



2021 Water Corporation - Asset Management System Review

Review Report

Economic Regulation Authority
October 2021



EXECUTIVE SUMMARY

Introduction

This report presents the findings of an asset management system review undertaken in respect of Water Corporation (Western Australia) pursuant to the requirements of section 24 of the *Water Services Act 2012 (WA)*.

The asset management system review has been conducted in order to assess the effectiveness of Water Corporation's asset management system. It has been conducted in accordance with the *2019 Audit and Review Guidelines; Water Licences* (the Guidelines), as published by the Economic Regulation Authority (ERA) in March 2019.

The review has comprised an assessment of Water Corporation's performance against the 12 asset management processes and 58 effectiveness criteria, as set out in the Guidelines. Performance has been assessed in respect of the review period, 1 July 2018 to 30 June 2021.

Water Corporation

Water Corporation, which is owned by the State Government, was created under section 4(1) of the *Water Corporations Act 1995*. Under the provisions of its Water Services Licence WL32, Water Corporation is authorised to provide potable and non-potable water supply services, irrigation services, sewerage services, and drainage services within an operational area covering the entire state of Western Australia. It is the principal supplier of these services within its operational area.

Water Corporation has an asset base having a total replacement value of approximately \$38 billion. This includes water supply systems comprising two seawater desalination plants, 118 dams and weirs, 125 borefield facilities, 82 water treatment plants, 760 water storage facilities, 482 water pumping stations, 210 water dosing facilities and approximately 34,840 km of water network; wastewater collection and disposal systems comprising 1,191 wastewater pumping stations, 113 wastewater treatment plants, 14 wastewater storage facilities and approximately 17,280 km of wastewater network; and a drainage network comprising approximately 2,500 km of urban and rural drains.

Significant changes during the review period from an asset management perspective include improvements to the asset creation and acquisition process aimed at improving rigour and governance in the early phases of the process, and the initiation and ongoing implementation of improvement to its works management processes which is based around a change from SAP to the Maximo asset management platform.

Response to Recommendations from Previous Asset Management System Review

- R5/2015 – Contingency planning: Water Corporation should identify for its operations the desired level of application, coverage and contents of contingency plans and implement contingency planning consistently using these criteria through a program of activity.

Resolved during the review period

- R1/2018 – Asset planning: We recommend that Water Corporation modifies the Summary of Improvement Opportunities include[d] in the Asset Management Strategy to include due dates and accountabilities for each of the identified improvements.

Resolved during the review period

- R2/2018 – Asset management information system: We recommend that Water Corporation be required to report annually on the progress of its nominated actions to address the observed shortcomings:

1. Engineer out drivers of errors
2. Provide real time validation on entry
3. Refine the data integrity monitoring

Partially resolved during the review period; remains ongoing

- R3/2018 – Contingency planning: We recommend that Water Corporation continues its program of testing contingency plans so that all Criticality 5 plans are tested by December 2019 and all Criticality 4 plans are tested by June 2020 and that the outcomes of the testing are documented and updates to the plans arising from the lessons learned are actioned.

Resolved during the review period

Findings of Current Asset Management System Review

The review of Water Corporation's asset management system identified that all but six of the effectiveness criteria were rated A1, i.e. processes and policies were adequately defined and the asset management system was performing effectively. Performance improvement is required for five of the criteria which were rated A2. Process and policies improvement is required for one criterion, which was rated B1.

Overall Effectiveness of Water Corporation's Asset Management System

The review of Water Corporation's asset management system found that, from an overall perspective, processes and policies were adequately defined and the system was performing effectively. All asset management processes were rated A1.

In summary, Water Corporation's asset management system is considered to be robust and effective. It was apparent to the auditors that it is a very mature system, and that processes and procedures were well established and effectively implemented.

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1. INTRODUCTION

Viridis Consultants Pty Ltd (Viridis), in conjunction with Cobbitty Consulting Pty Ltd, was engaged by the Economic Regulation Authority of Western Australia (ERA) to undertake an asset management system (AMS) Review in respect of Water Corporation.

The ERA is responsible for administering the licensing scheme in the *Western Australia Water Services Act 2012* (the Act). The primary objective of regulation is to ensure the provision of a competitive and fair environment, particularly where businesses operate as natural monopolies. Under section 24(1) of the Act, the ERA is responsible for engaging an independent expert (contractor) to undertake the review of a water services licence. Water Corporation ('the licensee') holds a water services operating licence (WL32, Version 17) that permits it to provide potable and non-potable water supply services, irrigation services, sewerage services, and drainage services within an operational area covering the entire State (refer plans: OWR-OA-309, OWR-OA-175(E); OWR-OA-175-1(B)). The operating licence was granted by the ERA on 28 June 1996 and was last amended on 31 March 2021, when it was renewed for a further 25 years. This is the second revision of Water Corporation's operating licence since the previous asset management system review was carried out. The licence was first amended during this period on 1 May 2020. Other licences are held by other entities with overlapping operational areas. Water corporations may be appointed as the supplier of last resort by the Minister for Water, with the concurrence of the Treasurer, under section 55(3) of the Act.

Water Corporation is the principal supplier of water, wastewater, drainage and bulk irrigation services in Western Australia, managing a \$38 billion asset base (replacement value), which is summarised in Figure 1.

Viridis undertook the review in accordance with ERA's *2019 Audit and Review Guidelines: Water Licences* (the Guidelines).

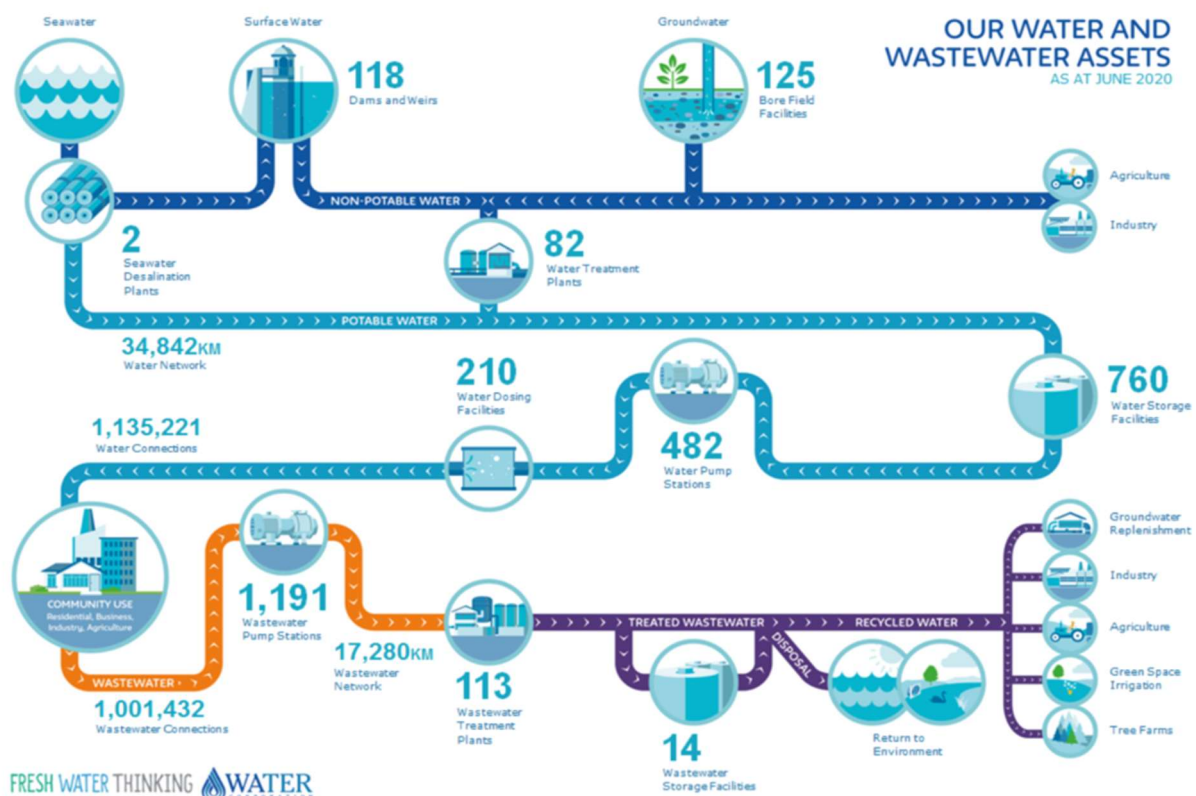


Figure 1 Water Corporation water and wastewater assets
 (Source: Water Corporation, Strategic Asset Plan 2021-22)

2. REVIEW OBJECTIVES

Section 24(1) of the Act requires licensees to have an asset management system and to provide the ERA with a report prepared by an independent expert on the effectiveness of the system.

Section 24(2) of the Act requires the AMS to set out the measures taken by the licensee for:

- the proper maintenance of the water service works of the licensee
- the provision and operation of the water service works specified in the licence and of other water service works necessary for the provision of the water service or services authorised by the licence.

