Bores; • Mains; • Tanks; and • Reservoirs.	No Recommendations

Documents sighted

- Guidelines for Plan, Monitor & Assess Asset Performance, Condition and Risk Process, October 2008
- Strategic Management - Policy Procedure Standard - Internal - Decommission and Dispose Assets Core Process
- Strategic Management - Policy Procedure Standard - Internal - Asset Decommission and Disposal Guideline
- Strategic Management - Policy Procedure Standard - Internal - Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process
- PM#2492016v3D – Decommission & Dispose Assets, July 2009
- PM#367588v4 – S087 Disposals Standard, October 2008
- PM#364856v3 – PCY233 Disposals, October 2008
- PM#2759026v2 – Disposed Assets 2008-2009
- Decommission & Dispose Assets – Context Model
- Decommission & Dispose Assets – Main Process Model

4. Environmental Analysis

Key Process	Outcomes	Effectiveness Criteria
Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.	The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.	• Opportunities and threats in the system environment are assessed • Performance standards (availability of service, capacity, continuity, emergency response, etc) are measured and achieved • Compliance with statutory and regulatory requirements • Achievement of customer service levels

Testing	Observations	Recommendations
Inspection of the policies and process documentation.	The key document is the accountabilities framework. This document is freely available. The General Manager (GM) Customer Services is responsible for services to customers and service delivery, the GM Planning and Infrastructure is responsible for the planning and acquisition of assets and the GM Asset Management is responsible for the ongoing management of the assets. The business planning process is an enabling process within the Accountabilities Framework. It is referred to as "Manage Strategic Direction". The level 1 process is broken down into two level 2 processes of: • Plan Corporate Strategic Direction; and • Monitor Corporate Strategic Direction. In March and April strategic direction is provided by the Board and Corporate Executive for the next 5 to 20 years, based on environment scans and risk profiles.	No Recommendations

Testing	Observations	Recommendations
	Environmental scanning is used to identify existing and future threats and opportunities in moving forward. Together with the Strategic Risk Profile it allows the Corporation to assess the impact of the threats and then to plan actions to prepare for them. This scanning is undertaken by the Corporate Planning Branch as an input into the "Plan Corporate Strategic Direction" process. Scanning is also undertaken at the branch level. Workshops are undertaken with the Asset Management Lead Team (AMLT) to identify and rank issues. In April, May and June the 5 year Process Plans are developed by the Process Managers. Branch and Region Managers develop their 1 year operational plans. During July to October, the 5 year capital and operating budgets are developed based on the strategic direction provided by the business. The Strategic Development Plan is a 5 year plan that articulates how WaterCorp will address identified threats into the future. This document is supported by the Strategic Asset Management Plan (SAMP). The SAMP articulates the threats identified and their impact on existing assets and future services.	
Identify evidence of performance standards and reporting.	Performance standards and reporting are addressed through the Business Performance Reporting System. Reporting is addressed at Corporate, Division and Branch/Region levels. The standards are based on the customer charter, legislative and regulatory requirements. Reporting is undertaken monthly to check for compliance. Process Managers have KPI's set to report against the standards.	No Recommendations

Testing	Observations	Recommendations
	Typical performance standards measured include: • Financial performance; • Operating Licence; and • Business Targets. At other levels performance standards include: • Project costs and timing; • No. incidents; • Continuity of water supply; • Wastewater overflows; • Water pressure and flow; • Leaks per 100 kms; and • Sewer blockages. Internal performance standards also exist for WaterCorp personnel e.g. number of condition assessments undertaken per year and assets having complete attribute data as required by the Corporation. These KPI's are monitored monthly and where breaches occur they are reported at region level to be addressed by the asset managers.	
Investigate performance breach for observation of documentary evidence of investigations and corrective actions.	At the Corporation level WaterCorp complies with its operating licence, customer, regulatory and legislative requirements. There is no evidence of breaches at this level during post 2006 review. Legislative requirements are measured from: • Water Corporation Operating License (Economic Regulation Authority); • Memorandum of Understanding between Health Department of Western Australia and Water Corporation for	No Recommendations

Testing	Observations	Recommendations
	Drinking Water; • Australian Drinking Water Guidelines 2004; and • Framework for the Management of Drinking Water Quality. In addition to the above the National Performance Framework (Water Services Association of Australia & National Water Commission's National Water Initiative) is used to report on performance against a defined set of indicators. A review of the KPIs from the National Performance Framework in 2007 concluded that there was no KPI that was non-compliant. Deloitte reported that: *"Of the 74 indicators subject to review for one or more locations, 64 were assessed as Fully Compliant for all relevant locations, and the remaining 10 indicators assessed as Materially Compliant for one or more locations. No indicator within scope was assessed as Materially Non-compliant."* Monthly reporting at Division and Branch/Region level may identify internal non compliance. Where there is a breach, actions are identified to address the breach. This is evidenced within the SAMP where trends are plotted against KPI's and monitored.	
Inquiry of staff as to application of general or specific corrective actions.	Actions vary depending on the type of breach. They may result in: • Changes in asset operations; • Changes to contingency plans; • Changes in asset maintenance; • Capital projects; • Disposal of the assets; and	No Recommendations

Testing	Observations	Recommendations
	• Programs initiated to monitor performance e.g. CCTV. Specific actions relate to specific incidents e.g. review the operating strategy, storage of spares, vegetation clearance programs e.g. fire breaks and safety risk assessments.	

Documents sighted

- Accountabilities Framework, May 2008
- Corporate Environment Scan March 2009
- Manage Strategic Direction Process
- Customer Charter
- Performance Report to ERA, Mar 2009
- Performance Report to ERA, Dec 2008
- PM#617596v1 - Water Corporation 2006-07 National Performance Framework Review Final Report - 06 Nov 07

5. Asset Operations

Key Process	Outcomes	Effectiveness Criteria
Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.	Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.	• Operational policies and procedures are documented and linked to service levels required • Risk management is applied to prioritise operations tasks • Assets are documented in an Asset Register including asset type, location, material, plans of components, an assessment of assets' physical/structural condition and accounting data • Operational costs are measured and monitored • Staff receive training commensurate with their responsibilities

Testing	Observations	Recommendations
Identification and inspection of process documentation and linkage to service levels.	The Tactical Asset Management (TAM) branch has developed process documentation to assist OAM to implement and monitor effective asset management processes. This documentation includes: • Guideline for Plan, Monitor and Assess Asset Performance, Condition and Risk Process; • Plan Asset Operations Core Process; • Analyse Asset Operations Core Process; • Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process; and • Manage Asset Capability Core Process. It should be noted that some of these processes are still being finalised and it is intended that they be implemented.	No Recommendations
Assess the adequacy of training.	The Operational Asset Management (OAM) branch is responsible for	It should be recognised that asset

Testing	Observations	Recommendations
	providing the capability for assets to meet the agreed levels of service; assets delivered that are fit for purpose, ensuring consistent asset management practices and activities across WaterCorp and providing expertise and guidance in operational asset matters. To assist in delivery of the above responsibilities specific training has been implemented. This training is provided jointly by the Asset Management Council/Maintenance Engineering Society Australia (MESA) and WaterCorp and consists of two day training split into asset management theory and application within the WaterCorp context. This training delivers external expertise coupled with internal requirements and expectations. Currently, there is a view within OAM that operational asset management capability is inconsistent across the state. As such WaterCorp is working towards providing consistency through additional training and the support of the Mechanical and Electrical Services Branch (MESB). In addition to the above, the Asset Management Division is seeking additional asset management training within the Water Industry with the objective of improving skills and professional development in asset management.	management training, in particular specific accredited asset management training for the water industry is not readily available. Training has been provided in the past by specialist consultants as part of their services. WaterCorp needs to catalogue specific training requirements in asset management as it covers a significant number of functions, separated into internal, external or combined training and seek appropriate bodies to provide training e.g. • ACEAM; • CIEAM; • IPWEA; or • Specialist consultants.
Review asset register for operations content e.g. operational procedures, activity and costs.	Assets are located in the FLER (Functional Location Equipment Register) asset register within SAP/PM Financials. Assets are structured by hierarchy and key attributes (characteristics) are captured. The type of data included in SAP/PM includes locational data, asset technical data e.g. asset dimensions. Other data recorded in separate modules of SAP and other applications include accounting data, condition, risk, operations activities and budgets/costs. A	To improve the data quality WaterCorp should continue to place significant effort in data capture to complete the capture of the required asset characteristics.

