2012 Post Review Implementation Plan

Water Corporation Western Australia

February 2013

Odysseus-imc Pty Ltd
Infrastructure Management Consultants

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AMENDMENT RECORD

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INTRODUCTION

Water Corporation (WaterCorp) is required to undertake an asset management system effectiveness review (AMSER) on a 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, 2006 and 2009.

The outcomes of the 2012 review are identified in the AMSER 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).

The time period covered by this review is 2009 – 2012. This report is an impartial review of WaterCorp's asset management effectiveness under the ERA guidelines.

The review conducted between July 2012 and September 2012 examined the asset management processes used by the Water Corporation in delivering the services to its customers. On-site reviews were undertaken between 23rd to 26th July and 30th July to 2nd August respectively. 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.

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 2012 Effectiveness Review the effectiveness 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.

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
Asset Planning	B	2
Asset Creation/Acquisition	A	1
Asset Disposal	A	3
Environmental Analysis	A	1
Asset Operations	A	2
Asset Maintenance	B	2
Asset Management Information System	A	1
Risk Management	B	3
Contingency Planning	B	2
Financial Planning	A	1
Capital Expenditure Planning	A	1
Review of the AMS	A	1

TABLE 1 – ASSET MANAGEMENT EFFECTIVENESS RATINGS

WaterCorp has responded to the recommendations identified in this report and provided input into the post review implementation plan in the following table.

The above ratings are based on the definitions in Table 5 and 6 of the ERA Audit Guidelines: Electricity, Gas and Water Licences – August 2010.

IMPLEMENTATION PLAN - 2012

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

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
1	**Asset Planning**	The Renewal Planning Section is a recent development. Extensive effort has been applied to identify the approach to be taken for Renewal Planning. As such documentation is still to be developed.	Renewal Planning Group to develop supporting documentation such as: • Business case; and • Process manual.	Documentation to support the renewals planning process is under development. This includes: 1. Revised process diagram 2. Renewals Planning business plan 3. Updated business rules for ACA and ARA 4. Updated process guidelines	Manager, Asset Management Branch	1. February 2013 2. April 2013 3. June 2013 4. October 2013
2		Asset management planning procedures are of varying state, quality and are out of date.	Asset management planning procedures objectives, purpose and content to be reviewed. All procedures to be updated in line with agreed approach. Procedure document needs to reflect current approach including asset renewal, strategy statements, etc.	The AMB in its new structure will review all processes and develop streamlined processes in alignment with the new structure.	Manager, Asset Management Branch	December 2013
3		Although great effort has gone into the development of	Implement the 'Our Plan, Monitor and Assess Asset	The strategies for condition assessment of key asset classes are being revised to ensure the	Manager, Asset Management	Revised strategies in place by July

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		the 'Our Plan, Monitor and Assess Asset Performance, Condition & Risk Story' the implementation of the story is vital to achieving the desired state.	Performance, Condition & Risk Story' by setting clear target dates and responsibilities in order to achieve the desired result.	program is well targeted, provides value for money, and can support robust decision making and deterioration modeling. The Asset Risk Assessment process and system is being reviewed to improve usage within the business, consistency, and ensure the outcomes are embedded in capital planning processes.	Branch	2013 Ongoing improvement planned as more information becomes available ARA changes planned for implementation by December 2013
4		The AM Branch is replacing Asset Class Plans with Strategic Statements.	Complete the remaining 17 Strategic Statements.	Commencement of Asset Class Strategies will occur in 2012/13 with completion due in 2014/15. WC Comment : This date cannot be changed as this is a large body of work with an agreed delivery schedule based around resource availability.	Manager, Asset Management Branch	June 2015
5		Supporting tools are needed to assist in the analysis process.	Improve the renewals forecasting of sewer mains (large and small) by obtaining an appropriate tool to undertake the analysis.	A review of industry best practice decision support tools and suitability for Water Corporation is planned to be undertaken with CSIRO. A number of tools have already been considered but the review will support the selection of the most appropriate approach.	Manager, Asset Management Branch	October 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
6		Supporting tools are needed to assist in the analysis process.	Improve forecasting of whole of life cost for mechanical and electrical assets by obtaining an appropriate tool.	A review of industry best practice decision support tools and suitability for Water Corporation is planned to be undertaken with CSIRO. A number of tools have already been considered but the review will support the selection of the most appropriate approach. WC Comment : The Corporation intends to undertake a comprehensive review of the available approaches and consider how these fit with business requirements and how systems would be integrated and supported. The timeframe proposed is appropriate for this scope of work.	Manager, Asset Management Branch	February 2014
7		Good quality data for strategic planning is not currently available.	There needs to be a joint effort by the central group and regions to improve quality and accuracy of data.	The Corporation collects and manages large amounts of asset condition and performance data for decision making purposes. It has recognised that improvement is required to ensure currency, consistency and validation of some of the data and has commenced actions to remediate. The Corporation will continue to use available data and information while improving processes to address the gaps. Planning data requirements have been defined and accepted and included into Dynamic Data Standards which are yet to be fully	Manager, Asset Management Branch	1. June 2013 2. December 2013 3. March 2014 4. June 2014

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				implemented.		