Under the Act, water services licensees also are required to provide a report on an effectiveness review of their AMS once every 24 months, or another period that has been specified by the ERA. Accordingly, the objective of this AMS review is to assess the effectiveness of Water Corporation's AMS against the twelve asset management processes and 58 effectiveness criteria set out in the Guidelines.

3. SCOPE OF WORK

3.1. Review Period

The review covers the period 1 July 2018 to 30 June 2021. During this period there were three versions of Water Services Licence WL32 in force:

- Version 15 (From 1 July 2018 to 30 April 2020)
- Version 16 (From 1 May 2020 to 30 March 2021)
- Version 17 (from 31 March 2021).

3.2. Type of Assurance Engagement

This is a 'limited assurance engagement', as defined in the Guidelines. Engagement risk has been reduced to an acceptable level for the circumstances of this review. The following circumstances, which would require a 'reasonable assurance engagement', are not applicable:

- First review of the licence.
- The previous review identified serious deficiencies.
- There have been material changes to the AMS since the last review.

A review priority has been assigned for the twelve asset management processes and each of the effectiveness criteria, as detailed in the Guidelines (refer Section 4).

3.3. Site Visits

The onsite review included interviews of staff at the Perth head office and interviews of operational staff and virtual inspections of assets at operational sites. The sites that were visited, and topics discussed are detailed below.

Perth Head Office:

- Meetings using Webex Video conferencing software:
- Opening Meeting 26 July 2021.
- Closing Meeting 30 July 2021.
- Interviews held using Webex Video conferencing software:
- 12 Asset management processes were discussed.
- Held on 26-27 and 29 July 2021.

Perth Seawater Desalination Plant:

- 28 July 2021.
- Interviews held with onsite staff using Webex Video conferencing software.
- Materials reviewed including virtual site inspection (following the process flow) using pre-recorded photography.
- Screensharing used to view operational technology.

Margaret River Wastewater Treatment Plant and Reuse sites:

- 28 July 2021.
- Interviews held with onsite staff using Webex Video conferencing software.
- Virtual site inspection (following the process follow) using live head camera technology.

Leeuwin District Depot:

- 29 July 2021.
- Interviews held with onsite staff using Webex Video conferencing software.
- Attended the daily Team Leader meeting via teleconference.
- Inspection of depot using pre-recorded video.

Vasse Diversion Drain:

- 29 July 2021.
- Interviews held with onsite staff using Webex Video conferencing software.
- Review of renewal project using recent drone footage.

3.4. Personnel and Documentation

3.4.1. Licensee's Representatives

Table 1 Licensee representatives

Water Corporation Interview Attendees	Position
Evan Hambleton	General Manager Assets Planning and Delivery Group
Barry Ford	General Manager Operations Group
Brian Robertson	Head of Asset Investment
John Van Den Hurk	Head of Asset Investment Planning Metro
Julia Krsnik	Head of Asset Investment Planning Regional
Helen Forte	Head of Asset Strategy Business Unit
Louise Denham	Head of Customer Billing & Assurance
Ronny Flendt	Head of Customer Centre
Peta Maddock	Head of Customer Strategy & Engagement
Nathan Harding	Head of Engineering
Ray Curtis	Head of Group Finance
Jane Mitchell	Head of Information Technology Services
Paul Bendotti	Head of Operational Asset Management Business Unit
Matt Coleman	Head of Operational Technology
Alan Warburton	Head of Operations Centre
Wayne Kearney	Head of Risk Assurance
Brendan Hardy	Head of Strategy Architecture & Security
Sharon Dignard	Head of Strategy, Policy and Analytics
Andrew Wyber	Head of Water Quality
Ian Aldridge	Manager Asset Management Services
Danielle Higgs	Manager Asset Management System & Risk
Greer Gilroy	Manager Asset Performance & Forecasting
Anthony Paonni	Manager Budgeting & Reporting
Chad Madafarri	Manager Capability Improvement (IT Group)
Mandy Damant	Manager Corporate Risk Management
Paul Prottey	Manager Customer & Wastewater Operations
Ling Ng	Manager Design Treatment Electrical & Mech
Suzanne Brown	Manager Drainage & Liveable Communities
Courtney Fitzsimmons	Manager Economic Policy & Analytics
Jon Druce	Manager Estimation
Anthea Bird	Manager Financial Accounting & Reporting

Water Corporation Interview Attendees	Position
Andrew Dunne	Manager Group Financial Performance
Tino Galati	Manager Inservice Assets Metro
Evan McCartin	Manager Inservice Assets Regional
Vanessa Moscovis	Manager Integrated Water Cycle Metro
Matthew Bowman	Manager Integrated Water Cycle North
Marc Kessels	Manager Management Review & Audit
Christine Stuart	Manager Operations Analytics & Support
Jodi Males	Manager Operations Delivery
Scott Northcott	Manager Operations Delivery
Andrew Pascoe	Manager Regulation & Compliance
Elleke Bosworth	Manager Support Services Project Management Business Unit
Neil Hooley	Manager Training
Steve Christie	Manager Water Operations
Josh Jackson	Operations Manager Leeuwin District
Sue Parsons	Planner Asset Activity
Mike Marinovich	Principal Asset Risk
Anne O'shannon	Principal Contingency & Resilience
Cheryl Deport	Principal Customer Networks
Sasi Thamrongvoraporn	Principal Integrated Water Cycle Planning
Scott Samuels	Principal OT Architecture & Security
Jean Dujmovic	Program Manager Asset Management
Deborah Hunt	Senior Analyst Financial Accounting & Reporting
Allan Miller	Senior Operator
Janet Ham	Senior Principal Asset Management System
Louis Tang	Senior Project Manager Assets Delivery
Dean Puzey	Senior Technical Advisor Treatment
Angela Puzey	Specialist Environmental Risk
Caroline Harris	Specialist Operations Contracts
Andrew Nguyen	Specialist Operations Support
Kim Savage	Team Leader Asset Activity
Patrick Francis	Team Leader Asset Registrations
Peter Davenport	Team Leader Compliance & Assurance
Alex Gower	Team Leader Dams Safety
Jermone Wade	Team Leader Drainage
Tony Carlino	Team Leader Environment
James Evans	Team Leader Environmental Programs
Alec Ovans	Team Leader Treatment Leeuwin District
Sonja Thompson	Lead Product Owner Works Management
Darren Chapman	PSDP Alliance Manager (Suez)
Dieter Mendoza	Asset Manager (Suez)

3.4.2. Information Sources

Documentation referred to throughout the review process, to determine compliance, has been footnoted in section 7 against each criterion for which it was used. In summary the documents referred to included, but were not limited to, the following:

- Asset Management System documentation:
 - Asset Management System Manual
 - Infrastructure Asset Management Policy
 - Asset Management Strategy
 - Asset Class Management Plans
 - Asset Risk Framework

- Strategic Asset Plan
- Asset Acquisition Guidelines
- Decommission and Dispose Assets Guidelines
- External Environmental Scanning Guideline
- Plan Scheme Operations Planned Operations and Maintenance Prioritisation Guideline
- Operational Contingency Planning
- Program Management Guideline
- Asset Management Maturity Assessment Procedure
- ERA Compliance Reports
- Evidence of implementation of asset management procedures and guidelines, with a focus on facilities/sites identified for inspection
- Perth Seawater Desalination Plant documentation:
 - Alliance contract, including asset management requirements
 - Asset Management Plan (or Asset Class Management Plan, as applicable)
 - Operation and Maintenance Manual (including details of adopted maintenance regime)
 - Operation and maintenance procedural documentation
 - Maintenance schedules
 - Maintenance planning procedures/system (work order process)
 - Water Safety Plan
 - Environmental Discharge Licence (or relevant requirements for brine discharge)
 - Incident/Emergency Management Plan
 - Operational records (including SCADA and water quality compliance records)
 - Maintenance records
- Margaret River Wastewater Treatment Plant and Reuse Sites documentation:
 - Asset Management Plan (or Asset Class Management Plan, as applicable)
 - Operation and Maintenance Manual (including details of adopted maintenance regime)
 - Operation and maintenance procedural documentation
 - Water safety plan (recycled water)
 - Environmental Discharge Licence (or relevant requirements)
 - Incident/Emergency Management Plan
 - Operational records (including SCADA, water quality compliance and environmental compliance records)
 - Maintenance records
 - Documentation (capital delivery framework documentation) related to recent upgrades, including:
 - project planning and approval
 - project delivery
 - testing and commissioning
- Vasse Diversion Drain documentation:
 - Asset Management Plan (or Asset Class Management Plan, as applicable)
 - Maintenance Manual (including details of adopted maintenance regime)
 - Maintenance procedural documentation

- Environmental Management Plan (or similar)
- Maintenance records (to reflect maintenance activity over the review period)
- Documentation (capital delivery framework documentation) related to the upgrade works, including:
 - project planning and approval
 - project delivery
 - testing and commissioning
- Leeuwin District Depot (Busselton) documentation:
 - Asset Management Plans (or Asset Class Management Plans, as applicable) for the assets maintained
 - Operation and Maintenance Manuals for a selection of asset types/classes
 - Operation and maintenance procedural documentation
 - Incident/Emergency Management Plan(s)
 - Operational records (including SCADA where applicable)
 - Maintenance records.