Testing	Observations	Recommendations
	process is in place to capture the attributes where gaps exist. This data capture program is monitored monthly through KPI reports that identify the attributes not captured by asset for each asset class. Operational costs are reported monthly through the Business Performance Reporting process. Variances in costs and budgets are identified and discussed at Region and Branch level. Typical operating reports at region level include monitoring of: • Pressure/flow faults; • % connections with required pressure; • Connections interrupted > 1 hour; • Leaks and bursts; • Wastewater overflows; and • Blockages. Typical treatment plant reporting includes water/effluent quality, asset availability, inflows, incidents and cost projections vs. budget. These reports are generated weekly.	
Review effectiveness of the assets themselves.	In reviewing the operating effectiveness of the assets it is necessary to assess the current performance. As there has been no compliance breach the assets could be deemed to be operating well. However, in looking at the trends for water mains it is likely that: • There will be an increase in the numbers of leaks and bursts over time; • Levels of interruption to supply for customers is currently being estimated and it is believed that the real results, while still complying with Licence requirements, may in fact be higher than currently reported;	No Recommendations

Testing	Observations	Recommendations
	• There are high level of asbestos cement and reinforced concrete mains leaks and bursts; and • Increasing numbers of reticulation valves are being found to be inoperable. The trend for sewer blockages is improving while the affect of wastewater overflows on properties is increasing. However in the next five years the indicator will still comply with requirements. With respect to wastewater treatment plants, the capacity is being exceeded and planned upgrades are required. Additional odour control works are also required. Replacement of existing wastewater ocean outlets is required due to poor asset condition.	
Sample a number of asset failures. Determine if root-cause analysis has been completed and what has been done as a result of the analysis.	Root-cause analysis is undertaken through the TAM branch and the MESB. The TAM branch undertakes the analysis on demand through either incidents or triggers e.g. performance. The MESB undertakes the analysis on a regular basis e.g. two per month to: • Interrogate trends e.g. ratios of percentage planned vs. total work orders ; • Examine high costs; and • Examine high frequencies. The outcomes of the analysis are used to review operations and maintenance standards and procedures. A review of the incident records indicates that a substantial amount of information is recorded against the failure and includes:	While there is a space in the incident management report for root-cause analysis, it is not filled in. The incident report should document the root-cause analysis completion, the analysis document and the date completed.

Testing	Observations	Recommendations
	• Cause of incident; • Extent of Impact; • Personnel involved; • Response; • Incident summary; • Operational response; • Lessons learned; • What was done well; • What could be improved; and • Actions required. While there is a place for Root-cause analysis, there is no indication of whether the analysis was undertaken, when it occurred or what are the outcomes. If the analysis had been undertaken it should be linked to the incident.	
Assess the use of risk to prioritise operations tasks.	Capability managers in the operations group routinely monitor asset operational triggers to ensure they are operating as intended. The triggers e.g. number of leaks are used to monitor planned and actual performance. Standards of performance are set by SAM or the Customer Charter through Levels of Service and Key performance indicators. An asset identified as not meeting performance will be identified for either a condition or risk assessment. The outcomes of the risk assessment may lead to one of the following actions: • Ongoing monitoring; • Changes to operational activity; • Changes to maintenance; or	No Recommendations

Testing	Observations	Recommendations
	• Capital works. The deferral of capital works will lead to the development of contingency plans for the asset. If residual risk is still too high, further actions are required. This will generally mean input from the TAM group for the review of treatments. Contingency plans are monitored to ensure the residual risk is acceptable.	
Test application of procedures over the review period.	A review of the operations procedures indicated that the procedures identified above either at Corporate or the regions are followed on a daily basis. This is evidenced by the use of available systems, asset reporting, data collection, condition assessments, risk analysis and the monitoring of performance through KPI's for the operational activities.	No Recommendations
Test analysis of costs and actions to correct significant variation.	The operating costs are reported monthly as a part of the monthly business reporting and reported against budget costs. Should there be a significant cost, actions are undertaken to address the variance. The Operational Asset Management (OAM) Branch investigates the variance to identify whether: • The asset's operations plan should be modified; or • Capital invested to upgrade or replace the asset. An example of this is identifying and initiating projects to reduce energy costs. In addition to the above, risks are reviewed to identify the projects and their priority.	No Recommendations

Documents sighted

- Business Performance Reporting (Board/Executive Pack), August 2009
- Performance report ERA, December 2008
- Weekly Operations Report, 30 September 2009 (Subiaco, Beenyup, Woodman Point, Kwinana WWTP)
- OAM Role and Focus presentation, 30 September 2009
- Explanation of the Roles and Activities of MESB and IDB, March 2009
- Strategic Management - Policy Procedure Standard - Internal -Plan Asset Operations Core Process
- Strategic Management - Policy Procedure Standard - Internal -Analyse Asset Operations Core Process
- Strategic Management - Policy Procedure Standard - Internal -Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process
- Strategic Management - Policy Procedure Standard - Internal -Manage Asset Capability Core Process
- Risk Profile Report North West Region – aspects and impacts, September2009
- Root-Cause Analysis Action Plan
- S110 Incident Management, 29 September 2009

6. Asset Maintenance

Key Process	Outcomes	Effectiveness Criteria
Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.	Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.	• Maintenance policies and procedures are documented and linked to service levels required • Regular inspections are undertaken of asset performance and condition • Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule • Failures are analysed and operational/maintenance plans adjusted where necessary • Risk management is applied to prioritise maintenance tasks • Maintenance costs are measured and monitored

Testing	Observations	Recommendations
Identification and inspection of procedural documentation.	As with operations the Tactical Asset Management (TAM) group has developed process documentation to assist OAM to implement and monitor effective asset management processes. This documentation includes: • Maintenance strategy; • Register of maintenance standards; • Maintenance plans; • Work instructions; • Plan Asset Maintenance Core Process; • Analyse Asset Maintenance Core Process; • Strategic product specifications; and • Preferred equipment lists.	Continue to review and complete process documentation including maintenance standards and procedures. Demonstrate alignment between the maintenance strategy and the asset class plans once each plan is completed.

Testing	Observations	Recommendations
	The above documents provide the link between strategy and service delivery.	
Random inquiry of staff as to the knowledge of maintenance staff of procedures.	Water Corporation personnel in head office and G&A region were tested with respect to their understanding of maintenance procedures. Personnel have access via the intranet to the documentation and are involved in any discussions on the processes. As such they were able to demonstrate a sound understanding and knowledge of maintenance procedures. The MESB is a specialist branch supporting OAM with respect to the operations and maintenance of mechanical and electrical (M&E) assets. This branch has intimate knowledge of the required maintenance of M&E assets and as such have input into maintenance standards.	No Recommendations
Test application of procedures over the review period.	A review of the maintenance procedures indicated that the procedures identified above either at Corporate or the regions are followed on a daily basis. This is evidenced by the use of available systems, maintenance histories/records, risk analysis and the monitoring of maintenance performance through KPI reporting for the activities. As G&A were the only Region to be reviewed, it is not possible to draw a conclusion as to the consistency of the Regions across the State. It has been indicated that there is inconsistency of skills across the asset managers in OAM. From this it can be inferred that it will be likely that inconsistency of asset management application will occur across the Regions.	Review the regions for consistency of application of corporate requirements. Implement a formal training program for asset managers specifically designed to improve the skill base.
Do sample walk through of riskier assets.	As part of this review the following high risk sites were visited:	No Recommendations

Testing	Observations	Recommendations
	• BH Main duplication; and • Mundaring Treatment Plant, dam and Pump Stations A and B. ACA condition assessment report was developed with the assistance of Mechanical Electrical Services Branch (MESB) to provide an independent assessment on the mechanical and electrical issues at the Mundaring Pump Stations. The report was compiled using corporate SAP, ACA, ARA and operational information. The final report resulted in creation of project CW02223-Mech & Elec upgrade of A & B PS's. The report highlighted risks associated with OHS and ability to maintain continuity of supply. These risks have been highlighted on the corporate risk matrix. Where capital funding is not readily available contingency plans are developed to manage the assets until works can be undertaken. Upon inspection the infrastructure at pump station A was found to be ageing with numerous issues. The pump station needs refurbishment with safety issues associated with the old pumps. There has however been works undertaken to address some of the issues while a project has been identified to improve the overall condition of the pump station site.	
Review evidence of inspections for asset performance and condition. Review condition manual for consistency of approach.	Asset condition assessments are undertaken as an ongoing process and reported monthly to the OAM branch for review of performance. A quality audit is undertaken every 6 months. Condition manuals have been developed for each asset class and available on the intranet. The condition rating is a 1 – 5 rating criteria supported by asset	It was felt that the condition rating process and gap treatment tended towards capital expenditure as the solution to the asset condition as a first pass while there could be potential for a maintenance

Testing	Observations	Recommendations
	specific definitions. Even so the ratings are consistently applied across assets. Supporting the condition criteria Is a gap treatment program that identifies the condition of the assets against the intended service level / performance. This is a +2 to -2 rating which is used to determine the likely treatment to close the gap. In undertaking condition assessments as a first stage they are visual. However, if further assessment is required it will be undertaken by either the MESB or specialist consultants who will then produce a report with recommendations. Asset deficiency reports undertaken as part of normal operations are collated and used to determine either maintenance work or recorded in the ACA database for treatment application.	solution to provide an appropriate improvement. Either focussed training or improved treatment options should be identified to provide non-capital solutions as alternatives to capital.
Review effectiveness of the assets themselves.	Refer to Operations table.	No Recommendations
Test analysis of costs and actions to correct significant variation.	The maintenance costs are reported monthly at the region level as a part of the monthly business reporting and reported against budget costs. Should there be a significant variance, actions are undertaken to address it. The asset managers investigate the variance to identify whether: • The asset's maintenance plan should be modified; or • Capital invested to upgrade or replace the asset. In some instances there may be a need to have MESB investigate the variance to determine the most appropriate action. OAM will make the final decision whether the maintenance plan will be changed. Activity based planning is also undertaken to refine the maintenance	Increase the level of activity based planning training.