WaterCorp Response/Action (continued):

implemented.

1. Implement the detailed data needs for the planning processes, including data integrity requirements and source system.

2. Implement system changes and changes to collection Processes where required.

3. Develop reports to review and validate the data and KPI's to monitor process compliance.

4. Monitor data on a regular basis and feedback KPI's and non-compliance to Field Users.

WC Comments:

These dates cannot be brought forward for the following reasons:

- Involves multi-stakeholder involvement

- IT changes to the systems

- Training of users

Bringing the dates earlier will put the project at risk and quality of the data will be compromised.

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
8		Good quality data for strategic planning is not currently available.	The data collection KPI's process needs to be re-initiated to ensure the collection of the data is undertaken in a timely manner.	See actions 3 & 4 from Recommendation 7.		
9		Current process for tracking improvements from asset class plans can be enhanced. A more robust process is required for the Strategic Statements.	Enhance the current improvement implementation process by setting clear target dates, assigning responsibilities and monitoring progress monthly in line with group meetings.	A process is currently being developed to monitor improvements arising from the new Asset Class Strategies. Timing of routine monitoring will be tailored to needs of specific improvements being implemented.	Manager, Asset Management Branch	August 2013
10	**Asset Creation and Acquisition**	The 'Assess Asset Capability' process analyses all relevant asset performance, condition and risk information, assesses options and initiates actions in time to ensure assets can meet future performance requirements and deliver service commitments to customers. The optioneering process comes in to play when an	The Optioneering process to be implemented as a feed-in to the Asset Acquisition Process and that training includes raising awareness in relevant corporate branches and the regions.	The 'Optioneering' process is an initiative that the Corporation introduced in late 2011. It is specifically geared at ensuring all available business solutions are properly considered prior to accepting a capital solution. Prior to the AMSER audit, work was already underway to integrate this concept into the Asset Acquisition Process. Integrate Optioneering into the Asset Acquisition 'Ribbon' diagram to provide a holistic view of our processes. 1. Optioneering training has been provided	Manager, Asset Management Branch (Actions 1 and 2)	1. February 2013 2. June 2013 3. December 2013

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		issue of capability has been identified as an emerging issue through the Assess Asset Capability. It is in effect the business case development stage where a range of options (including operational, capital, challenging of standards etc) are considered and evaluated to ensure that the most cost effective whole of life solution is being adopted. Optioneering will allow a broader project analysis to be undertaken at the high level e.g. instead of commencing a capital project to solve the problem, identify operational projects that may solve the problem or defer the need for capital. The Optioneering process will support identification of non-capital options as an alternative to a capital		for around 60 relevant staff. Further work is being done to develop an enhanced Optioneering Training Package. 2. Implement the process for relevant corporate and regional branches as well as Alliances. 3. For water production and wastewater treatment systems, Aroona's TASK Summaries will identify for high risk assets, the appropriate mitigation strategy. Aroona will undertake training on Optioneering by the end of Feb 2013 to then complete optioneering for the 54 projects associated with system risks with a score above 100 by end Dec 2013.	Aroona Alliance, Asset Manager (Action 3)	

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		solution.				
11	**Asset Disposal**	The System Capability Forecasting (SCF) Tool will enable ongoing monitoring of asset performance and will support timely and effective expenditure.	Finish the development of the SCF and implement across the corporation and regions as soon as possible.	1. Complete current SCF development program and implement across the Business. 2. Implementation of SCF will occur for priority schemes during 2012/13 and across priority 2 and 3 schemes over the next two years. WC Comment : The June 2015 date cannot be brought forward for the following reasons: SCF dependent on a large collection of data; software process and significant analysis work. Note, however that highest priority schemes will be completed in 2013. 3. For water production and wastewater treatment Aroona's system (TASK) will identify the outputs of SCF and SCM that is required to facilitate the capture and monitoring of triggers for planning and making capital investment decisions. SCF	Manager, Asset Management Branch (Actions 1 and 2) Aroona Alliance, Asset Manager (Action 3)	1. March 2013 2. June 2015 3. June 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				will be implemented on critical assets.		
12		The corporation does not have full knowledge of the assets to be disposed.	An audit programme should be established for assets requiring disposal across the corporation and regions.	The Corporation has compiled an extensive list of assets requiring disposal over the last four years. These were prioritised based on risk and by the end of 2012 all identified high risk assets will have been completed. An audit will be undertaken to verify remaining assets on the current list and to identify if any need to be added.	Manager, Asset Management Branch	June 2013
13		In discussions with WaterCorp personnel they expressed uncertainty about who was responsible for managing asset disposal.	Responsibility for asset disposal should be clearly identified in all situations e.g. post project disposal.	Already defined under existing process. Work will be undertaken to ensure relevant staff understand the process and follow it.	Manager, Asset Management Branch	February 2013
14		In discussions with WaterCorp personnel they expressed uncertainty about who was responsible for managing asset disposal.	All personnel involved in the asset disposal process should be trained in the process end to end.	All relevant staff will be provided with refresher training on the documented disposal processes.	Manager, Asset Management Branch	October 2013
15		Asset disposal appears to be undertaken in an adhoc manner in the Regions and as such there is the potential for assets identified as needing	Develop a 3 to 5 year rolling disposal programme that is monitored as per current programme processes. The programme should become part of the normal project	**No action required** A program to dispose of all surplus assets identified as not required for operating purposes has been developed and in implementation mode for the past 3 years. All		