3.5. Work Schedule

3.5.1. Activities and Period the Review has been Performed

The review was undertaken in accordance with the schedule in Table 2.

Table 2 Work Schedule

Activities	Date	Reviewer
Submit a detailed information request to Water Corporation	23/06/21	James Howey Jim Sly
Review the supplied evidence, undertake a desktop review and identify specific areas for review.	23/07/21	James Howey Jim Sly
Prepare a detailed agenda for onsite work	16/07/21	James Howey
Onsite interviews and inspections		
Day 1: opening meeting and staff interviews	26/07/21	James Howey Jim Sly
Day 2: staff interviews	27/07/21	James Howey Jim Sly
Day 3: virtual site inspections: - Perth Seawater Desalination Plant - Margaret River Wastewater Treatment Plant and Reuse sites	28/07/21	James Howey Jim Sly
Day 4: virtual site inspections and staff interviews: - Leeuwin District Depot - Vasse Diversion Drain	29/07/21	James Howey Jim Sly
Day 5: Staff interviews and Closing Meeting	30/07/21	James Howey Jim Sly
Post review information request	06/08/21	James Howey
Prepare Draft Review Report	20/09/21	James Howey Jim Sly Internal QA reviewer

Activities	Date	Reviewer
Final Review Report	Planned 30/09/21	James Howey Jim Sly Internal QA reviewer

3.5.2. Review Team and Utilisation

Table 3 Review Team Members

Review team member	Position	Hours
James Howey	Director, Viridis Consultants	159.5
Jim Sly	Director, Cobbitty Consulting	167.0
Administration		35.5

4. DEVIATIONS FROM THE REVIEW PLAN

The Review Plan contained the following caveat:

The preferred method of delivery for the interviews and inspections is face-to-face. However, there are ongoing concerns in relation to COVID and travel restrictions may be imposed at any time. Viridis will adhere to State requirements. If a period of quarantine is required to travel, that travel will be postponed. The review team is based in Victoria and Queensland, which reduces the chance of both being unable to travel. If one auditor can travel, the review will proceed and the second auditor will connect using video conferencing. If both auditors are prevented from traveling, Viridis will liaise with ERA to determine an appropriate approach.

Due to the timing of the audit interviews neither auditor could travel to site, due to COVID-19 travel restrictions. In an email dated 5 July 2021, it was proposed to the ERA that the review should be completed remotely. Delivery of the review remotely was agreed by the ERA by return email on 5 July 2021.

The review plan was followed in all other respects.

5. RECOMMENDATIONS FROM PREVIOUS REVIEWS

Outstanding recommendations of previous reviews were assessed to determine if Water Corporation had resolved the identified issue. The status of these recommendations is shown in Table 4.

Table 4 Status of recommendations addressing asset system deficiencies from the previous review

A. Resolved during current review period				
Recommendation reference (no./year)	Process and policy deficiency / Performance deficiency (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Auditor's recommendation	Date resolved	Further action required (Yes/No/Not Applicable) Details of further action required (including current recommendation reference, if applicable)
R5/2015	B3 (9.1) Contingency Planning – <i>Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.</i> The auditor was unable to conclude that Water Corporation had adequately identified the highest operational risks to its business and undertaken contingency planning to address them. This is because contingency planning has been undertaken inconsistently across the business.	Water Corporation should identify for its operations, the desired level of application, coverage and contents of contingency plans and implement contingency planning consistently using these criteria through a program of activity.	June 2020	No
R1/2018	A1 (1.1) Asset planning – <i>Asset management plan covers key requirements.</i> The <i>Asset Management Strategy</i> includes completing the Asset Class Plans in the section on Continuous Improvement and Review; however, no details of the Asset Class Plans to be developed or the proposed timeframes to complete them is included in the document.	We recommend that Water Corporation modifies the Summary of Improvement Opportunities include[d] in the <i>Asset Management Strategy</i> to include due dates and accountabilities for each of the identified improvements.	June 2020	No

A. Resolved during current review period				
Recommendation reference (no./year)	Process and policy deficiency / Performance deficiency (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Auditor's recommendation	Date resolved	Further action required (Yes/No/Not Applicable) Details of further action required (including current recommendation reference, if applicable)
R3/2018	<p>A2</p> <p>(9.1) Contingency planning – <i>Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.</i></p> <p>In response to recommendation R5/2015, Water Corporation has developed S498 Operational Contingency Planning Standard and Contingency Planning - development, testing and Review Procedure. These are supported by a template and a Framework for Critical Assets. These actions address the parts of the recommendation to identify the level of application, coverage and contents of contingency plans.</p> <p>Water Corporation has documented the contingency plans that it has prepared under this revised approach and we reviewed a sample of contingency plans at our review meetings. Water Corporation tested a selection of plans in 2017-18. They also provided an exercise and test program for 2018-2024.</p> <p>This recommendation has therefore been left open (and transferred to R2/2018) as consistent implementation is supported by testing and refinement of the plans.</p>	<p>We recommend that Water Corporation continues its program of testing contingency plans so that all Criticality 5 plans are tested by December 2019 and all Criticality 4 plans are tested by June 2020 and that the outcomes of the testing are documented and updates to the plans arising from the lessons learned are actioned.</p>	June 2020	No

B. Unresolved at end of current review period			
Recommendation reference (no./year)	Process and policy deficiency / Performance deficiency (Rating / Reference number, Asset management process & effectiveness criterion / Details of deficiency)	Auditor's recommendation	Further action required (Yes/No/Not Applicable) Details of further action required (including current recommendation reference, if applicable)
R2/2018	A2 (7.2) Asset management information systems <i>– Input controls include appropriate verification and validation of data entered into the system.</i> Water Corporation's tracking of work order data quality has identified that quality for some measures are persistently not meeting its requirements.	We recommend that Water Corporation be required to report annually on the progress of its nominated actions to address the observed shortcomings: <ol style="list-style-type: none"> 1. Engineer out drivers of errors 2. Provide real time validation on entry 3. Refine the data integrity monitoring 	Yes – The original recommendation has not been fulfilled. Water Corporation is to continue to deliver the Work Management Project and ensure it includes an objective to improve the verification and validation of work order data to an appropriate standard.

6. PERFORMANCE SUMMARY

The effectiveness of Water Corporation's asset management system has been assessed for the adequacy of Water Corporation's processes and policies, and its performance in implementing them. Each asset management process and effectiveness criteria has been assessed using ERA's rating scales from the Guidelines; one for process and policy and another for performance, which are shown in Tables 5 and 6.

Table 5 Process and Policy Rating Scale

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> Processes and policies are documented. Processes and policies adequately document the required performance of the assets. Processes and policies are subject to regular reviews, and updated where necessary. The asset management information system(s) are adequate in relation to the assets being managed.
B	Requires some improvement	<ul style="list-style-type: none"> Processes and policies require improvement. Processes and policies do not adequately document the required performance of the assets. Reviews of processes and policies are not conducted regularly enough. The asset management information system(s) requires minor improvements (taking into consideration the assets being managed).
C	Requires substantial improvement	<ul style="list-style-type: none"> Processes and policies are incomplete or require substantial improvement. Processes and policies do not document the required performance of the assets. Processes and policies are considerably out of date. The asset management information system(s) requires substantial improvements (taking into consideration the assets being managed).
D	Inadequate	<ul style="list-style-type: none"> Processes and policies are not documented. The asset management information system(s) is not fit for purpose (taking into consideration the assets being managed).

Table 6 Performance Rating Scale

Rating	Description	Criteria
1	Performing effectively	<ul style="list-style-type: none"> The performance of the process meets or exceeds the required levels of performance. Process effectiveness is regularly assessed, and corrective action taken where necessary.
2	Improvement required	<ul style="list-style-type: none"> The performance of the process requires some improvement to meet the required level. Process effectiveness reviews are not performed regularly enough. Recommended process improvements are not implemented.
3	Corrective action required	<ul style="list-style-type: none"> The performance of the process requires substantial improvement to meet the required level. Process effectiveness reviews are performed irregularly, or not at all. Recommended process improvements are not implemented
4	Serious action required	<ul style="list-style-type: none"> Process is not performed, or the performance is so poor the process is considered to be ineffective.

A detailed assessment of Water Corporation's asset management system is in section 7 and a summary of review grades is presented in Table 7 below.