Testing	Observations	Recommendations
	requirements during budget planning. Concern was expressed for additional activity based planning training.	
Evaluate actions to investigate and correct issues including maintenance practices associated with asset failures during the review period.	Depending on the severity of an incident, the incident reports provide significant detail on the incident; lesson learnt and associated actions to address the asset failures. E.g. incident record # 2346 identifies the impacts of bushfires on Zone 1 main conduit WPS Mundaring. The cause of the incident was damage to key assets at Mundaring as a result of the fires. The outcomes of the analysis identified the following maintenance actions: • Establish maintenance plan for clean up/vegetation removal at all sites prior to summer; and • Establish maintenance plans for fire suppression systems. Similarly incident record 2388 lists a wastewater overflow into Booragoon child care centre caused by the existing relief gully not being capable of accommodating all of the flow. This resulted in closure of the child care centre. Resulting maintenance actions were to: • Develop a maintenance plan for 12 monthly CCTV commencing December 2007; • Install reflux valve and overflow relief; and • Reline 230mm earthenware main between manholes. In both of the above instances the resulting actions appear technically sound and reasonable.	No Recommendations
Assess the use of risk to prioritise	Refer to observations regarding "**Assess the use of risk to prioritise**	No Recommendations

Testing	Observations	Recommendations
maintenance tasks.	**operations tasks"** in item 5, asset operations. Essentially the risk process covers the operations, maintenance and capital works. Specifically addressing maintenance, risk is used to prioritise maintenance tasks. Activity based planning (ABP) is used to support the risk ratings and prioritisation. It incorporates maintenance plans and anticipated repair costs. Each maintenance item has an individually costed plan that includes labour, materials, vehicle costs. Risk is used to determine the priority ranking of each item. The risk ranking and associated costs are then matched against budget to determine the maintenance that is achievable.	

Documents sighted

- Strategic Management - Policy Procedure Standard - Internal - Plan Asset Maintenance Core Process
- Strategic Management - Policy Procedure Standard - Internal - Analyse Asset Maintenance Core Process
- Root Cause Analysis Action Plan
- Email, ACA Assessment Performance for the Regions, 10 September 2009
- Report for Northam, Pantapin and North Kellerberrin Tanks roof inspections, GHD, June 2009
- Geraldton Waste Water Scheme Kalbarri S.P.S No.'s 1,2 and 3 Asset Condition Assessment, MESB, November 2008
- Incident record number 2346
- Incident record number 2388
- S110 Incident Management, 29 September 2009

7. Asset Management Information Systems

Key Process	Outcomes	Effectiveness Criteria
An asset management information system is a combination of processes, data and software that support the asset management functions.	The asset management information system provides authorised, complete and accurate information for the day-to-date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.	• Adequate system documentation for users and IT operators • Input controls include appropriate verification and validation of data entered into the system • Logical security access controls appear adequate, such as passwords • Physical security access controls appear adequate • Data backup procedures appear adequate • Key computations related to licensee performance reporting are materially accurate • Management reports appear adequate for the licensee to monitor licence obligations

Testing	Observations	Recommendations
Identification and inspection of process documentation covering control and security of information systems.	There is significant documentation covering all systems used by WaterCorp. It comes in the form of: • Policies e.g. PCY237 Information Management, PCY268 Accountability Framework, PCY149 Intellectual Property,PCY252 Privacy; • Information Standards e.g. S056 – Asset Management, S057 – Business Continuity, S058 – Security Technology and Physical Security; • IT Disaster Recovery – Management Framework; • Application User Manuals; • Application Technical Manuals; and • Quick reference documentation on the WaterNet.	No Recommendations

Testing	Observations	Recommendations
Random testing of user's with respect to knowledge of system and data management procedures.	Informal testing was undertaken on personnel in the corporate office and G&A region with respect to the knowledge of systems and associated procedures. All personnel demonstrated sound knowledge in the use of the systems they use. In addition they also demonstrated awareness of other systems that either support or provide information for their needs. Personnel tested included the following: • Maintenance Planner; • Program Managers; and • Asset Managers. The findings of the testing concluded: • The understanding of personnel with the systems they used varied across the business from intimate knowledge to general understanding. However there was no evidence of users not understanding the systems they used; • The systems form part of day to day activity and this is accepted by personnel; • Personnel within the SAM branch are aware of the need for sound data to support their functions. G&A region is currently educating supporting personnel (general workforce) in system use and data needs who are responsible for collecting the data required for reporting purposes; • The systems used are supported to some degree by in-built data controls e.g. drop down lists, data validation; • There is a high satisfaction level with users and this is associated with high use of the systems; and • Data management is not specifically identified within the accountability framework.	Data collection, management and development should be identified as a key process on the accountability framework. Data improvement is an ongoing process and while a program is in place to improve asset characteristics it would be better served to assist the data capture through the use of mobile devices and the implementation of Stage 2 mobile applications. A local GIS Strategy within AMD should be developed to identify improved use of the GIS e.g. development of "measle" maps illustrating geographically, areas of poor condition, poor performance assets and localised areas of high risk etc. This could assist in cost effectiveness reviews and expenditure on improved system performance as opposed to individual asset performance. The use of GIS for displaying time based impacts of the capital program on the local asset profile

Testing	Observations	Recommendations
		is another use.
Review of the accuracy of performance data sets and reporting.	Performance reporting is an extensive activity across WaterCorp. The frequency of performance reporting varies across the business from weekly in the case of operations to monthly for SAM, TAM and OAM branch monitoring to quarterly and annually for Executive reporting. This places a high demand on personnel to collect and analyse the results of the reporting as well as communicate the results and recommendations for any variances. This is also a driver to ensure the right systems are in place to allow the reporting to be timely and support the required data. The Business Process Review System has been developed to assist in structuring the reports with the appropriate structure and data needs. It also requires close off of the data at specific times to allow the results to be aggregated against the reporting hierarchy. The use of the traffic light system (red, yellow, green) to identify non compliance with KPI levels allows for easy identification and assessment of issues resulting in focussed analysis of poor performance. The main issue is not necessarily the accuracy of data but the timeliness of data gathering as limited resources will reflect on the availability of the data e.g. results being reported in the following month rather than the current month.	No Recommendations
Random sample of management reports available to satisfy management needs and actions to address significant exceptions.	Performance reporting is undertaken within a structured hierarchy e.g. region, branch, executive, board and external e.g. ERA and involves operations, maintenance, condition, risk, project delivery, capital expenditure and many other activities. This provides personnel with the ability to drill down through the reporting to determine at	No Recommendations

Testing	Observations	Recommendations
	the micro level the items that are causing performance issues. As discussed previously any non-compliance or adverse trends are identified and actions put in place to rectify the issue. These rectifications vary between the performance criteria but may involve the following processes: • Changes to operational plans; • Changes to maintenance activities; • Further investigation; • Additional capital expenditure; and • Ongoing additional monitoring. Where required, actions will be escalated to the required Branch for comment, analysis, recommendations and resolution.	

Documents sighted

- PCY237 Information Management, November 2007
- Business Performance Reporting Board/Executive Pack, October 2009
- Capital Investment Summary, October 2009
- Quarterly Executive Report, Projects in the Implementation Phase
- Maintenance Summary Report, PSN water, 30 September 2009
- Report for Northam, Pantapin and North Kellerberrin Tanks roof inspections, GHD, June 2009
- Weekly Operations Report, 30 September 2009 (Subiaco, Beenyup, Woodman Point, Kwinana WWTP)
- Asset Information Projects - 2009/10

8. Risk Management

Key Process	Outcomes	Effectiveness Criteria
Risk management involves the identification of risks and their management within an acceptable level of risk.	An effective risk management framework is applied to manage risks related to the maintenance of service standards	• Risk management policies and procedures exist and are being applied to minimise internal and external risks associated with the asset management system • Risks are documented in a risk register and treatment plans are actioned and monitored • The probability and consequences of asset failure are regularly assessed

Testing	Observations	Recommendations
Identification and inspection of policies and procedures.	One of WaterCorp's main objectives is the reduction of risk across the business whether it be asset failures, financial risk and others. The supporting documents (policies and procedures) include: • AS/NZS 4360:2004; • PCY135 Risk Management; • S122 Risk Management Guidelines; • Accountability Framework; • Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process; • Risk Assessment Criteria; • Manage Risks Process; and	No Recommendations