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		disposal may not be disposed.	business requirements where it can be reported against and monitored.	high risks assets have now been disposed and the program is being wound up. For future asset disposals funding is to be requested via normal budgeting process by individual operating branches as a component of new projects where relevant or as a standalone operating business case. This is in accordance with the documented asset disposal process.		
16		The system capability matrix process will support identification of non-capital options as an alternative to a capital solution.	Complete the implementation of the system capability matrix.	We will consider the need to modify SCM to show relevant operational projects for inclusion to reporting alongside existing capital projects. There is however, a component built into the Asset Acquisition process that now requires evidence that non-capital options have been considered before a capital solution can proceed.	Manager, Asset Management Branch	December 2013
	Environmental Analysis		**No Recommendations**			
17	**Asset Operations**	While operational data is being captured good quality data is not being captured to support operations. Additional training required in	Extend current training to provide operators in the field with the importance of data collection, the role they play in asset management and how their job is important to	The Water Corporation has documented the date requirements for Operations. These requirements have been embedded into procedures and IT systems.	Manager, Service Delivery Branch and Manager, Asset Management Branch	1. December 2013 2. February 2014 3. March 2014

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		the field for system users to input and Asset Managers to use the data accessible through the current systems.	the greater business outcomes.	The next stage of the data quality project is to reinforce these requirements through training and feedback reports. 1. Review the detailed data needs for Operations, including data integrity requirements and source system. 2. Implement system changes and changes to collection Processes where required. 3. Develop reports to review and validate the data and to KPI's monitor process compliance. 4. Monitor data on a regular basis and feedback KPI's and non-compliance to Field Users. WC Comment: These actions require the stated times – Significant amount of investigation required upfront to then be able to progress changes in a rational and effective way.		4. June 2014
18		Good quality data is not being captured to support operations. Based on the review, gaps in the asset and asset attributes currently exist. Also the maintenance	Asset related data capture should be embedded into normal operational activities.	As indicated in response to Recommendation 17 data requirements have been embedded into operational procedures and IT systems. Current efforts are focused on education/training to achieve more consistent compliance with these procedural	Manager, Asset Management Branch	1. December 2013 2. March 2014

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		data being recorded in the region reviewed is inconsistent and difficult to interpret.		requirements. Refer to actions 1 and 2 of recommendation 17. Aroona has an initiative to improve collection of asset condition data from the field. The strategy and business case will be developed by June 2013 however action is not programmed until a later date in order to integrate with other strategies. WC Comment : The March 2014 date cannot be changed as this action requires extended time – Significant amount of investigation required upfront to then be able to progress changes in a rationale and effective way.	Aroona Alliance, Asset Manager	3. June 2013
19		Currently critical control points are used to monitor the performance of the assets at the treatment plants. Critical control reports are generated weekly with a monthly view. Trends are reviewed with managers each week.	Work towards the monitoring of Process Control Points for all treatment plant.	The Wastewater Quality Branch is implementing a 12 Element Wastewater Quality Framework designed to drive regulatory and operational improvements for WWTPs. As part of the implementation phase, Process Control Tables which capture both Process and Critical Control Points of a WWTP are being developed and implemented across the state.	Manager, Wastewater Quality Branch Aroona Alliance,	December 2013 June 2014

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		The Aroona Alliance use Process Control Tables to compare operations against process control points. If results are different to set trigger points, an Asset Deficiency Report (ADR) is produced (typically mechanical and electrical equipment). Woodman Point WWTP is working towards also monitoring and reporting against Process Control Points. There is a desire to extend the monitoring of Process Control Points.		The information in Aroona's system (TASK) will be used to develop the Level of Service and will inform how the asset is to be operated. Process Control Points are a set of parameters for the Levels of Service and for operating the asset within a specified risk. Critical Control Points will be identified and monitoring requirements established. WC Comment: The June 2014 date is based on a detailed work program from Aroona Alliance. Unable to bring this forward without additional costs being incurred.	Asset Manager	
20		SCADA data is collected however a plan is needed that guides the use of this data for planning purposes.	Develop a plan on how to utilise SCADA data for all asset classes, e.g. Data to be used, what purpose and what asset class. Incorporate use of Data Historian within the plan.	SCADA data requirements have been specified in Data Standards, collected from sites and stored as raw data in the Data Historian. A program of work is underway to look at the data flow "end to end", from the instrument calibration to the Final Reports to ensure data integrity. These findings and improvements are to be	1. Manager, Asset Management Branch 2. Manager, Asset Management Branch and Manager, Infrastructure Planning Branch.	1. June 2013 2. December 2013