Table 7 Performance Summary Table for Reviews

Asset management process & effectiveness criteria		Process and policy rating (A – D)	Performance rating (1 – 4)
1	Asset planning	A	1
1.1	Asset management plan covers the processes in this table	A	1
1.2	Planning processes and objectives reflect the needs of all stakeholders and are integrated with business planning	A	1
1.3	Service levels are defined in the asset management plan	A	1
1.4	Non-asset options (e.g. demand management) are considered	A	1
1.5	Lifecycle costs of owning and operating assets are assessed	A	1
1.6	Funding options are evaluated	A	1
1.7	Costs are justified and cost drivers identified	A	1
1.8	Likelihood and consequences of asset failure are predicted	A	1
1.9	Asset management plan is regularly reviewed and updated	A	2
2	Asset creation and acquisition	A	1
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options	A	1
2.2	Evaluations include all life-cycle costs	A	1
2.3	Projects reflect sound engineering and business decisions	A	1
2.4	Commissioning tests are documented and completed	A	1
2.5	Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood	A	1
3	Asset disposal	A	1
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process	A	1
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	A	1
3.3	Disposal alternatives are evaluated	A	1
3.4	There is a replacement strategy for assets	A	1
4	Environmental analysis	A	1
4.1	Opportunities and threats in the asset management system environment are assessed	A	1
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	A	2
4.3	Compliance with statutory and regulatory requirements	A	2
4.4	Service standard (customer service levels etc) are measured and achieved.	A	1
5	Asset operations	A	1
5.1	Operational policies and procedures are documented and linked to service levels required	A	1
5.2	Risk management is applied to prioritise operations tasks	A	1
5.3	Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical/structural condition	A	1
5.4	Accounting data is documented for assets	A	1
5.5	Operational costs are measured and monitored	A	1
5.6	Staff resources are adequate and staff receive training commensurate with their responsibilities	A	1
6	Asset maintenance	A	1
6.1	Maintenance policies and procedures are documented and linked to service levels required	A	1
6.2	Regular inspections are undertaken of asset performance and condition	A	1

Asset management process & effectiveness criteria		Process and policy rating (A – D)	Performance rating (1 – 4)
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule	A	1
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary	A	1
6.5	Risk management is applied to prioritise maintenance tasks	A	1
6.6	Maintenance costs are measured and monitored	A	1
7	Asset management information system	A	1
7.1	Adequate system documentation for users and IT operators	A	1
7.2	Input controls include suitable verification and validation of data entered into the system	A	2
7.3	Security access controls appear adequate, such as passwords	A	1
7.4	Physical security access controls appear adequate	A	1
7.5	Data backup procedures appear adequate and backups are tested	A	1
7.6	Computations for licensee performance reporting are accurate	A	1
7.7	Management reports appear adequate for the licensee to monitor licence obligations	A	1
7.8	Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation	A	1
8	Risk management	A	1
8.1	Risk management policies and procedures exist and are applied to minimise internal and external risks	A	1
8.2	Risks are documented in a risk register and treatment plans are implemented and monitored	A	1
8.3	Probability and consequences of asset failure are regularly assessed	A	1
9	Contingency planning	A	1
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	A	1
10	Financial planning	A	1
10.1	The financial plan states the financial objectives and identifies strategies and actions to achieve those	A	1
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs	A	1
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	A	1
10.4	The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period	B	1
10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	A	1
10.6	Large variances in actual/budget income and expenses are identified and corrective action taken where necessary	A	1
11	Capital expenditure planning	A	1
11.1	There is a capital expenditure plan covering works to be undertaken, actions proposed, responsibilities and dates	A	1
11.2	The capital expenditure plan provides reasons for capital expenditure and timing of expenditure	A	1
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	A	1
11.4	There is an adequate process to ensure the capital expenditure plan is regularly updated and implemented	A	1
12	Review of AMS	A	1
12.1	A review process is in place to ensure the asset management plan and the asset management system described in it remain current	A	2

Asset management process & effectiveness criteria		Process and policy rating (A – D)	Performance rating (1 – 4)
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system	A	1

7. AUDITOR'S OBSERVATIONS

The auditors' observations and evidence utilised is detailed in Table 8.

Table 8 Review observations and recommendations

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
1	Asset planning Asset planning focuses on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price)			A	1
1.1	Asset management plan covers the processes in this table	4	<p>Summary: The asset management system is comprised of many documents and between these they cover all of the asset management process or effectiveness criteria. Also, in conducting the asset management system review it was clear that all the elements were covered. This criterion had a previous recommendation in regard to amending the <i>Asset Management Strategy</i>.</p> <p>Process and policy: Review of the <i>Strategic Asset Plan</i>¹ and the <i>Asset Management System Manual</i>² demonstrated that all of the processes are covered. The <i>Line of Sight Framework</i>³ shows how corporate objectives are implemented by the asset management system for each portfolio (water, wastewater, irrigation and drainage) and identifies asset risk, asset management objectives, levels of service and investment source for each of the corporation objectives.</p> <p>Performance: During the interviews and site inspections it was evident that Water Corporation's asset management system was comprehensive and covered all of the processes in the ERA's asset management processes and effectiveness criteria.</p> <p>Previous Recommendation R1/2018 It was recommended that <i>Water Corporation modifies the Summary of Improvement Opportunities include[d] in the Asset Management Strategy to include due dates and accountabilities for each of the identified improvements.</i> The strategy has been updated; it now includes Section 11 - Continuous Improvement, which refers to the <i>Asset Management System Improvement Plan</i>.⁴ The <i>Improvement Plan</i> has been updated, capturing improvements from a variety of sources including asset management system review recommendations, Internal and External AM Maturity Assessments and business/stakeholder suggestions. Improvement opportunities are monitored in the annual Asset Management Improvement Plan.</p>	A	1
1.2	Planning processes and objectives reflect the needs of all stakeholders and are integrated	5	<p>Summary: The <i>Asset Management Strategy</i> identifies the priorities of stakeholders. Stakeholders are managed as per the <i>Corporate Compliance Framework</i> and <i>Legislation Register</i>, the <i>Corporate Stakeholders Strategy</i>, and through a "Tap In" engagement program for customers. The asset management objectives, as identified in the strategy, are focused on delivering the needs of stakeholders.</p>	A	1

¹ Strategic Asset Plan 2021-22 #113334674.

² Asset Management System Manual, May 2021 #58587247.

³ Line of Sight Framework #74631917.

⁴ Asset Management System Improvement Plan 2021 – 2024.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
	with business planning		<p>Process and policy: The <i>Asset Management Strategy</i>⁵ identifies the priorities of stakeholders. Stakeholders are managed as follows:</p> <ul style="list-style-type: none"> Regulatory stakeholders are managed through the Corporate Compliance Framework⁶ and Legislation Register.⁷ The Corporate Stakeholders Strategy⁸ outlines how corporate stakeholders are managed. Customers and the community are engaged through the “Tap In” engagement program and “Your Say” website.⁹ <p>The <i>Strategy</i> refers to the <i>Infrastructure Asset Management Policy</i>,¹⁰ which sets the asset management principles and informs the asset management strategy.</p> <p>The <i>Infrastructure Asset Management Policy</i> requires that a line of sight be achieved between corporate and asset management objectives. This is achieved through the <i>Line of Sight Framework</i>.¹¹ All of the objectives are mapped to levels of service measures (also referred to as asset management objectives measures), which are aimed at meeting stakeholder requirements. The <i>Asset Acquisition Guideline</i>¹² defines the process of the creation or change to tangible assets. The planning phase considers the requirements of stakeholders, and the selection of projects into the 5-year Asset Improvement Program is based on alignment with the corporate and asset management objectives.</p> <p>Performance: The <i>Kwinana Brownell Cr Ps Storage Business Case</i>¹³ was provided as evidence of the process. This document clearly identifies the strategic alignment with the corporate and assessment management objectives. In this instance the pump station required an upgrade as it was identified as a high risk for overflow into the environment. This aligned with the corporate objective to operate at the Lowest Environmental Impact and the asset management objective to have reliable and sustainable service while managing community and environmental impacts.</p> <p>There has been some customer engagement through the Customer and Community Group. They implement the Customer Experience Strategy and run the Tap-in survey; through this they have concluded that corporate objectives are aligned with stakeholder expectations.</p>		
1.3	Service levels are defined in the asset management plan	4	<p>Summary: There is a framework that is used in the <i>Asset Management Strategy</i>¹⁴ to define service levels. The Asset Class Strategies contain the levels of service, and these are implemented on an asset class basis through the Asset Class Management Plans.</p>	A	1

⁵ Asset Management Strategy 2018-2038 #49235063 April 2018.

⁶ S332 Corporate Compliance Breach Reporting Framework #845435.

⁷ Extract for the Legislation register.

⁸ Corporate Stakeholder Engagement Framework 2020-21 #99823675.

⁹ <https://yoursay.watercorporation.com.au/>.

¹⁰ PCY392 Infrastructure Asset Management.

¹¹ Line of Sight Framework #74631917.

¹² Asset Acquisition Guideline #5855521 18 June 2020.

¹³ Kwinana Brownell Cr Ps Storage Business Case #C112561676.