Testing	Observations	Recommendations
	• Asset Management Planning Systems (AMPS)	
View the risk register, select samples and review treatment plans that have been actioned and monitored.	An assessment of the treatment plans for the following assets was undertaken: • G&WS MSCL 88.4 – 94.0 W Meckering; and • Mundaring PS A & B: M&E Upgrades. The treatment plans are linked to the asset risks and identify the following: • Financial investment over time (Planned and allocated); and • Planned Practical completion (PPC) date. As the projects proceed, the costs are tracked and the treatment plan updated with respect to the PPC date. Should the required practical completion date require changing it is undertaken in the treatment plan by the Asset Manager. The planned PPC can change through delays or deferrals. Changes to the PPC date is evidence of the monitoring of the treatment plan.	No Recommendations
Examine risk register to check if potential failures have been identified in the register. Review asset failures and failure rate. Has the risk rating been reviewed after the failure?	A complete risk review process is undertaken on a six monthly basis. This ensures that assets that have been treated or their risk has changed; are captured and reviewed. However, if an incident occurs at the start of the 6 month period the risk will not be updated until the end of the 6 months.	When a failure is recorded and subsequently completed the risk review should be undertaken as part of the incident process and identified on the incident form e.g. who reviewed the risk, when it was reviewed and what the outcomes were.
Check that the risks associated with assets that have been treated, have	Refer previous row.	Refer above

Testing	Observations	Recommendations
been reviewed. Check whether the risk review has been recorded.	On inspection of the risk register, changes to assets are reflected by the residual risk becoming the current risk and the assessment review due date being changed.	
Random inquiry of staff as to their knowledge of the risk process.	Random inquiry of WaterCorp personnel with respect to their knowledge of risk. The inquiry involved discussion of risk the personnel are involved in as well as other areas of risk that they may be exposed to. The findings were: • Personnel involved in risk processes demonstrated sound knowledge of the process; or • If there were doubts, they knew where to obtain the required information e.g. WaterNet. In addition assistance was provided by personnel where needed. Where personnel are exposed to risks they understand the general processes and the outcomes required.	No Recommendations
Review the application of risk by personnel.	Water Corporation personnel in head office and G&A were tested with respect to their application of risk procedures. Personnel have access via the intranet to the documentation and systems. As such they were able to demonstrate a sound understanding and knowledge of risk procedures. All personnel are involved in the application of risk for various assets and functions e.g. project planning, program management and planning, capital works identification, operations and maintenance. There were issues raised regarding the interpretation of consequences and risks within OAM and this is recognised by the TAM branch. TAM undertakes a review of each risk identified by the OAM asset managers to agree or modify the risks. As part of this process	A training program regarding the interpretation of consequences, likelihood of failure and risk should be developed and introduced to the Asset Managers.

Testing		Observations	Recommendations
		asset managers are notified of anomalies and the correct interpretation. TAM has also established meetings to discuss risk further with asset managers.	

Documents sighted

- PCY135 Risk Management
- S122 Risk Management Guidelines
- Strategic Management - Policy Procedure Standard - Internal - Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process, 9 October 2008
- Risk Assessment Criteria, August 2009
- Strategic Risk Profile
- Risk Profile Report, North West Region – aspects and impacts
- Risk Profile Report, Southern Seawater Desalination Plant IWSS Ravenswood Pump Station
- Risk Profile Report, Acquire Infrastructure Assets – Design Assets
- Treatment Plan – G&WS MSCL 88.4 – 94.0 W Meckering
- Treatment Plan – Mundaring PS A & B: M&E Upgrades

9. Contingency Planning

Key Process	Outcomes	Effectiveness Criteria
Contingency plans document the steps to deal with the unexpected failure of an asset.	Contingency plans have been developed and tested to minimise any significant disruptions to service standards.	• Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks

Testing	Observations	Recommendations
Identify contingency plans and their review processes.	Generic contingency plan templates have been developed for Water Treatment Plant, Water Pumping Station, Sewerage Treatment Plant, Sewerage Pumping Station, Chemical Dosing Plant, Sewer Gravity Main, Sewerage Pumping Main, Water main, and Water Storage Complex. These have been accepted by Risk Management and a CSD representative. They address the expected risks for each asset class. Contingency plans are in the process of being completed for the top 50 highest risk assets in each region. Each region has an officer responsible for the creation or review of contingency plans. In addition to the above process the incident management system is a trigger for either creating contingency plans or updating contingency plans. Depending on the incident an action may be to review the contingency plan. As an example incident record # 2487 is the flooding of the Kellerberrin pump station. The resultant action was to review the regional contingency plan for critical spares and assess the adequacy	No recommendations

Testing	Observations	Recommendations
	of the main conduit contingency plan.	
Do a walkthrough of contingency plans (Desktop and exercises) and check for compliance. Explore the frequency of updates.	The regions implement reviews of contingency plans as a result of failures / incidents. Incident reporting is a prime function of WaterCorp. Depending on the incident an action resulting from the incident will be the update of the existing contingency plan or the creation of a contingency plan. The documents are stored on the document management system "AquaDoc". Updates of the plans are version controlled and dated within the system.	No Recommendations
Review the testing of contingency plans and identify documented evidence of improvements to contingency plans.	Refer above. In addition to incidents, plans may be updated due to changes in equipment, operations, maintenance changes and use. In addition the asset risk and criticality will drive the creation of contingency plans.	No Recommendations

Documents sighted

- Chidlow Mainline Booster Pump Station Operational Contingency Plan
- Incident record number 2346
- Incident record number 2388

10. Financial Planning

Key Process	Outcomes	Effectiveness Criteria
The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term.	A financial plan that is reliable and provides for the long-term financial viability of the services.	• The financial plan states the financial objectives and strategies and actions to achieve the objectives • The financial plan identifies the source of funds for capital expenditure and recurrent costs • The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets) • The financial plan provide firm predictions on income for the next five years and reasonable indicative predictions beyond this period • The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services • Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary

Testing	Observations	Recommendations
Identify and inspect processes and associated documentation.	The Strategic Development Plan (SDP) is a 5 year plan reviewed annually that includes: • Financial Objectives; • Strategies to address the objectives; and • Required actions. A Business Performance Reporting manual is available for use. Financial planning is supported by policies and procedures such as: • PCY112 financial delegation policy; • S072 Financial Authorisation Standard; and	Clear definitions of renewal, upgrades and replacement are required to be defined, implemented across WaterCorp and consistently applied. This will assist the SAM branch with its analysis of the funding gap.

Testing	Observations	Recommendations
	• S336 Capitalisation Decision. Additional external supporting documentation includes: • AASB 101 Presentation of Financial Statements (2007); • AASB 2008-5 Amendments to Australian Accounting Standards arising from the Annual Improvements Process; and • 2008-6 Further Amendments to Australian Accounting Standards arising from the Annual Improvements Process. While a definition of capital is defined, there is no clear definition of renewals and upgrades. This has implications with the ability of WaterCorp to understand to what degree they are funding asset consumption also referred to as the "funding gap".	
Random inquiry as to the knowledge of staff of the procedures	Financial planning at WaterCorp is to a large degree a bottom up process with respect to the operations and capital planning. Branch and Region plans are developed for operating and maintenance costs while the capital costs are generated through the capital investment process. These costs are then compared to the expected budgets. During the review and associated meetings, WaterCorp personnel involved in the financial planning were tested with respect to the procedures. All personnel were aware of the part of the financial planning they were involved in and had a broad understanding of how the processes they undertake fit with the overall financial plan.	No Recommendations
Obtain a copy of the current financial plan including budget/actual and assess its alignment with the processes.	All financial data is recorded electronically in SAP and can be presented in many ways. SAP allows the data to be aggregated in many formats through the reports. A single financial plan does not	No Recommendations

Testing	Observations	Recommendations
	exist. Instead there are a number of documents that provide the financial data. Financial reporting is undertaken through the Annual plan. The SDP outlines the strategic direction and resource requirements for the next 1 to 5 financial years. It is supported by the capital and operating budgets which in turn are supported by the: • 5 year process plan; • Business direction; and • 1 to 2 year branch and regional plans.	
Test the financial plan for: **a. identification of sources of funds,** **b. projections of profit and loss,** **c. balance sheets,** **d. prediction of income for at least five years,** **e. operations,** **f. maintenance,** **g. administrative and** h. **capital expenditure requirements.**	The SDP contains summary information on profit and loss. It incorporates projected income and expenditure for a five year period as well as a statement of the financial position. All administrative costs are assigned to the development of the finance statement. The balance sheet is documented in the Annual Report financial section in addition to: • Cash flows; • Depreciation; • Capital commitments; • Expenses; • Loans and borrowings; and • Revenue.	No Recommendations
Examine current financial plan and establish whether processes have been	As discussed previously the financial planning process consists of numerous sub-processes including relationships with operations and capital planning and acquisition processes. Throughout this review, it	No Recommendations