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				documented in revised Data Standards. 1. Update Dynamic Data Standards to include SCADA sourced information. 2. Implementation of Data Standards into Business Processes (done in current Assets and Operations Improvement Project).		
21	**Asset Maintenance**	The current documentation process needs to be completed.	Continue to review and complete process documentation including maintenance standards and procedures.	- Complete and detailed documentation has been developed and is in active use. - For Maintenance Standards, Procedures and Work Instructions see action 22 - For Process documentation see action 23.	Manager, Asset Management Branch	July 2013
22		The maintenance standards are stored in a library (spreadsheet) and incorporated in SAP for new assets. 83% of the asset base is covered by the new generation maintenance standards. The current maintenance standards need to be completed.	Complete the maintenance standards for the asset base.	The Water Corporation has Maintenance Standards for all priority Asset Classes. Maintenance Standards are under continuous development and have recently been redeveloped for 83% of the Asset Base. Continuing redevelopment of the remaining Maintenance standards will be in accordance with Aquadoc #7793719 on priority basis. Additional "Equipment Level Standards" will be developed concurrently on priority basis. WC Comment :	Manager, Asset Management Branch	Schedule #7793719 to 2015. To be revised on priority basis each financial year.

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				Schedule in place. Now at less urgent asset types so schedule based around overall priorties of all work tasks for the staff involved in this work.		
23		The current documentation process needs to be completed.	Document the process for incorporation of maintenance standards for new assets.	Complete and detailed documentation has been developed and is in active use for the "Plan Asset Maintenance Process" and the "Formulate and Review Asset Maintenance standards Process". The Plan Asset Maintenance process adequately covers two streams, one of which is the introduction of new assets and new technologies. Minor work will be carried out by end of 2012/13 to integrate these two Processes to reflect recent organisational changes.	Manager, Asset Management Branch	July 2013
24		The current process averages condition across assets with the risk that the condition rating may not reflect the actual results.	Review condition assessment process to ensure that the condition assessment does not skew the rating by averaging good and bad condition, e.g. ensure the current process isolates poor condition assets from the overall condition (use of	This current review of the existing ACA process had commenced in the first half of 2012 to address Water Corporation identified improvement opportunities. This review has identified the need to assess the condition of different components of the asset separately, e.g. tank roof, concrete structure, liner, stand, etc. This will ensure that poor condition assets can be identified. The changed process will be	Manager, Asset Management Branch	December 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		ADRs).		documented in a new set of "business rules" for ACA.		
25		Dashboards are a useful and effective way of monitoring performance of the assets.	Continue the development of dashboards as the need is identified.	No additional action required. Work is already progressing on the 'Operational' and "Asset Management' dashboard. This will be an ongoing function as new needs are identified.	Manager, Asset Management Branch	ongoing
26		Fault mode analysis is being applied inconsistently. WaterCorp's current systems have been built to capture and feedback this data – Analysis of that data is Asset Management accountability.	Formalise fault mode analysis and develop guidelines for data requirements and analysis.	Fault and Position Code specification is sound. However user ability to select appropriate equipment is an issue. Review of end to end information flow to identify process and system pinch points is to be undertaken.	Manager, Asset Management Branch	June 2013
27		Data is entered into the maintenance management system inconsistently resulting in poor quality supporting data. WaterCorp's current systems have been built to capture and feedback this data – Analysis of that data is an Asset Management accountability.	Improve the quality of data being fed back into the work orders by providing documented direction and support for maintenance personnel.	Data requirements for the maintenance process has been defined and embedded into our SAP and Mobile Computing Systems. Data quality issues are being encountered when analysing the data and a program of work is underway to improve data integrity. 1. Review the detailed data needs for the maintenance process, including data integrity requirements and source system.	Manager, Asset Management Branch and Manager, Service Delivery Branch.	1. August 2013 2. December 2013 3. September 2013 4. December 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				2. Implement system changes and changes to collection processes where required. 3. Develop reports to review and validate the data and to KPI's monitor process compliance. 4. Monitor data on a regular basis and feedback KPI's and non-compliance to Field Users.		
28		Good quality data is not being captured to support asset information and analysis.	Incorporate the data capture as part of planned maintenance and/or inspections as part of normal operations.	1. Fault Cause and Position Data is being captured for Corrective Maintenance. Class Feedback for Planned Maintenance is being captured and mandatory as specified in 2000 when SAP was implemented. Review of additional feedback requirements will be undertaken following action in point 27. 2. Formulate approach to field capture of data and what systems/ Processes changes are required. 3. WC Comment : This will be worked on with progressive improvements over time. Highest benefit areas will be targeted first but more minor areas of improvement may occur up to 2015.	Manager, Asset Management Branch and Manager, Service Delivery Branch.	1. Review of data capture requirements commenced in 2012/13 2. Formulation of approach and changes to systems/ process expected to extend into 2015.