¹⁴ Asset Management Strategy 2018-2038 #49235063 April 2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Process and policy:</p> <p>The <i>Asset Management Strategy</i> identifies the framework that is used to set the levels of service. The asset owner specifies the levels of service that are required to meet the asset management objectives, which are in turn to meet the corporate objectives. The asset management objectives, Levels of Service, Measure and Target are tabulated in the <i>Asset Management Strategy</i> for the water, wastewater and drainage portfolios.</p> <p>This hierarchy of objectives, from corporate objectives through to levels of service, is illustrated in the <i>Line of Sight Framework</i>¹⁵ for each of the portfolios.</p> <p>The asset class strategies contain the levels of service, and these are implemented on an asset class basis through the asset class management plans¹⁶. The <i>Water Storage Asset Class Strategy</i>¹⁷ and the <i>Bores & Borefields Asset Class Strategy</i>¹⁸ were provided as evidence.</p> <p>The Asset Investment Plans¹⁹ identify the strategic alignment, which includes the level of service and linkage to the Strategic Asset Investment Plans.</p> <p>Performance:</p> <p>Levels of services are clearly defined in the <i>Asset Management Strategy</i> and are implemented through the Asset Class Management Plans.</p>		
1.4	Non-asset options (e.g. demand management) are considered	4	<p>Summary:</p> <p>Non-asset options are considered in the <i>Plan Asset Investigation Guidelines</i>.²⁰ These guidelines are used to remedy identified deficiencies in assets. There are a number of non-asset options for demand management, such as carting water or doing nothing. Further discussion in respect of non-asset options is presented under Criterion 2.1.</p> <p>Process and policy:</p> <p>The <i>Plan Asset Investigation Guidelines</i> are used to remedy identified asset deficiencies. In the first stage of the process, deficiencies are to be addressed operationally. If this is not possible, issues are escalated and entered into the <i>Asset Deficiency Register</i>.²¹ In the planning stage of any project the 'do nothing' option which is technically a non-asset option, is compulsory.²² The <i>Guideline – Integration of Water Efficiency into Scheme Planning</i>²³ requires that water efficiency is considered as part of the planning process. This is to ensure that water efficiency is considered and determined if it "can provide cost effective and sustainable demand reduction when compared against other options for new or augmented water sources".</p> <p><i>Carting as a Permanent Water Supply Option</i> identifies that Water Corporation should consider water carting as a permanent solution for an entire town, a partial town supply or as a supplemental supply. This is to be considered where it is cost effective.</p> <p>Performance:</p> <p>The Project Investment Business Cases for the Kwinana Brownell Cr Ps Storage²⁴ includes the options of do nothing and tankering, both of which would be non-asset options.</p> <p>The <i>Perth and Peel Integrated Water Services Plan</i>²⁵ has identified a shortfall in water supply within the planning period. Water efficiencies have been identified as a way to reduce this.</p>	A	1

¹⁵ Line of Sight Framework #74631917.

¹⁶ Water Storage Facility Asset Class Management Plan 2019-28 #8069647.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
1.5	Lifecycle costs of owning and operating assets are assessed	5	<p>Summary:</p> <p>There is a process for assessing the lifecycle costs of owning and operating assets. Net present value (NPV) assessments have been done and the Asset Class Strategies/Asset Class Management Plans include a forecast of the replacement value of assets. The asset acquisition process includes the completion of a Financial Impact Statement (FIS) in support of each business case. An example FIS was shown.</p> <p>Process and policy:</p> <p>It was stated that the <i>Asset Acquisition Guideline</i>²⁶ included a net present value (NPV) assessment in the Asset Investment Planning Phase. The <i>Investment Business Case Template</i>²⁷ includes a TOTEX investment forecast, current financial year plus 5 years. Each option assessed also requires an NPV.</p> <p>The asset acquisition process has five gateways and the <i>Financial Impact Statement Guidelines</i>²⁸ identifies the FIS requirements for each of the gateways. The FIS has six worksheets:</p> <ul style="list-style-type: none"> • Assumptions • Capital – incremental capital costs • Operating Cost – covering operation and maintenance (O&M), as well as disposal • Operating Cost Calculations – calculations for O&M • Capacity utilisation – change in O&M due to population changes • Revenue – revenue created • FIS – additional information <p>Performance:</p> <p>The FIS was provided for the Kwinana Brownell Cr PS Storage for the scoping²⁹ and notional stages,³⁰ both of which include the life cycle costs for the project. These include values for the forthcoming 8 years; the FIS contains financial modelling over an extended period. The project lengths are by default 100 years, in accordance with the <i>Financial Impact Statement Guidelines</i>. The Asset Class Strategies include a forecast of the replacement value of assets.³¹</p>	A	1

¹⁷ Water Storage Asset Class Strategy.

¹⁸ Bores & Borefields Asset Class Strategy.

¹⁹ Investment Business Case: Kwinana Brownell Cr Ps Storage #C112561676.

²⁰ Plan Asset Investigation Guideline #58582518.

²¹ Asset Deficiency Register screen shot.

²² Investment Business Case: Kwinana Brownell Cr Ps Storage #C112561676.

²³ Guideline - Integration of Water Efficiency into Scheme Planning # 11913112.

²⁴ Investment Business Case: Kwinana Brownell Cr Ps Storage #C112561676.

²⁵ Perth Peel Integrated Water Services Plan March 2021.

²⁶ Asset Acquisition Guideline # 58555521 18 June 2020.

²⁷ Investment Business Case: Kwinana Brownell Cr Ps Storage #C112561676.

²⁸ Financial Impact Statement Guidelines #58541862.

²⁹ Kwinana Brownell Cr Ps Storage - Scoping FIS #112574891.

³⁰ Kwinana Brownell Cr PS Storage - Notional FIS #99176391.

³¹ Water Storage Asset Class Strategy.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
1.6	Funding options are evaluated	5	<p>Summary: The <i>Financial Impact Statement Guidelines</i>³² state that third party funding is to be recorded on the revenue of the financial impact statement of a new project. However, it is not evident from the documentation that funding options are routinely assessed as well as the technological aspects. Most projects are funded through public private partnerships.</p> <p>Process and policy: Water Corporation is state owned. All operational funding is generated through customer charges, volumetric and headworks. There is a small amount of loan funding for capital projects. Borrowing amounts are set by and loaned from Treasury. The <i>Financial Impact Statement Guidelines</i> identifies that government grants or funding from external parties is to be recorded on the revenue of the financial impact statement of a new project. In this way the funding options can be evaluated.</p> <p>Performance: Funding line items can be seen in the FIS provided for the Kwinana Brownell Cr PS the Storage for the scoping³³ and notional stages³⁴. However, no revenue was recorded. Most projects are internally funded or funded through the process described in respect of Criterion 10.2. The Mundaring WTP is an example of a project that has been funded through a public private partnership.</p>	A	1
1.7	Costs are justified and cost drivers identified	4	<p>Summary: Costs are justified and cost drivers identified through the Investment Business Case template, which includes details of the Business Drive / Need. A multi-criteria analysis is used to determine the best option.</p> <p>Process and policy: The <i>Asset Acquisition Guideline</i>³⁵ provides examples of drivers of asset investment decisions, these include the following:</p> <ul style="list-style-type: none"> • Base Capital Maintenance: Renewals to rectify deteriorating asset condition and performance. • Supply / Demand: Growth across residential, commercial and/or industrial customers. • Enhanced Services: licencing and compliance issues. • Quality and Standards: safety, water quality issues, changing standards or regulations. <p>The Investment Business Case template includes details of the Business Drive / Need. The FIS³⁶ details the lifecycle costs of the project and these assessed in the Investment Business Case and a multi-criteria analysis is used to determine the best option, which includes the NPV, project duration, project cost, solution complexity and residual risk. All potential solutions are assessed against do nothing. Thus, the project and cost incurred must be demonstrably better than the do nothing option.</p>	A	1

³² Financial Impact Statement Guidelines #58541862.

³³ Kwinana Brownell Cr Ps Storage - Scoping FIS #112574891.

³⁴ Kwinana Brownell Cr PS Storage - Notional FIS #99176391.

³⁵ Asset Acquisition Guideline #58555521 18 June 2020.

³⁶ Kwinana Brownell Cr Ps Storage - Scoping FIS #112574891.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			Performance: The Kwinana Brownell Cr Ps Storage Investment Business Case was provided as an example. It identifies that the time to overflow is 20% less than the design standard and will fall to 65% less over the next 5 years. This document also identifies the strategic alignment with the Corporate Objective, Asset management objectives and Objective Risk Assessment. An example of the NPV optional analysis was provided for the Ravensthorpe Catchment upgrade. ³⁷		
1.8	Likelihood and consequences of asset failure are predicted	4	Summary: The likelihood and consequences of asset failure have been determined through the asset class management plan process, which includes the probability of failure by component based on condition, and the consequence of failure, using the <i>Corporate Risk Assessment Criteria</i> . Process and policy: Objective risk assessments are used to align risks at the facility level to corporate risks, corporate objectives, and levels of service. This allows line of sight between asset investment business cases and achievement of corporate objectives. The prediction of likelihood and consequence of asset failure is determined through the asset class management plan ³⁸ process. The <i>Risk Management Framework</i> in conjunction with the <i>Corporate Risk Assessment Criteria</i> provide guidance on undertaking risk assessments. The <i>Corporate Risk Management Framework</i> ³⁹ provides the structure for the management processes and risk-based decision making. The risk assessment methodology is specified in the <i>Corporate Risk Assessment Criteria</i> ⁴⁰ document. The Asset Class Management Plans include a probability of failure by component based on condition, using the likelihood descriptors in the <i>Corporate Risk Assessment Criteria</i> . Performance: A criticality assessment has been undertaken based on the consequence of failure, using the consequence descriptors in the <i>Corporate Risk Assessment Criteria</i> and is presented in the asset class management plan. The asset probability of failure and criticality are used to provide an asset class risk assessment, by component. The current replacement cost is provided in a matrix based on risk and component.	A	1

³⁷ CW02810 Ravensthorpe Upgrade Bitumen Catchment.