Testing	Observations	Recommendations
followed.	was evident that processes are actively followed and monitored. The processes at the higher financial planning consolidation level are no exception. Finance personnel are located in each Branch and Region to assist in this process.	
Review the application of risk by personnel.	The management of operational and capital planning risks has been discussed previously. The Strategic Risk Profile is produced through the corporate risk register. The Strategic Risk Profile provides the Board and Executive with a graphical representation of the corporate risks within the risk register. Corporate risks are identified against key elements e.g. • Customer; • Recruitment; • Economic; • Environment; • Stakeholder/Political; • Regulation/Governance; and • Societal. Consequences including financial are analysed and reported within the register. Actions are then generated to address the high and extreme risks. Management Review and Audit develop a three year Strategic Audit program encompassing a rolling annual program with the principle objectives of : • Assisting the Board in discharging corporate governance; • Supporting Corporate vision; • Providing executive management with recommendations;	No Recommendations

Testing	Observations	Recommendations
	• Identifying efficiency and effectiveness opportunities; and • Providing assurance that the Corporation is achieving its operational goals and objectives in an effective and efficient manner. The audit process is designed to monitor processes and determine improvements. WaterCorp is also exposed to the following primary financial risks e.g. • Credit risk; • Liquidity risk; and • Market risk. The following statements were extracted from the Annual Plan. "***Credit risk*** *is the risk of financial loss to the Corporation if a customer or counterparty to a financial instrument fails to meet its contractual obligations, and arises principally from the Corporation's receivables from customers.* *Management has a credit policy in place and the exposure to credit risk is monitored on a regular basis."* *"**Market risk** is the risk that changes in market prices, such as foreign exchange rates and interest rates, will affect the Corporation's income or the value of its holdings of financial instruments.* *The objective of market risk management is to manage and control market risk exposures within acceptable parameters, while optimising return. The Corporation enters into derivatives, and also incurs*	

Testing	Observations	Recommendations
	financial liabilities, in order to manage market risks." *"**Liquidity risk** is the risk that the Corporation will not be able to meet its financial obligations as they fall due. The Corporation's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Corporation's reputation."*	

Documents sighted

- S072 Financial Authorisation Standard, 18 November 2008
- PCY112 – Delegated Financial and Legal Authorisations, 18 November 2008
- Corporate Budget, Planning and Pricing Timetable 2010/11 to 2014/15
- Financial Report, section 5 2009 Annual report
- Business Performance Reporting Process flowchart and timetable
- Corporate Risk Register
- MR&A Review and Audit Program, 2009 - 2010

11. Capital Expenditure Planning

Key Process	Outcomes	Effectiveness Criteria
The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. **Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next 5 years would usually be based on firm estimates.**	A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for the decisions and evaluation of alternatives and options.	• There is a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates • The plan provide reasons for capital expenditure and timing of expenditure • The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan • There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned

Testing	Observations	Recommendations
Identification and inspection of process documentation.	Asset acquisition requires the following processes: • A robust capital investment approach; • Capital expenditure cashflow and forecasting; • Business cases; • Risk based prioritisation; • Asset acquisition and delivery processes; • Financial delegations; and	No Recommendations

Testing	Observations	Recommendations
	• Project delivery strategies. The above processes are documented in the asset acquisition guidelines, PCY112 financial delegation policy, procurement policies and procedures and a host of other documents for each of the above processes. The process documentation identifies: • The end to end processes; • Each of the sub processes and explanations; • Process flow charts; and • Guidelines. The process documentation is readily available on the Intranet.	
Obtain copy of capital expenditure plan for the current year and assess whether the process is being followed.	The monthly CIB report demonstrates the use of the processes. It reports budget against actual expenditure and identifies variances in the expenditure. It is categorised by capital program. Likewise the information can be readily accessed through the SAP system at any level within the plan. The sub-processes were reviewed and tested during the review and found to be used across the branches and the G&A region.	No Recommendations
Test the capital investment plan for: **a. identification of issues,** **b. actions proposed,** **c. responsibilities,** **d. timing,** **e. compatibility with asset life, and**	It is the implementation business cases that justify the capital projects. The business case identifies: • Business need; • System risks, residual risks, asset risks; • Approved options; • Project scope (actions), costs, timing and project	The business cases as well as including risk mitigation could provide the ability to incorporate other parameters such as carbon emission reduction, social benefits, and environmental benefits etc.

Testing	Observations	Recommendations
f. the condition identified in asset management plans.	implementation; and • Business impacts. NPV analysis forms part of the business case and incorporates the operating and capital costs and potential revenue. The asset condition obtained through the ACA process is used to identify the risks involved with the asset. The risk is used to prioritise the projects. Renewal programs are generally based on condition or asset life. Other factors such as poor performance may also drive the need for replacement or renewals. Asset class plans are in the process of being developed. Renewal programs will be identified for each asset class as part of this process.	An additional analysis could be undertaken to examine an individual high cost project against a group of lower cost projects to determine the cost effectiveness outcomes e.g. where do I spend the money for the best outcome.
Examine current capital investment plan and assess frequency of review.	The capital investment plan is reported to the Board on a quarterly and yearly basis. The report includes comparison of budgets and actual costs with variances identified against each project. Where variances of significance are identified actions are identified to rectify the variance. In addition to the above the capital investment plan for each region is monitored and reported monthly.	No Recommendations
Assess how supporting documentation and reasons impact on the capital investment plan.	The Capital investment plan can be influenced by external drivers as identified in the Strategic Asset Management Plan resulting from the environmental scanning process and other research. Issues such as energy management, climate change, water efficiency, sustainability, growth have been identified as key strategic issues that will influence the capital investment plan in the short and long term.	No Recommendations

Testing	Observations	Recommendations
	Key points for consideration include: • Energy management – need to be more efficient due to rising energy costs; • Climate change – drying climate resulting in greater reliance of desalination and water recycling; • Water efficiency – recycling and ground water replenishment; • Sustainability – development of risk mitigation strategies to combat the above issues; and • Growth – need for redundancy in wastewater treatment plant, including upgrades and replacement due to ageing infrastructure. WaterCorp is currently in the process of addressing the above issues. In the short term asset renewals due to poor performance / condition and ageing infrastructure have an impact on the capital investment plan. The SAM branch is currently developing specific renewal and replacement programs through the development of the asset class plans. This will significantly improve the current renewal plans.	
Review the application of risk by personnel.	Risk mitigation is a key driver for the development of capital investment plans. Asset condition assessments feed the risk process which is used to identify capital projects at the local or region level. Region personnel apply risk through the ARA process to identify potential capital treatments and prioritisation. The projects are then compiled in the ARA database across the regions and corporate then ranked to produce the final list based on available funding. Risk is applied over a 5, 10 and 15 year period.	No Recommendations

Testing	Observations	Recommendations
	When projects are completed the risk is reviewed. The TAM branch facilitates the risk process and provides training and support to the regions. Testing this process at G&A region demonstrated that the personnel were comfortable in the process.	

Documents sighted

- PCY263 Capitalisation, February 2009
- Asset Acquisition Guidelines, November 2006
- S336 Capitalisation Decision, January 2009
- Capital Investment Branch monthly report, August 2009
- Capital Investment Report – Board report, December 2007
- Quarterly Executive Report
- WCWA Directions For Our Water Future, February 2009
- Strategic Asset Management Plan, 2009
- PM#2755853v1 – Main Conduit SRA Zone 1
- PM#2755879v1 – Treatments for Zone 1 risks

12. Review of AMS

Key Process	Outcomes	Effectiveness Criteria
The asset management system is regularly reviewed and updated.	Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.	• A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current • Independent reviews (e.g. internal audit) are performed of the asset management system

Testing	Observations	Recommendations
Identify and inspect process and supporting documentation.	The Strategic Asset Management Plan has an improvement section that identifies key asset management improvements required resulting from the development of the SAMP, Asset Class plans or internal and external audits. The improvements are subject to ongoing monitoring and reporting once approved to be developed or implemented. As discussed previously Asset Class Plans are being developed in lieu of Asset Management Plans. The content of the Asset Management Plans is readily available electronically. If needed the information can be readily assembled. A continuous improvement process is in place and lead by the AMLT. Each branch identifies improvements that are then discussed through the AMLT and prioritised accordingly. A continuous improvement register exists to assist in the program development and monitoring.	No Recommendations
Examine and test processes associated with asset management system	Internal reviews have been undertaken within the review period to identify improvements to the asset management system. This also included external reviews e.g. WSAA Asset Management	No Recommendations

Testing	Observations	Recommendations
updating.	benchmarking. In addition to the above reviews, the MR&A group undertake yearly audits within a three year program that include a review of asset management processes. The outcomes of the internal audits are recommendations for improvements that are then monitored.	
Consider the need to update the asset management plan based on the results of the asset management system review.	Refer above.	No Recommendations
Identify any internal reviews in the review period and the uptake of any recommendations from such reviews.	In 2007 the AMD and IDB initiated a joint review of the engineering standards. A key outcome was the development of a business analysis process to review business response to asset issues and opportunities. The draft process was tested in 2008 by implementing pilot projects. The process continues to be developed by the Engineering Standards Co-ordinator in SAM. Key documents have been prepared and are currently being trialled. Additional work is required including: • Completion of process documentation including templates and procedures; • Development of Engineering Standards Development Register; • Roll-out of the process and delivery of awareness training; • Assessment of the workload of the Asset Treatment reference Group members; • Review and prioritising of the standard jobs submitted to IDB; • Development of the ongoing Steering group process; and • Agreement on the funding model for engineering standards development work.	No Recommendations