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
29		Assets were inspected at Newman. Hydrants installed by BHP prior to handover to WaterCorp are American above ground hydrants. They are now exhibiting rusting failure where the riser meets the ground level. They are being replaced with standard hydrants as they fail. Inspections were being performed on the sewer manholes at the time of the visit. Inspection of the lids indicated a number of lids popping as a result of gas build up in the mains. The concrete in the lids was either cracking or breaking up as a result of upward pressures.	As part of the Maintenance Strategy in Newman, the Corporation conducts preventative jet washing of sewers where there are known blockage hotspots based on past blockage history. It should be noted that for this specific area, there is no intensive preventative maintenance plan in place as there hasn't been a high number of blockages recorded. In addition the following preventative actions are undertaken to minimise blockages in Newman: • The Civil Technical Consultant uses a CCTV camera to view the internal of the sewers. He advises that his camera investigations have shown that there is some root intrusion mostly where there is earthenware pipe. Most of the roots	1. Review historical performance of hydrants in Newman 2. Review the current asset stock of hydrants in Newman 3. Determine failure trend and likelihoods 4. Develop business case for renewal 5. Ensure that the resultant un-planned interruptions to water services are being captured as part of our leaks and bursts monitoring for the state. Further investigation may change approach but currently there is no requirement to specifically monitor Newman for hydrant failures at this time. A risk assessment as part of the Business Case will inform the inherent risk and timing required for replacements.	Manager, Asset Management Branch	Actions 1-4 completed by July 2013 Action 5 – to be captured as part of issue 28.

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
			observed in the pipes are not large, but fibres. • The Corporation employs Industrial Waste Inspectors who are engaged to check industrial and commercial premises who have industrial waste permits to ensure that grease traps are being used and maintained correctly to prevent substances entering the sewer system which may cause blockages and inconvenience to customers. To address the issues related to the Newman assets above it is intended that the Asset Management Branch monitor repeat failures centrally and notify the regions of the repeat failure so that the regions identify the actions required to rectify the issues. Repeat failures should be monitored and reported			

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
			centrally. Should repeat failures demonstrate an ongoing trend, strategies should be developed to overcome the trends.			
	Asset management information system (AMIS)		**No Recommendations**			
30	**Risk Management**	It is recognised that improvements to the ARA are required for it to be successfully applied in the Corporation.	Improve the process documentation supporting ARA, such as guidelines with examples, criteria matrix, links to planning process, etc.	A review of the ARA process commenced in early 2012. The process and system is being reviewed to improve usage and consistency within the business and to ensure the outcomes are embedded in capital planning processes.	Manager, Asset Management Branch	ARA changes planned for implementation by December 2013
31		Corporate risks are not currently managed centrally in one risk information system.	On procuring the new Risk Information System (register) and in accordance with the risk management principles, existing and new corporate risk be consolidated into the new system.	All Tactical Profiles, the OSH risk profiles and some project and operational risk profiles are maintained within the Corporate Risk Information System (CRIS). These risks are used to produce the Corporate Risk Reports for Board reporting purposes.\n\nProject risk profiles and some other operational risk profiles are not maintained within CRIS. These risk profiles may be housed in CRIS once a replacement system has been procured and	Manager, Risk & Assurance Branch	December 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				implemented.		
32		It is not evident that risk ratings have been reviewed after the asset failure.	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 renewals planning team have identified the need to be more involved in incident reviews to support the failure mode analysis and gather opportunistic condition data for key asset classes. This information will also be used to update information in decision support tools and ARA.	Manager, Asset Management Branch	December 2013
33		Understanding and acceptance of the Asset Risk Assessment in the regions can be improved.	Advise the regions on the benefits of the Asset Risk Assessment and how they can help the organisation achieve business objectives.	A series of Regional visits have already been carried out by the Renewals Planning team to improve regional understanding of the ARA process. There will continue to be ongoing communication with the regions about the benefits of ARA and the planned changes. The revised business rules will improve the clarity on the use of ARA and links to business objectives.	Manager, Asset Management Branch	Ongoing communication ARA changes planned for implementation by December 2013
34		NW Region is not currently using the Asset Risk Assessment.	Align NW Regions approach to the use of the Asset Risk Assessment.	Refer to response to Recommendation 33.		
35		Application of Asset Risk Assessment in the regions can	Improve the application of the Asset Risk Assessment in the	Refer to response to Recommendation 33		

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		be greatly improved.	regions.			
36		It is recognised that improvements to the Asset Risk Assessment are required for it to be successfully applied in the Corporation.	Embed the Asset Risk Assessment within the organisation by making it more user friendly and improving education.	Refer to response to Recommendation 30	Manager, Asset Management Branch	ARA changes planned for implementation by December 2013
37		Corporate risks are not currently managed centrally in one risk information system.	On procuring the new Risk information system (register) incorporate Water Quality risks into the system.	Water Quality process related risks are currently maintained in CRIS. There is a detailed risk barrier assessment carried out by the Drinking Water Quality process which is based on the Drinking Water Quality Guidelines methodology. This risk assessment has been translated into the Corporate risk methodology and incorporated into CRIS. If CRIS is replaced by a new system this information will be transferred to the new system as a part of the system roll-out.	Manager Drinking Water Quality	Dependent on timing of the new Risk System.
38		Current failure mode data especially in NW Region is of poor quality. Every "repair" work order requires mandatory fault cause and fault position in context with the repair work being undertaken to be captured	Establish codes for failure mode input into work orders and make it mandatory to be completed.	Failure Mode input (Fault Position and Fault Cause) have been established and feedback is mandatory. The issue of field Operational Personnel feeding back inappropriately is being addressed via a number of Service Delivery initiatives including	Manager, Service Delivery/ Regional Business Managers	At completion of BBB project.