³⁸ Water Storage Facility Asset Class Management Plan 2019-28 #8069647.

³⁹ Corporate Risk Management Framework #16100952.

⁴⁰ Corporate Risk Assessment Criteria #621047.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
1.9	Asset management plan is regularly reviewed and updated	5	<p>Summary: The Asset management plan is to be regularly reviewed and updated; however, the <i>Asset Management Strategy</i> is past its review date. Neither this or the Strategic Asset Plan documents have a document history which would demonstrate to the reader the frequency of review and highlight areas that have changed.</p> <p>Process and policy: The <i>Asset Management Strategy</i>⁴¹ is a CorDoc and has regular reviews under the CorDoc management process, which is currently on a 3-yearly basis. The <i>Strategic Asset Plan</i>⁴² is updated annually and is classified as a CorDoc but is not actively registered in the system.</p> <p>Performance: The <i>Asset Management Strategy</i> was last updated April 2018 and should have again been reviewed/updated in April 2021. The <i>Strategic Asset Plan</i> was last updated in February 2021 as per schedule. Neither of these documents have a document history, which would demonstrate to the reader the frequency of review and highlight areas that have changed.</p>	A	2
2	Asset creation and acquisition Asset creation/acquisition is the provision or improvement of assets.			A	1
2.1	Full project evaluations are undertaken for new assets, including comparative assessment of non-asset options	4	<p>Summary: Water Corporation has in place an Asset Acquisition Process that requires full evaluation of new assets, including the comparative assessment of asset and non-asset options for meeting servicing requirements. Water Corporation advised that, during the review period, it has improved the rigour of its asset development and acquisition process through an increased focus on 'front end' planning and development.</p> <p>Governance of the asset acquisition process is managed through a series of 'gateway' approvals, each of which is based on a documented business case. Business case templates clearly define the information that is to be included, including the identification and evaluation of servicing options.</p> <p>A review of sample documentation demonstrated that the Asset Acquisition Process, as it applies to the evaluation of projects, is being effectively implemented. Furthermore, it appears that the revised procedures have indeed resulted in a more robust approach to the planning and development of projects.</p> <p>Process and policy: The <i>Asset Acquisition Guideline</i>⁴³ outlines the process for acquisition of assets from investment planning through to handover and subsequent review to verify that the planned benefits have been realised. The process comprises seven phases, with an approval milestone or project 'gateway' between each phase, as follows:</p> <ul style="list-style-type: none"> Asset Investment Planning Phase – the purpose of this phase is to plan and manage both existing and future assets to ensure that they have the capacity to meet the current and future expectations of Water 	A	1

⁴¹ Asset Management Strategy 2018-2038 #49235063 April 2018.

⁴² Strategic Asset Plan 2021-22.

⁴³ Asset Acquisition Guideline #58555521.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Corporation's customers. This phase leads to the Appropriation Request Approval gateway.</p> <ul style="list-style-type: none"> • Select and Program Formulation (Prioritisation) Phase – this phase involves confirmation, through a prioritisation process, of projects to be included in the 5-year Asset Investment Plan. This phase leads to the Approval to Develop gateway. • Development Phase – the purpose of which is to develop a project that has been accepted into the 5-year Asset Investment Plan to a sufficient level of detail and certainty that a robust single option can be taken forward into the Engineering and Delivery phases. This phase leads to the Approval to Invest gateway. • Engineering Phase – comprises the detailed work required to further develop the project in preparation for the delivery phase. This phase leads to the Approval to Deliver gateway. • Deliver Phase – involves the detailed design, construction, and commissioning of the assets. Key documentation for commissioning and handover is prepared and completed in accordance with handover procedures. This phase leads to the Project Practical Completion gateway. • Handover Phase – this phase enables the formal transfer of the asset to the Asset Manager and Operators and eventual closure of the project. It leads to the Asset Transfer and Registration gateway. • Review Phase – this phase involves a review of the project to verify that the planned benefits have been realised, and to identify lessons learned for feedback into the overall asset acquisition process. <p>Project evaluations are undertaken initially in the Asset Investment Planning phase and in more detail in the Development phase of the asset acquisition process. This involves the comparative assessment of options, including non-asset options.</p> <p>The Asset Investment Planning phase involves determination/confirmation of asset need prior to inclusion via a risk prioritisation process. Activities undertaken in this phase include:</p> <ul style="list-style-type: none"> • Investigation of the problem/service requirement and definition of the scope for further investigation work. • Review of the applicable Asset Class Strategies. • Review of the Asset Class Management Plans and any related renewal programs currently in place. • Review of monitoring results to determine current asset performance. • Review of demand and growth projections. • Investigation of options to address the problem/service requirement. • Meeting with stakeholders to agree on the options to be further developed. <p>If, as a result of these activities, it is determined that a capital solution (new asset) is required, a project is registered for consideration for inclusion in the rolling 5-year investment program.</p> <p>As noted above, the Development phase involves development of a project to a sufficient level of detail and certainty that a robust single option can be</p>		

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>taken forward into the Engineering and Delivery phases. Amongst the activities to be undertaken during this phase are the following which relate more specifically to the development and evaluation of options:</p> <ul style="list-style-type: none"> • Design activities (design alternatives review and/or concept design review, depending upon the complexity of the scheme and asset to be built); this excludes detail design, which would be undertaken in the Engineering or Delivery phases. • Financial evaluation of the design alternatives and/or the single option to be taken into Engineering and Delivery and preparation of a Financial Impact Statement. <p>Although a single project option is carried forward into the Engineering and Delivery phases of the asset acquisition process, further project evaluation is undertaken during the Engineering phase. This is realised through activities including:</p> <ul style="list-style-type: none"> • Update of the Financial Impact Statement. • Update of the project cost estimate and schedule (+20% / -5%). • Confirmation of system and user requirements (asset baseline requirement). • Confirmation of the functional specification. • Identification and evaluation of risks, and development of management plans. <p>Governance of these processes is managed through the preparation and approval of business cases at each stage of the project development process, including an Investment Business Case, Development Business Case and Delivery Business Case. Standard business case templates provide guidance in respect of content and detail, thereby ensuring a robust evaluation of both need and the adopted solution (option) for each investment.</p> <p>The requirement to consider non-asset solutions is identified in the <i>Plan Asset Investigation Guideline</i>,⁴⁴ which requires an initial investigation in response to a performance or condition deficiency to consider operational change or maintenance adjustment as well as asset replacement options. Non-asset solutions are also to be considered from a broader system perspective; for example, the <i>Asset Management Strategy 2018-2038</i>⁴⁵ indicates that: <i>“Demand management is always considered as one of a suite of options to be implemented prior to water source augmentation. There has been a major focus on reducing water consumption in Perth over a number of years”</i>.</p> <p>Review of the business case templates reveals that consideration of a “Do nothing” scenario, which is essentially a non-asset option, is mandatory for all projects. “Do nothing” scenarios would typically involve changes to operational arrangements and/or maintenance regimes to achieve the service objectives. As with all other options, assessment criteria include benefit (NPV), duration, project cost, solution complexity and risk.</p> <p>Depending on the scope and location, most asset creation projects are subject to mandatory external approvals at various stages of their development. Ensuring that required approvals can be/are secured can be deemed part of the project evaluation process; external agency requirements may result in</p>		

⁴⁴ Plan Asset Investigation Guideline #58582518 v. 29/06/2021.