Testing	Observations	Recommendations
	In 2008/09 the following improvements were identified by the AMLT to optimise asset management: 1) Refine processes and further develop tools to optimise whole-of-life asset performance and minimise levels of cost while delivering required levels of service; 2) Implement a program to improve the integrity of systems and processes to optimise asset performance; 3) Improve commissioning and handover processes to ensure fit for purpose assets; 4) Improve maintenance plans for targeted asset classes and monitor existing plans; 5) Increase the understanding and use of system capability tools; 6) Improve the co-ordination of the asset renewals program; 7) Complete risk treatment plans for top 50 critical assets in each region; 8) Develop a program for development of operations plans and pilot the process; 9) Implement programs to further optimise the energy efficiency of operations; and 10) Review and update the Strategic Asset Management Plan. The reviewer has sighted the outcomes of improvements 1, 3, 5, 6, and 10 above. In addition to the above the WSAA Asset Management Benchmarking project was completed in 2008. The improvements included: • Improved communications and feedback loops relating to business objectives development and dissemination;	

Testing	Observations	Recommendations
	• Complete process documentation and processes in the areas of operations and maintenance; • Improve the review and improvement processes; • Improve the quality of data with respect to asset condition, physical attributes and performance; and • Improve systems integration. The report also noted*: "Several elements of each project are already underway and when fully implemented these improvement initiatives will contribute significantly to delivering value from asset management in line with business drivers."* As a result of the above, additional funding has been identified in 2009/10 for the following: • ACA GAP Treatment Management Program; • Disposal of Surplus Assets; • "New Assets" Asset Management Handover Group; • Pumping Efficiencies Program; and • Management of Operational Contingencies for Deferred Capital Projects.	

Documents sighted

- Strategic Asset Management Plan, March 2009
- Optimise asset management 2008/09, Powerpoint
- New Initiatives Funding 2009/10 AMD
- WSAA Asset Management Benchmarking 2008, GHD

REVIEW STATEMENT

Odysseus-imc Pty Ltd has completed the 2009 Asset Management Effectiveness Review. The review examined the measures taken by WaterCorp (the licensee) for the proper management of the assets used in the provision and operation of services and where appropriate, the construction or alteration of relevant assets.

Odysseus-imc Pty Ltd believes the findings in this document are an accurate reflection of the outcomes of the review.

Sandy Muir
Director
Odysseus-imc Pty Ltd
19 Smiley Road
Broadmeadows Vic 3047

Date Signature Attached: 6th November, 2009

Appendix A – Documents Sighted

Hardcopy Documents

Document No.	Document Title
AMSER 2009-001	11Mile Booster Pump Station Commissioning Management Plan Project No. CW-00392 Rev - 2.1
AMSER 2009-002	Accountabilities Framework, May 2008
AMSER 2009-003	AS/NZS ISO 9001:2008 certification, Project Management and Contract Management services for Water Industry Infrastructure Projects, Bureau Veritas, February 1995
AMSER 2009-006	Asset handover checklist, revised August 2009
AMSER 2009-007	Asset Information Projects - 2009/10
AMSER 2009-008	Audit Checklist
AMSER 2009-009	Broome Water Supply Scheme Planning Review, May 2009
AMSER 2009-010	Business Performance Reporting Board/Executive Pack, October 2009
AMSER 2009-011	Business Performance Reporting Process flowchart and timetable
AMSER 2009-012	Capital Investment Branch monthly report, August 2009
AMSER 2009-013	Capital Investment Report – Board report, December 2007
AMSER 2009-014	Capital Investment Summary, October 2009
AMSER 2009-016	Corporate Budget, Planning and Pricing Timetable 2010/11 to 2014/15
AMSER 2009-018	Corporate Risk Register
AMSER 2009-022	E2E Asset creation – User Requirements (joint briefing to AMD/P&ID Lead Teams, August 2009
AMSER 2009-024	Explanation of the Roles and Activities of MESB and IDB, March 2009
AMSER 2009-026	Flora Street Pumping System Review, 2006
AMSER 2009-027	Flora Street Wastewater Pump Station – Review pumping capacity and investigate contingencies for emergencies, Nov 2006
AMSER 2009-029	Guidelines for Plan, Monitor & Assess Asset Performance, Condition and Risk Process, October 2008
AMSER 2009-030	Incident record number 2346
AMSER 2009-031	Incident record number 2388
AMSER 2009-032	Infrastructure Planning Business Case, Mundaring WW Treatment and Treated WW Management, May 2009
AMSER 2009-033	Maintenance Summary Report, PSN water, 30 September 2009
AMSER 2009-035	MR&A Review and Audit Program, 2009 - 2010
AMSER 2009-036	New Initiatives Funding 2009/10 AMD
AMSER 2009-039	PCY112 – Delegated Financial and Legal Authorisations, 18 November 2008
AMSER 2009-040	PCY135 Risk Management
AMSER 2009-041	PCY237 Information Management, November 2007
AMSER 2009-042	PCY263 Capitalisation, February 2009
AMSER 2009-045	Planning Process Manual, 13 May 2009
AMSER 2009-046	PM#2255647v2 – Water reticulation asset class plan

Document No.	Document Title
AMSER 2009-054	Project Closeout Checklist, McNeill Road Sewer Pump Station, Project Number C-S01278, January 2008
AMSER 2009-055	Project Closeout Report, G&AWS West Northam 30ML Storage Tank, Project Number: C-W01549, December 2008
AMSER 2009-056	Project Start-Up Checklist, McNeill Road Sewer Pump Station Type 4C, , Project Number C-S01278, March 2004 2008
AMSER 2009-058	Report for Northam, Pantapin and North Kellerberrin Tanks roof inspections, GHD, June 2009
AMSER 2009-059	Risk Assessment Criteria, August 2009
AMSER 2009-060	Risk Profile Report North West Region – aspects and impacts, September2009
AMSER 2009-061	Risk Profile Report, Acquire Infrastructure Assets – Design Assets
AMSER 2009-062	Risk Profile Report, Southern Seawater Desalination Plant IWSS Ravenswood Pump Station
AMSER 2009-063	Root Cause Analysis Action Plan
AMSER 2009-064	S072 Financial Authorisation Standard, 18 November 2008
AMSER 2009-065	S110 Incident Management, 29 September 2009
AMSER 2009-066	S122 Risk Management Guidelines
AMSER 2009-067	S336 Capitalisation Decision, January 2009
AMSER 2009-068	Southern Seawater Desalination Project IWSS Integration User Requirements Version 3, March 2009
AMSER 2009-069	Strategic Asset Management Plan, March 2009
AMSER 2009-070	Strategic Management - Policy Procedure Standard - Internal - Analyse Asset Maintenance Core Process
AMSER 2009-071	Strategic Management - Policy Procedure Standard - Internal - Asset Decommission and Disposal Guideline
AMSER 2009-072	Strategic Management - Policy Procedure Standard - Internal - Decommission and Dispose Assets Core Process
AMSER 2009-073	Strategic Management - Policy Procedure Standard - Internal - Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process
AMSER 2009-074	Strategic Management - Policy Procedure Standard - Internal - Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process, 9 October 2008
AMSER 2009-075	Strategic Management - Policy Procedure Standard - Internal - Plan Asset Maintenance Core Process
AMSER 2009-076	Strategic Management - Policy Procedure Standard - Internal -Analyse Asset Operations Core Process
AMSER 2009-077	Strategic Management - Policy Procedure Standard - Internal -Manage Asset Capability Core Process
AMSER 2009-078	Strategic Management - Policy Procedure Standard - Internal -Plan and Assess and Monitor Asset Performance and Condition and Risk Core Process
AMSER 2009-079	Strategic Management - Policy Procedure Standard - Internal -Plan Asset Operations Core Process
AMSER 2009-080	Strategic Risk Profile
AMSER 2009-084	Weekly Operations Report, 30 September 2009 (Subiaco, Beenyup, Woodman Point, Kwinana WWTP)
AMSER 2009-085	WSAA Asset Management Benchmarking 2008, GHD