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		and feedback. There has been extensive training and instruction issued on this requirement.		the "Building Better Business" (BBB) Project.		
39		Currently the identification of consequences of asset failure is adhoc.	Implement a consistent approach to the identification of consequences of asset failure across WaterCorp.	The use of the revised Asset Risk Assessment process and consistent decision support frameworks will support the consistent approach to identification of consequence of failure for asset failures. WC Comment : This is a major piece of work to select /develop and implement Decision Support Frameworks.	Manager, Asset Management Branch	ARA – December 2013 Other decision support frameworks completed by Jun 2015
40		There is no apparent link between incidents and analysis resulting from the incident.	Re-visit the recommendation from the AMSER 2009 audit and review incident reports to ensure cause of incident, links/references to the root cause analysis document and the date completed are recorded.	The Water Corporation already has a documented incident management system (IMS) in place. This system includes documenting lessons learned at incident close-out. We will review how the "lessons learned" from incidents are fed back into the general asset management processes. (E.g. improved asset design, maintenance, operations and business continuity planning).	Manager, Service Delivery Manager, Asset Management Branch	July 2013
41		Data can be entered into the incident management systems resulting in	Develop consistency of approach to data entry by incorporating standard codes for incidents so that reporting	Water Corporation will establish a standard set of incident codes for use in incident recording in management system.	Manager, Service Delivery Branch	December 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		inconsistent data.	can be structured.			
42		Gaps have been identified in the response to incidents based on the degree of impact of the incident e.g. need for root cause analysis	Enhance the E2E process for incident management that addresses incidents that create different levels of impact.	The Water Corporation already has a well-documented incident management system in place. We will review it to assess if it requires any improvement in the way it addresses incidents with differing levels of impact.

Aroona Asset Management has increased the focus on incident management via its Technical Service group. The Technical Service group will respond to Corporate Incidents according to any enhanced corporate process. Other local incidents will be picked up and treated locally. | Manager, Service Delivery Branch | July 2013 |
| 43 | | Gaps have been identified in the response to incidents based on the degree of impact of the incident e.g. need for root cause analysis | Develop triggers within the incident management system in line with a decision tree to identify and monitor future actions to address the incident raised. | The Water Corporation has an incident management system in place which will be reviewed to assess if it requires any improvement in its triggers. | Manager, Service Delivery Branch | December 2013 |
| 44 | | There are gaps in the data being reported for incidents. | Review the data quality within the incident management system to address the supporting processes, data and the effectiveness of the system. | As part of the Corporation's continued strategy to improve its data quality, the review of the data within the incident management system will be assessed. | Manager, Service Delivery Branch and Manager, Asset Management Branch | December 2013 |

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
45		There is no documented evidence of the issues and responses associated with the Jabbarup main failure e.g. root cause analysis, investigations etc.	WaterCorp needs to complete the investigation on the Jabbarup main failure and identify future actions as required.	The Water Corporation has a documented incident management system in place. In this instance of the Jabbarup main failure the normal incident management protocols broke down. The Region will investigate this incident and provide a close-out report.	North West Regional Business Manager	March 2013
46		Critical assets are not known within the North West region and therefore failures are occurring in areas that could have been avoided if the consequences were known and appropriate controls put in place.	A formal criticality assessment be applied across the corporation.to improve the prioritisation of assets and associated works.	A critical asset identification process already exists within the Corporation and has been used in each region. North West Region has incurred several staff changes which have impacted knowledge of some corporate procedures and this is being addressed. For all the major metropolitan water production and wastewater treatment facilities managed by the Aroona Alliance the system (TASK) will identify high risk (critical and/or problematic) assets. For each high risk asset, a Risk Assessment and identification of the appropriate mitigation strategy will be undertaken to assist in the prioritisation of treatment solution/s. Technical Asset and System Knowledge (TASK) Summaries are being	Aroona Alliance – Asset Manager	December 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
				developed for all systems managed by Aroona and through this high risk assets are being identified. A preliminary assessment has been completed for 70% of the systems and the high risk asset list will be refined as the TASK Summaries are refined during this year.		
47		With respect to the Jabbarup Crescent failure in Newman there doesn't appear to have been any internal review conducted. The Region does not appear to have contacted anyone centrally to support and/or assist them with this issue or to follow it through to a long term.	Develop and implement a strategy to ensure multiple or repeat faults or fixes for the same address or asset are highlighted and investigated.	Regional Asset Managers monitor trends in multiple failures to highlight and remedy asset issues. This process will be reviewed to ensure that there are no gaps or shortcomings in future failures.	Manager, OAMB to co-ordinate	March 2013
48	**Contingency Planning**	Generic contingency plan templates have been developed for Water Treatment Plant, Water Pumping Stations, Sewerage Treatment Plant, Sewerage Pumping Stations, Chemical Dosing Plant, Sewer Gravity Mains, Sewerage Pumping Mains, Water Mains, and	Finalise the draft contingency planning guidelines.	The Contingency Planning Guideline is in draft format and awaiting final review and input from major stakeholders that use or are affected by associated actions.	Manager, Asset Management Branch	April 2013