⁴⁵ Asset Management Strategy 2018-2038 #49235063 April 2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>changes to project scope, which may potentially result in changes to the preferred solution. The <i>External Approvals Manual</i>⁴⁶ details the external approvals that may be required and the timing and way they should be secured. The external approval process for an individual project is managed using an <i>External Approvals Tracking Spreadsheet</i>.⁴⁷</p> <p>Water Corporation advised that it has improved the rigour around its asset creation and acquisition processes over the last three years, with a focus on 'front end' effort to develop and confirm that the appropriate servicing solution has been identified for implementation; the revised Asset Acquisition Process is the approach detailed in the <i>Asset Acquisition Guideline</i> (which is summarised above) For example, the 'Development' phase of the process was introduced approximately 18 months ago (mid-way during the review period). Prior to this, a Pre-Select Checklist was completed annually as the means of activating new projects.</p> <p>In summary, Water Corporation has in place an Asset Acquisition Process, which was updated during the review period to improve rigour through an increased focus on 'front end' planning and development. This process requires full evaluation of new assets, including the comparative assessment of asset and non-asset options for meeting servicing requirements.</p> <p>Performance:</p> <p>Water Corporation demonstrated that full project evaluations are undertaken for new assets by providing example business cases:</p> <ul style="list-style-type: none"> • <i>Project Delivery Business Case for the Margaret River WWTP Upgrade</i>⁴⁸ – this business case sought approval to upgrade the treatment plant capacity from 1.5 ML/day to 3 ML/day by constructing a new Oxidation Ditch type plant to replace the existing Intermittent Decant Extended Aeration (IDEA) type plant. Upgrade of the sludge dewatering system was also included. <p>The business case identified that four options (two with sub-options) had been considered for upgrading the treatment plant; these included various process conversion, replacement and duplication arrangements. It further indicated that the specific replacement option that was recommended at the end of the preliminary design phase had been changed due to safety concerns identified during engineering design.</p> <p>It is noted that this business case was prepared in accordance with procedures in place prior to the current business case requirements being implemented. Accordingly, more extensive detail of the options evaluated was not included. Furthermore, under the previous procedures, the project was initiated (in this case re-initiated after being on hold for several years) via a <i>Capital Project Pre-Select Checklist</i>,⁴⁹ in which criteria including alignment with the relevant Strategic Investment Business Case, planning status, performance/requirement triggers having been met, consideration of minor CAPEX/OPEX solutions having been considered, currency of cost estimates, financial evaluation and risk were addressed.</p>		

⁴⁶ External Approvals Manual.pdf #58806596 March 2021.

⁴⁷ Template - External Approvals Tracking Spreadsheet (13963566).pdf.

⁴⁸ CS01153_-_Margaret_River_WWTP_Upgrade_to_3_MLD_-_Project_Delivery_Business_Case.pdf.

⁴⁹ C-S01153_Margaret_River_WWTP_Upgrade_to_3000_kL_d_-_Select_Checklist.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Under the previous procedures, selection of the project for development (on the basis of the Pre-Select Checklist) would normally be followed by the submission and approval of a Scoping Business Case. For this project a <i>Short Planning Business Case; Infrastructure Project</i> (Scoping Business Case),⁵⁰ in which the project need and option evaluation were discussed, had previously been approved, with the recommendation being carried forward to project delivery.</p> <ul style="list-style-type: none"> • <i>Project Delivery Business Case for Busselton Upgrade Vasse Diversion Drain</i>⁵¹ – this business case sought approval to construct upgrade works to the Vasse Diversion drain in order to contain the 1% Annual Exceedance Probability (AEP) (1 in 100 years) storm flows. The drain previously had a capacity equivalent to a 5% AEP (1 in 20 years). The option approved for implementation was to: “...provide a risk based upgrade that significantly reduces the likelihood of failure through flood induced overtopping (increases the flood handling capacity to above 1% Annual Exceedance Probability) whilst also reducing the likelihood of internal erosion piping failure and slope stability failure”. The scope of work required to achieve this outcome was defined. • <i>Project Delivery Business Case for MC Dedari 32 ML Storage</i>⁵² – this business case sought approval to construct a new 32 ML concrete tank to replace an existing unroofed reservoir that failed to comply with the requirements of the <i>Australian Drinking Water Guidelines</i>. An overview of the options evaluated was included; these initially comprised lining and covering of the existing reservoir; provision of two new steel tanks of 30 ML capacity; and provision of one new steel tank of 60 ML capacity. The required storage capacity was reviewed in both the planning and scoping phases; a design alternative review workshop held to review the options resulted in the decision to adopt a post-tensioned concrete tank on the basis that steel tanks had been found to be uneconomical. Further summary details of the ‘do nothing’ and preferred options were documented. As for the Margaret River WWTP Upgrade project, this project was initiated and initially progressed under the previous project development and acquisition procedures. Approval of a <i>Capital Project Pre-Select Checklist</i>⁵³ resulted in selection of the project for development. The subsequent <i>Project Scoping Business Case (Approval to Scope)</i>⁵⁴ outlined the planning options that had been identified and evaluated, as well as a review of the design alternatives for the adopted solution (design/delivery strategy, tank material of construction, overflow sump arrangement, and tank access provision). The outcomes were as reflected in the Project Delivery Business Case. • An extensive portfolio of information was provided in respect of the <i>Kwinana Brownell Crescent Wastewater Pumping Station Project</i>, which involves design and construction of a new in-ground storage tank to 		

⁵⁰ C-S01153_Margaret_River_WWTP_Upgrade_to_3000_kL_d_-_Project_Scoping_Business_Case_(13696592).pdf.

⁵¹ C-D00116_-_Busselton_Upgrade_Vasse_Diversion_Drain_-_Project_Delivery_Business_Case.pdf.

⁵² CW02188_-_MC_Dedari_32ML_Storage_Tank_-_Delivery_Business_Case.pdf.

⁵³ CW02188_-_MC_Dedari_60ML_Storage_-_Select_Checklist_Yr1.pdf.

⁵⁴ C-W02188_-_MC_Dedari_32ML_Storage_-_Project_Scoping_Business_Case.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>provide additional overflow storage which meets Water Corporation's containment standards. From the perspective of demonstrating evaluation of options, the <i>Development Business Case</i>⁵⁵ and <i>Investment Business Case</i>⁵⁶ both identified that options including the following were identified and evaluated:</p> <ul style="list-style-type: none"> Operational response to a failure event using tankering – this non-asset option was considered not to be operationally feasible due to the high inflow volume that would need to be transported. Increasing storage capacity in stages using pipes or tanks – these options were not considered feasible due to the footprint required and the short timeframe within which full capacity would be required. Increasing storage capacity using a single tank. <p>Having discounted all except one option, cost benefit (NPV), project cost, complexity and risk were documented for the remaining 'single tank' and 'do-nothing' options.</p> <p>In addition to the sample business cases, the <i>CD00177 Busseton WC Bridge 56 Replacement - External Approvals Tracking Spreadsheet</i>⁵⁷ was provided as an example of the engagement of external stakeholders as part of the project development and approvals process. As previously indicated, navigation of the external approvals process may result in scope changes and/or the need to develop or adopt alternative options and can therefore be deemed to comprise part of the option evaluation process. The external approvals process is discussed further in respect of Criterion 2.5.</p> <p>In summary, Water Corporation demonstrated that full project evaluations are undertaken for new assets, including comparative assessment of non-asset options where appropriate, in accordance with its documented processes and procedures. Furthermore, on the basis of the sample documentation reviewed, the revised procedures appear (as suggested by Water Corporation) to have resulted in a more robust approach to the planning and development of projects.</p>		
2.2	Evaluations include all life-cycle costs	4	<p>Summary:</p> <p>Water Corporation has in place and implements robust cost estimation and lifecycle analyses procedures in support of its project evaluation and decision-making processes. These procedures include the preparation of Financial Impact Statements in support of all business cases, which are updated throughout the Asset Acquisition Process.</p> <p>Process and policy:</p> <p>Water Corporation's <i>Asset Acquisition Guideline</i>,⁵⁸ an overview of which is provided in respect of Criterion 2.1 (above), requires the estimation of lifecycle costs for all projects. Cost estimates are used as one of the option assessment criteria as well as determining the overall financial impacts associated with the project investment. Costing information is compiled into a Financial Impact Statement, which is a primary document referenced in support of all business cases.</p>	A	1

⁵⁵ 1. CS02008 Kwinana Brownell Cr PS Storage – DBC.pdf.

⁵⁶ 01. CS02008 Kwinana Brownell Cr Ps Storage - Investment Business Case.pdf.

⁵⁷ CD00177 Busseton WC Bridge 56 Replacement - External Approvals Tracking Spreadsheet.pdf.

⁵⁸ Asset Acquisition Guideline #58555521 18 June 2020.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Cost estimates are prepared in accordance with the <i>Estimating Guidelines for Category A, B and Selected C Infrastructure Projects</i>⁵⁹ and specific procedures for the various estimate types. These <i>Guidelines</i> detail the purpose, content, format, business rules and responsibility for each estimate type.</p> <p>The <i>Cost Estimating for Assets Investment Planning Group</i> procedure⁶⁰ (for example) is the specific procedure applicable for all planning project cost estimates, including option analysis (i.e. cost estimates for project evaluation purposes). This procedure requires that cost estimates are prepared using the Asset Cost Estimating (ACE) System, or in consultation with an estimator; all Appropriation Request estimates, and preferred option estimates are to be checked by an Estimator.</p> <p>It is noted that, consistent with the <i>Estimating Guidelines</i>, the <i>Cost Estimating for Assets Investment Planning Group</i> procedure identifies the order of cost estimate accuracy expected at each phase of the asset acquisition process, specifically +50%/-10% for estimates prepared during the Investment Planning, Select and Program Prioritisation, and Development phases, and +20%/-5% for estimates prepared during the Engineering phase.</p> <p>Financial Impact Statements (FIS) are prepared in accordance with the <i>Financial Impact Statement Guidelines</i>,⁶¹ which identify six types of FIS that are required in support of approval submissions through the asset creation/acquisition process. Types of FIS include:</p> <ul style="list-style-type: none"> • Planning FIS – accompanies an Appropriation Request (Approval Gateway 1). • Notional FIS – accompanies a Development Business Case (Gateway 2). • Scoping FIS – accompanies an Investment Business Case (Gateway 3). • Delivery FIS – accompanies a Delivery Business Case (Gateway 4). • Post-commissioning review. • Options Analysis. <p>The <i>Financial Impact Statement Guidelines</i> details both the process for preparing an FIS using the available online tools, and the specific information that is to be input to the FIS model. Input data includes assumptions, capital costs, operation and maintenance costs, and asset lives. NPV calculations are completed using the data inputs and results are included in the FIS report; they are based on a default project term of 100 years unless otherwise nominated, and automatically incorporate asset replacement costs based on nominated asset life (manually input). Asset lives used for NPV analyses are based on the <i>Schedule of Standard Economic Lives</i>.⁶²</p> <p>As indicated in the preceding commentary, cost estimates and FIS (which include lifecycle cost analysis) are primary inputs to decision making and approval processes. The standard business case templates, which provide guidance in respect of content and detail, identify the requirement for robust lifecycle cost evaluation of projects. Each template requires:</p> <ul style="list-style-type: none"> • Details of the project cost and cost benefit (NPV) of each option considered. 		