Electronic Documents

Document No.	Document Title
AMSER 2009-004	Asset acquisition guidelines, November 2006
AMSER 2009-005	Asset commissioning guideline, August 2009
AMSER 2009-015	Chidlow Mainline Booster Pump Station Operational Contingency Plan,
AMSER 2009-017	Corporate Environment Scan March 2009
AMSER 2009-019	Customer Charter
AMSER 2009-020	Decommission & Dispose Assets – Context Model
AMSER 2009-021	Decommission & Dispose Assets – Main Process Model
AMSER 2009-023	Email, ACA Assessment Performance for the Regions, 10 September 2009
AMSER 2009-025	Financial Report, section 5 2009 Annual report
AMSER 2009-028	Geraldton Waste Water Scheme Kalbarri S.P.S No.'s 1,2 and 3 Asset Condition Assessment, MESB, November 2008
AMSER 2009-034	Manage Strategic Direction Process
AMSER 2009-037	OAM Role and Focus presentation, 30 September 2009
AMSER 2009-038	Optimise asset management 2008/09, Powerpoint
AMSER 2009-043	Performance Report to ERA, Dec 2008
AMSER 2009-044	Performance Report to ERA, Mar 2009
AMSER 2009-047	PM#2492016v3 – Decommission & Dispose Assets, July 2009
AMSER 2009-048	PM#2755853v1 – Main Conduit SRA Zone 1
AMSER 2009-049	PM#2755879v1 – Treatments for Zone 1 risks
AMSER 2009-050	PM#2759026v2 – Disposed Assets 2008-2009
AMSER 2009-051	PM#364856v3 – PCY233 Disposals, October 2008
AMSER 2009-052	PM#367588v4 – S087 Disposals Standard, October 2008
AMSER 2009-053	PM#617596v1 - Water Corporation 2006-07 National Performance Framework Review Final Report - 06 Nov 07
AMSER 2009-057	Quarterly Executive Report, Projects in the Implementation Phase
AMSER 2009-081	Treatment Plan – G&WS MSCL 88.4 – 94.0 W Meckering
AMSER 2009-082	Treatment Plan – Mundaring PS A & B: M&E Upgrades
AMSER 2009-083	WCWA Directions For Our Water Future, February 2009

Appendix B – Interview Schedule

AMSER 2009

INTERVIEW SCHEDULE

DATE	TIME	PEOPLE	BRANCH[1]	PROCESS
Tuesday 29 Sept	9:00	Russell Pascoe Tino Galati	SAM	
	10:30	Tino Galati Ian Allison	SAM	AMIS
	13:00	Dave Currell Brad Filmer Mark Gregor	ISB	AMIS
	14:30	Janet Ham	SAM	Disposal, Replacement
	16:00	Steve Wisdom Ken Walker Paul Ranieri Mike Tschanz	TAM	Operations, Maintenance, Disposal
Wednesday 30 Sept	9:00	Mark Leathersich Richard Forrest Peter Speers	IPB	Asset Planning
	10:30	Darren Arland	R&A	Risk Management
	13:30	Murray Johnsen Chris Higgs John Doran Noel Turner Merzuk Hodzic	OAM	Operations, Maintenance, Disposal

[1] Refer to the Branch table at the end of this appendix

	15:00	Steve Capewell John Doran	WPB	Asset operations, Maintenance
	16:00	Neil La Roche Peter Harding	PMB	Asset creation, acquisition
Thursday **1 October**	9:00	Mike Taylor Nicholas Wells Chris Dolley	CIB	Asset creation, acquisition
	10:30	Wayne Kearney Andrew Pascoe	R&A	Environmental analysis
	12:00	Mike Tschanz	TAM	Asset condition
	13:00	Paul Ranieri	TAM	Asset maintenance
	14:30	Brian Robertson Dennis Yovich Ted Sweeney Bill Goode	MESB	Asset operations, Maintenance, creation
	16:00	Chris Higgs Brad Gillies Stephen Flanagan	WWTB	Asset operations, Maintenance
Friday **2 October**	9:00	Ken Walker	TAM	Asset capability, risk
	10:30	Andy Klita	IDB	Asset creation, acquisition
	14:00	Peter Speers Kate McManus	IPB	Documentation walkthrough IPB
	14:30	Tina Zheng	IPB	Documentation walkthrough IPB
Monday **5 October**	8:30	Mark Fitzhardinge	SD	Asset failures
	8:30	Peter Harding / Tahlia	PMB	PMB web page
	9:30	Harvey Dennison	PMB	Quality System
	11:00	Mike Giorgi	FIN	Financial management

		Tony Vitalich Kevin Jones		
	13:00	Phil Davidson	PMB	Alliance Contracting
	13:30	Marc Griffiths	PMB	C&H Procedure
	14:00	Martin Hedley	Corp Planning	Environmental analysis
	15:00	Ray Thompson	PMB	User Requirements
	15:30	Paul Prottey	CSD	Operations Centre

Tuesday **6 October**	9:00	Brad Taylor Barrett Moulds Scott Miller Ian Kirton Sara Paton	G&A	Northam Creation, ops, mtce, disposal, contingency
	1:00	Brad Taylor Scott Miller		Site inspections

Wednesday **7 October**	11:00	Russell Pascoe Graham Cargeeg	AMD	Feedback Session

	BRANCH
SAM	Strategic Asset Management
TAM	Tactical Asset Management
OAM	Operational Asset Management
ISB	Information Services
IPB	Infrastructure Planning
R&A	Risk and Assurance
PMB	Project Management
WPB	Water Production
CIB	Capital Investment
MESB	Mechanical & Electrical Services
WWTB	Wastewater Treatment
IDB	Infrastructure Design
SD	Service Delivery
FIN	Finance
Corp. Planning	Corporate Planning
CSD	Customer Services Division
AMD	Asset Management Division
G&A	Goldfields and Agriculture Region

Appendix C – Status of 2006 Recommendations

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Key Process 1: Asset Planning					
Action 1: Training Program to be developed & implemented for all asset planners in IPB	Not all planners are using the planning process resource properly.	**COMPLETE**			
Action 2: Update operations & maintenance cost estimate in the IPB Estimating Template	Operating and maintenance costs in the planning estimates database can be refined	**COMPLETE**			
Action 3: A project to determine the full list of documents to be stored via AMPS is scheduled to commence shortly.	There is no definitive list of documents that contribute to an asset management plan .	**COMPLETE**			

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Key Process 2: Asset Creation and Acquisition					
Action 4: Project Management's 3rd party accredited QA system is currently being reviewed and updated. A training program will be implemented to refresh all project managers in its use. An formal internal and external audit is already in place to meet accreditation requirements	Not all project managers follow the standard checklists and rely on their expertise to complete all expected elements of projects.	**COMPLETE**			**Sighted**
Action 5: Asset Acquisition Guidelines discussed at CIPC meeting on 22 November 2006 and has been approved by GM, Planning & infrastructure. Briefing to staff planned for December 2006.	Asset acquisition guidelines have been revised.	COMPLETE			**Sighted**

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 6: Revised and simplified procedures for minor (category D) projects have been developed in conjunction with regional project management teams. The new procedures were posted on line in October 2006 and an awareness program and follow up sessions are being rolled out in the Regions over the next six months.	The Regional project managers believe documentation for minor projects is excessive.	COMPLETE			Sighted
Key Process 3: Asset Disposal					
Action 7: Develop and document the Decommission Assets process and "load" it to the TAM homepage including relationships with other corporate processes.	Defined process needed to identify and dispose of decommissioned assets.	COMPLETE			Sighted

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 8: Identify any extreme risk assets requiring action to be undertaken at the earliest possible time as a program of works to reduce the risks to a manageable level.	Address extreme risk backlog	**COMPLETE**	March 2007		
Action 9: Seek the necessary funding to undertake the works identified in the short term program of works.	Address extreme risk backlog	**COMPLETE**		Source for funding the identified works will be sought after compilation of program of works is completed at the end of March.	
Action 10: Review the "Surplus Assets Disposal Program" (GHD September 2005) to determine the real level of identified works and clarify the scope and estimates. Determine the long term program of works to be undertaken based in the allocated budgets and risk levels.	Address long term backlog. Currently some physical disposals may be deferred due to funding limitations. Risk assessments are used for prioritising funding.	**COMPLETE**			

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 11: Complete development of renewal strategies.	The renewal strategies for assets are under development	**ON TARGET**	Dec 2012	A renewals strategy has been outlined for water reticulation assets. This requires increases in funding beginning next year for metro assets and expenditure commencing as a regular annual budget allowance for country reticulation assets in year 5 of the capital program. Renewals strategies for Farmland mains and Trunk and Distribution mains are still under development as part of the respective Asset Class Plans. These are incorporating risk based approaches and are due in July 09 and Sept 09 respectively. The objective is to develop program business cases for all key asset classes to identify ongoing renewal funding needs. Major work has been done in water mains and an interim program set up for main sewers. These are the highest priority items. Currently other renewals are done via the ACA process and dealt with by Gap Treatment funding. A schedule for Asset Class Plan development, including renewals, has been established as a corporate priority.	**Sighted**

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 12: SAM will establish the strategy for the other linear asset classes.	The renewal strategy for large main sewers is a reaction to a recent failure and has taken a low risk approach to this asset group	**ON TARGET**	June 2010	A renewals program has been included in the capital allowances to address large diameter concrete sewer mains subject to corrosion attack. An overall renewals strategy for the full set of sewer mains (main sewers and reticulation sewers) is still to be developed. This will be addressed as part of the Asset Class Plans for these two asset classes. Given current resources this will not occur until 2009/10 financial year. In the interim a program of work has been included in the forward capital program for inspection and relining of "at risk" main sewers. Significant expenditure on relining (in excess of $5M pa) has occurred over the last 2 years.	**Sighted**
Action 13: Based on SAM strategy for linear assets TAM will review and adjust the main sewer relining program. There will be contract implications for the adjustment to the established relining program.	Need to review the previously developed main sewer relining program once the strategy for linear assets is completed	**COMPLETE**		Whilst awaiting the outcome of Action 12 to be finalised, TAM has developed a tentative program that shows the assets at risk that need to be identified in the relining program. This information has been made available to Perth Region for the purpose of their prioritisation exercise. TAM have developed main sewer relining program aligned with 08/09 and 09/10 funding from the WORM capital program. Action is with Perth Region to review existing CCTV tapes to prioritise future program.	