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		Water Storage Complex's. Contingency plans are either based on safety e.g. Cl2 gas or event based e.g. cyclone, bushfires. More recently operational contingency plans have been produced in the North West Region and are in draft format. These plans have been produced for Onslow, East Pilbara and Hedland. There is confusion however across WaterCorp personnel with respect to the purpose, use and definition of contingency plans. This confusion should be addressed when personnel have access to the draft contingency planning guidelines.				
49		A formal and prioritised approach to contingency	In addition to the current update frequencies prioritise the update of contingency	The Corporation has over recent years reviewed the contingency planning approach used and identified necessary improvements to	Manager, Asset Management Branch	1. May 2013 2. November

No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		planning is required.	plans based on risk should be considered, e.g. use the ARA process to identify high risk assets and then update the associated contingency plan. The relationship between ARA and Contingency plans is currently being scoped.	make this important facet of asset management more 'user friendly'. A focus has been to ensure all critical assets have contingency plans and this has been achieved in a manual written format. An accepted improvement is to systemise (ARA) the development of contingency plans to make them more accessible and provide a simpler way of review and update. 1. Complete scoping of 'next' ARA application and determine if this application is a suitable space for contingency plans to be prioritised. 2. If above is satisfied - undertake modification to existing or development of 'next' ARA application. (Dependent on (1) above) 3. Implement/ train users 4. WC Comment : Tasks are dependent on outcomes from first activity.		2013 3. February 2014
50		The NW Region has put in extensive efforts to producing	The concept behind the NW region spreadsheet should be	The North West Region contingency planning format provides a good conceptual view of	Manager, Asset Management	May 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		a contingency spreadsheet that currently sits in isolation from the rest of the Organisation.	integrated with the corporate system such that it becomes accessible to all personnel responsible for repairing operational failures.	information that should be available in a systemised Contingency Plan application. It was developed following discussions with central groups with the intention that it could be used as a prototype for systemisation. The format and information will be considered to assist development of the 'next' ARA application. Scope the development of ARA with consideration for the contingency planning module to include the NWR spreadsheet concept.	Branch	
51		There is an apparent confusion within WaterCorp to the meaning and application of incident management, emergency management and contingency planning. The need for improved understanding of Water Corp's contingency planning processes is understood and supported. Work is progressing and the requirement for additional support/focus across the asset management and	The naming convention for Contingency planning needs to be clarified and defined to WaterCorp personnel with the view to eliminating confusion between the terms incident management, emergency management and contingency planning.	Clarify terminology used in the Incident/Contingency Management Processes and seek agreement from relevant corporate Process Managers for inclusion in relevant documentation.	Manager, Asset Management Branch and Manager, Service Delivery Branch	April 2013

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No.	Asset Management Process	Issue	Recommendation	WaterCorp Response/Action	Responsibility	Timing of Actions
		service delivery should be explored.				
	Financial Planning		**No Recommendations**			
	Capital Expenditure Planning		**No Recommendations**			
52	**Review of the Asset Management System**	The Strategic Asset Management Plan (SAMP) contains recommendations for improvement for each group within the AM Branch. Recent reviews such as this review and the WSAA benchmarking project have identified additional improvements.	As a result of this review and the WSAA benchmarking, the SAMP should be updated to include the recommendations compiled in this review that are relevant for each group in the AM Branch. This consolidation would allow the internal and external recommendations to be captured in the one improvement register.	The SAMP is developed every two years and refreshed annually. The next SAMP will incorporate recommendations from the AMSER 2012 report and WSAA Asset Management Performance Improvement project undertaken in 2012.	Manager, Asset Management Branch	May 2013

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ACTIONS YET TO BE COMPLETED – 2009 REVIEW

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	WATERCORP COMMENTS	REVIEWER FEEDBACK
Key Process 1: Asset Planning					
Action 1: The program for the production of asset class plans (ACP) is accelerated.	WaterCorp personnel are relying heavily on the outputs from these plans	**TIMEFRAME EXTENDED**	**June 2013**	The original program of ACPs was to see delivery completed by June 2012. WaterCorp has ceased the production of ACPs and have now embarked on the development of 18 strategic statements. Ten strategic statements will be completed in 2012/13 with the remaining 8 to be completed in 2013/14.	Sighted
Action 3: Improve the renewals forecasting by obtaining an appropriate tool to undertake the analysis and feed the asset class plan.	The efficiency of current renewals analysis is limited by the lack of availability of an appropriate tool and the quality of the existing data. .	**TIMEFRAME EXTENDED**	**Rescheduled - delayed due to lack of resources and restructure**	As part of the ongoing refinement of renewals forecasts in SIBCs, work is underway to procure or develop appropriate decision support tools for assessing renewal needs at a program and a project basis. In addition to using PARMS-Planning and LARM (Linear Asset Risk Model) for water mains, work is underway to trial APT (Asset Performance Tools)-Lifespan as a tool to assess the optimum time to invest in other types of assets such as M&E equipment. Work will also be undertaken in the next 12-18 months to refine the current decision support tool for main sewers and develop a risk based approach for sewer pressure mains. A project with CSIRO to review the currently available decision support tools and the appropriateness for the Water Corporation is currently being discussed – this links closely with some work they are currently undertaking for Water Research Foundation.	

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ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	WATERCORP COMMENTS	REVIEWER FEEDBACK
Key Process 5: Asset Operations					
Action 8: While there is a space in the incident management report for root-cause analysis, it was not filled in. The incident report should document the root-cause analysis completion, the analysis document and the date completed.	There is a need to link root cause analysis to incident reporting.	**IN PROGRESS**	**April 2010**	The Incident Management system was developed in response to a recommendation of the 2006 Operating License Audit for a system based approach to recording and reporting of incidents. (This license requirement for reporting of incidents to the ERA was removed from July 2009). The current IMS has recently been modified to require Root Cause Analysis to be completed at the time that the incident is recorded. IMS is currently one of a number of systems that contain incident related information. Other systems include Site safe and risk registers. The sustainability of multiple systems is currently being considered by the business. One outcome could be the retirement of a number of current system (such as IMS), and replacement of a single system that contains all information, including root cause analysis. It is proposed to do no further work to IMS, but focus attention on conceptualising an integrated business solution that captures all hazards and incidents.	During the review it was evident that the incident report does not have the required links to root cause analysis documentation nor sufficient information to identify when the analysis had been completed or where it was located. Future system will need to be able to provide the links.

ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	WATERCORP COMMENTS	REVIEWER FEEDBACK
Key Process 6: Asset Maintenance					
Action 10: Demonstrate alignment between the maintenance strategy and the asset class plans once each plan is completed.	The maintenance strategies have been developed based on discussions between SAM and TAM and the SAMP as opposed to documented asset class plan output.	**ON TARGET**		Maintenance gaps/ areas for improvement identified in the ACPs are captured in the Asset Class Plan Change Register. Maintenance Strategies have been developed in parallel to the ACP's. The intent was to finalise ACP's and then prioritise gaps/improvements from the Change Register. It must be noted that 83% of our critical assets are already covered by Maintenance Standards, which are currently being revised to reflect the revised Maintenance strategy.	Sighted
Action 14: Increase the level of activity based planning training.	Activity based planning is also undertaken to refine the maintenance requirements during budget planning. Concern was expressed for additional activity based planning training.	**IN PROGRESS**	**June 2010**	All Regional staff including Asset Management were trained in 2007/ 08 when ABP was re-introduced. This included Senior Maintenance Planners. Maintenance Planners in JTC Asset Management Branch have been trained via the ABP Training Module and also personal on-the-job training by an expert user. The ABP training Module is available as a formal Training Module and available to all staff (can be booked as required).	Evidence of ongoing ABP training has not been provided.
Key Process 8: Risk Management					

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ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	WATERCORP COMMENTS	REVIEWER FEEDBACK
Action 18: 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 current 6 monthly risk reviews will capture the changes in risk but not in a timely manner.	**NOT COMPLETED**	**Feb 2010**	In the event of corporate incident the Incident Management System (IMS) and process includes an incident debrief and lessons learnt step that reviews the incident and the causes. If there are any issues arising from this that may impact the business, in terms of potential for similar incidents to occur, then this will be picked up as a follow on action to be initiated with the appropriate level of response. This may include a review of the associated risks. During the scheduled routine reviews of corporate risks the incident and subsequent learning's are included as part of the assessment. Both the incident management process and corporate risk review processes working collectively capture the changes in risk in what we feel to be a timely manner.	Based on our review we have not seen any evidence that the risk reviews have been completed for asset failures as opposed to capital delivery.
Action 19: A training program regarding the interpretation of consequences, likelihood of failure and risk should be developed and introduced to the Asset Managers.	The application of risk analysis is sometime misinterpreted by the asset managers.	**IN PROGRESS**	**Feb 2011**	The System Risk Assessment User Manual has been completed and has been provided to those involved with the leading and undertaking of risk assessment development in all Regions & Branches. Additional ongoing training is provided during the 6 monthly facilitated workshops.	The training programme is being developed and roll-out to the Asset Managers has commenced but is not yet completed across the Regions.
Key Process 11: Capital expenditure Planning					

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ACTIONS	ISSUES	STATUS	TARGET COMPLETION DATE	WATERCORP COMMENTS	REVIEWER FEEDBACK
Action 21: 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.	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	**IN PROGRESS**	**June 2010**	The SIBC process was sighted by the auditor. The SIBCs provide Corporate overarching priorities. The Planning and Implementation Business Case templates are well documented and these establish project priorities within the SIBC framework.	Aspects of the required action have been incorporated into the SAMP and business cases e.g. wastewater treatment and pumping renewal business case has elements of the benefits based on levels of service e.g. odours and overflows (environmental). However, a formalised approach for the business cases should be developed.

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