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Key Process 4: Environmental Analysis					
Action 14: High level environment scan will be provided to the business as part of the "Manage Strategic Direction Process"	Corporate scanning processes need to be enhanced to assist process divisions	**COMPLETE**			**Sighted**
Key Process 5: Asset Operations					
Action 15: This training need has been recognised with the establishment of the new Division.	Training responsibility is not always aligned with asset management responsibilities.	**COMPLETE**		An Asset Fundamentals course has been developed (internal and external presenters). All key asset staff, including regional OAM staff have attended the course. Course outlines basic AM principles and specific responsibilities of various AM staff.	**Sighted**
Action 16: The current project to the commissioning & handover process will provide for the asset operating manuals being delivered as part of projects for new assets created. Operating manuals will be delivered progressively from Oct 2007 for new assets.	Operators may not be referencing operations manuals when undertaking day to day operations.	**COMPLETE**		The Corporation has developed detailed guidelines covering what is expected from the project manager in relation to the operating manual for new assets. Recent projects completed would have manuals produced (e.g. Caddadup WWTP). Additionally the Corporation has	**Sighted**

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
				been developing operations plans for schemes. Several pilot plans have been developed and are currently being tested within the business.	
Action 17: Establish "Plan Asset Operations" and "Analyse Asset Operations" Processes and a program to address the development of operations Plans for all existing schemes.	Operators may not be referencing operations Plans when undertaking day to day	**ON TARGET**	July 2009	Template for Water Scheme is completed and being utilised. 1st round of Plans will be completed in June. Templates being developed for Wastewater Catchments, WWTPs and GWTPs. Gen 2 PAO Process under development and expected in July 2009. Integration with "Manage Water Quality" Process under development.	
Action 18: Develop operation plans for all schemes	Operators may not be referencing operations Plans when undertaking day to day	**ON TARGET**	June 2012	1st round of Plans will be complete in June. A program to complete all operation plans will be addressed progressively over a few years. No FTE allocation and no new initiative funding therefore will need to be assessed on a prioritised approach each year.	
Action 19: Place all existing operating Plans and newly developed Plans in AMPS for access by anyone who needs to access them.	Operators may not be referencing operations Plans when undertaking day to day operations.	**ON TARGET**	June 2010	New Operations Plans are being referenced in AMPS as they are developed.	

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Key Process 6: Asset Maintenance					
Action 20: Develop Maintenance Standards for all asset classes. Develop Maintenance plans in conformance with the Maintenance Standards.	Maintenance plans are being loaded into SAP. Not all are aligned with schemes yet	**ON TARGET**	6 classes complete June 09 7th class by Sept 09 3 more classes to be completed by 09/10	Seven Asset Classes completed to date (08/09). Maintenance Standards for four Asset classes expected to be developed in (09/10. Maintenance Plans are being loaded at progressively by OAM.	
Action 21: A Post Implementation review of the mobile computing system has been undertaken and the final report is expected shortly. The review will address issues such as current usage of PDA's and follow-up training requirements and recommend appropriate actions.	Not all operations sites are using the corporate PDAs for maintenance management	**COMPLETE**		Comment 22 May 2009: Findings from Post Implementation Review for MCS1 have been incorporated in the Project Plan for MCS2. This includes a strong focus on business change through the establishment of a Business Reference Group.	
Action 22: A KPI for usage of PDA's is under development.	Ditto	**COMPLETE**		KPI developed and implemented. Statistics sent to each Region and KPI included in Divisional Performance Report.	

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 23: SAM will provide a specification for data capture requirements and the IT system adjustment.	The possibility of maintenance problems being kept local without statewide recognition needs to be addressed.	**COMPLETE**		All failure assets are recorded via SAP-PM and SCADA. "Measle maps" of data can be created in our GIS to get visibility of localised or state wide problems.	**Sighted**
Action 24: Develop a process to access and apply information related to failures that may apply at multiple locations.	The possibility of maintenance problems being kept local without statewide recognition needs to be addressed.	**ON TARGET**	June 2008 for maintenance and June 2009 for operations	BWIP 2 functionality will provide the basis for developing High Failure Rate/ High cost reporting at equipment level using Feedback Codes currently being deployed. Status report not yet received	
Action 25: SAM will provide the prioritisation criteria for operating and maintenance tasks and programs for gap treatments and renewals.	Limitations on available funds /resources for maintenance could limit actions possible and a prioritisation method is needed to assist decision making.	**COMPLETE**		ACA/ARA processes are used to assess priorities. In addition, maintenance standards have been developed for all key asset areas and maintenance programs established. Where funds are limited in budget there is a process to determine most critical maintenance to do with available funds.	
Action 26: Work with OAM and SD to adjust the work management practices (which primarily manifest in SD) to achieve activity prioritisation.	Limitations on available funds /resources for maintenance could limit actions possible and a prioritisation method is needed to assist decision making.	**ON TARGET**	Oct 2009	Plan Asset Maintenance Process is now integrating well with ABP Process to provide a view of "Best Practice" and "Risk Based Funded Plan". Methodology has been developed and deployed for Maintenance Item Prioritisation.	**Sighted**

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
				Work Order prioritisation under development as part of the Planning & Scheduling Project.	
Key Process 7: Asset Management Information System					
Action 27: Current project is scheduled to be finished mid 2007.	An asset and service delivery information strategy is being developed to support the new Division.	**COMPLETE**		Work completed as part of ISD project requirements embedded in CIM Strategy review.	
Key Process 8: Risk Management					
Action 28: Gain approval for CARM model and implement. CARM concept discontinued. Redevelopment of ARA in SAP**.**	A criticality assessment model business case is required.	**COMPLETE**		ARA currently being revamped to a new version. ARA tool has been developed and implemented, and used to determine capital funding priorities.	**Sighted**
Action 29: Perform ARA's for remaining critical assets identified through CARM in action 28.	Critical assets should have risks assessments	**COMPLETE**		Each region has identified 50 most critical assets. This was done using ARA risk profiles.	**Sighted**
Key Process 9: Contingency Planning					
Action 30:	Not all critical assets may	**ON TARGET**	June 2011	As part of its due diligence the	**Sighted**

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
See MR&A audit action 2.4.1(ii). Accelerate identification of critical assets under ARA process and ensure all critical assets have suitable contingency planning	yet be identified (Refer risk management above)			Corporation is progressively reviewing the management of assets that are most critical to the delivery of service. Regions are currently reviewing the Top 50 most critical assets in each region. As part of the review the adequacy of various aspects, (i.e. condition, risk, preventative maintenance and contingency plans), related to asset performance are being assessed. All aspects are well progressed although resourcing constraints have resulted in slower than anticipated progress in the delivery of contingency plans.	
Action 31: SAM will provide the criteria for individual and generic contingency plans.	Appropriate contingency plans need to be in place for critical assets	**COMPLETE**		Generic CP framework has been developed.	
Action 32: Develop a program to update or provide contingency plans to all critical assets, progressively, over the coming 2 years.	Appropriate contingency plans need to be in place for critical assets	**ON TARGET**	June 2011	Critical assets identified. An interim contingency plan template sent to operating groups for use. Currently working to identify system for electronic loading of contingency plans.	

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
				CP guideline draft awaiting endorsement from Legal and Risk Branch. Asset based CP templates have been updated. Critical asset are now listed in SCM and existing CPs have been linked. Action remains to align existing CPs to new format.	
Key Process 10: Financial Planning					
No Action					
Key Process 11: Capital Expenditure Planning					
Action 33: Next version of Strategic Asset Management Plan to provide more guidance on renewal strategies to enable more detailed planning for asset replacement.	Renewal strategies definition will give clearer picture of capital investment requirement for renewals	**COMPLETE**			**Sighted**
Action 34: Asset Acquisition Guidelines discussed at CIPC meeting on 22 November 2006 and has been approved by GM, Planning & infrastructure. Briefing to staff planned for December 2006.	Asset acquisition guidelines review needs to be finalised	**COMPLETE**			**Sighted**
Key Process 12: Asset System Review					

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	COMMENTS	REVIEWER FEEDBACK
Action 35: The functionality to display an AMP was lost with the creation of AMPS. This is a SAM action to enable TAM to populate the system.	Asset management plan document definition not yet complete	**ON TARGET**	December 09	Work on project delayed. This work is now being incorporated into AMPS Strategy.	
Action 36: This is our current policy and is happening. There are no additional actions required.	SAMP action plan is the key to continued improvement	**COMPLETE**			