⁵⁹ (N47179384) - Estimating Guidelines for Category A B and Selected C Infrastructure Projects - Guideline_200.pdf.

⁶⁰ Cost Estimating for Infrastructure Planning.pdf #58528011 14 January 2020.

⁶¹ Financial Impact Statement Guidelines.pdf #58541862 01 July 2019.

⁶² Schedule of Standard Economic Lives.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> A summary of and reference to the FIS. A detailed investment forecast for the project, including capital and operating cash flows over previous, current and the next five years. Forecast capital costs are compared to any existing budget allowance whilst operational costs are compared to those being incurred prior to the proposed investment. <p>In summary, Water Corporation has robust procedures in place to ensure that all lifecycle costs are considered when undertaking project evaluations. These include both capital and operational costs (operation and maintenance); changes in operational costs are identified as part of the financial analysis.</p> <p>Performance: Referring to the business case documentation that was discussed in respect of Criterion 2.1 reveals that lifecycle costs were determined for each viable option, in support of both project/option evaluation and the actual approval submissions. Costs are summarised within the body of the business cases (as required by the template); detailed cost estimates (typically for the preferred/recommended option) and FIS are appended as supporting documentation.</p> <p>Review of the FIS for each case reveals that both capital and operational costs have been considered for the Margaret River WWTP and MC Dedari 32 ML Storage. The Kwinana Brownell Crescent Wastewater Pumping Station Project FIS, however, indicates that operational costs are not applicable; this is likely reflective of the proposed storage tank being a passive asset addition to an existing facility for which any additional operational costs are likely to be minimal.</p> <p>To further explain its cost estimating processes, Water Corporation provided an overview of the ACE (asset cost estimating) system. This spreadsheet based estimating tool, which is used to prepare estimates on a schedule of rates/prices basis, is underpinned by an MS Access database in which cost estimating data is held. Data has been compiled from available sources including (for example) actual tendered rates and prices (typically the average of three lowest bids) and rates provided by suppliers; cost indices and location factors are also taken into account, thereby providing robust cost estimates that are fully auditable.</p> <p>The ACE System is managed by a 'purpose-built' estimating group within Water Corporation. Estimates are prepared (or at least overseen/reviewed) by this group, which ensures the robustness and consistency of the cost inputs used for project evaluation purposes.</p> <p>In summary, Water Corporation demonstrated that it uses robust cost estimation and lifecycle analyses in support of its project evaluation and decision-making processes.</p>		
2.3	Projects reflect sound engineering and business decisions	4	<p>Summary: Water Corporation has demonstrated that it has in place a well-documented engineering design process, which has been developed to ensure that projects are developed on the basis of sound engineering and informed business decisions. Through the provision of sample project documentation, it demonstrated that this process is effectively implemented.</p> <p>Process and policy: Water Corporation's asset creation and acquisition process has been developed to ensure that implemented projects are reflective of sound</p>	A	1

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>engineering and business decisions. This is achieved in the first instance by ensuring the identification and robust assessment of options for meeting service requirements, principally during the Asset Investment Planning and Development phases of the process. Decision making during these phases is informed by inputs provided as part of the engineering design process, which extends throughout the life of the project.</p> <p>Engineering input to an asset creation/acquisition project is in accordance with the <i>Engineering Design Manual</i>,⁶³ which provides guidance in respect of all phases of the engineering design process. Inputs are provided in accordance with a design strategy based on the project requirements (including service/functional requirements, project delivery strategy and schedule), which identifies the inputs required throughout the acquisition process depending on the size, complexity and level of uncertainty associated with the project.</p> <p>The <i>Engineering Design Manual</i> presents an overview of the design process, providing guidance in respect of planning the design job, doing the design work, checking the design (whether undertaken in-house or externally), documenting the design and the use of 'digital engineering' in support of the process. Specific guidance is provided for various design approaches that may be adopted in providing input to the various stages of project development, including:</p> <ul style="list-style-type: none"> • Advice and Investigation Jobs. • Approval to Scope Business Case Input Stage (Activation Phase). • Single Stage Design (Simple Design Projects). • Concept Design Stage (Scoping Phase). • Engineering Design Stage (Scoping Phase). • Combined Engineering/Detailed Design Stage (Scoping Phase). • Detailed Design Stage (Deliver Phase). • Tender and Construction Advice Stage (Design and Construct) (Deliver Phase). <p>Further guidance is provided in respect of Safety and Risk Assessments, Job Administration and Third-Party Review.</p> <p>Guidance in respect of safety and risk assessments relates to safety and risks both in undertaking the design process and in ensuring that the outcomes of the design process can be safely constructed, operated and maintained. This aspect of the design process may require the conduct of a HAZOP assessment/workshop; the <i>Safety in Design Work Instruction</i>⁶⁴ provides further detailed guidance in respect of the processes to be followed throughout the life of a project.</p> <p>An integral part of the design process, particularly in respect of ensuring that projects reflect sound engineering, is a Design Alternatives Review, which is typically undertaken in a workshop format as part of the Development phase of a project. The objective of this review is to determine a single recommended option to progress to the Engineering phase. Whilst a single</p>		

⁶³ Engineering Design Manual.pdf.

⁶⁴ Safety_in_Design_Work_Instruction.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>option cannot always be identified without further assessment, this process aims to ensure the robustness of the decision making.</p> <p>Engineering design is undertaken in accordance with Design Standards which set out standard requirements for the various types of infrastructure, as well as the design process itself. Engineering works are constructed in accordance with specifications drawn from a catalogue of standard specification clauses which address typical project requirements; these also inform the design process.</p> <p>Examples of design standards (which are available on the Water Corporation website) include:⁶⁵</p> <ul style="list-style-type: none"> • Electrical standards – DS20 Design Process for Electrical Works, DS24 Electrical Drafting and DS25 Solar Energy Systems. • Treatment standards – DS33 Water Treatment Plants Mechanical and DS34 Process Engineering. • Water Conveyance standards – DS60 Water Supply Distribution Standard and DS 61 Water Supply Distribution Tanks. <p>The use of design standards and standard specification clauses ensures both the robustness of engineering input and consistency across Water Corporation's asset portfolio.</p> <p>The soundness of engineering inputs is also enhanced by the requirement for peer checking and review of all design work. This can be further augmented by third party review when deemed necessary due to the complexity of the design work and/or the consequences if the constructed works were to fail.</p> <p>In summary, Water Corporation has in place processes and procedures for ensuring sound engineering input to project decision making and the resultant outcomes.</p> <p>Performance:</p> <p>Referring again to the business case documentation that was discussed in respect of Criterion 2.1, the discussion of options considered demonstrates the pursuit of sound engineering solutions to meet the identified servicing requirement. Multiple options have been considered in order to identify the most beneficial solution.</p> <p>To further demonstrate the implementation of the engineering design process, Water Corporation provided a copy of the <i>Concept Design Report</i>⁶⁶ prepared by an external consultant in respect of the Woodman Point Water Resource Recovery Facility Sludge Treatment Upgrade (Project No: C-S03501). The concept design involved the investigation and comparative assessment of a range of options that was informed by a planning study undertaken by Water Corporation. The extensive report included the assessment of six options for the proposed solids handling upgrade, including the inclusion of new technology.</p> <p>As identified in the <i>Service Agreement</i>⁶⁷ for the consultant engagement, the deliverables for the project included processes aimed at ensuring the robustness of the output (recommended option):</p>		

⁶⁵ <https://www.watercorporation.com.au/About-us/Suppliers-and-contractors/Resources/Design-standards>.

⁶⁶ Jacobs, *Concept Design Report; Woodman Point Water Resource Recovery Facility Sludge Treatment Upgrade; Water Corporation Project Number: C-S03501*, 5 March 2021.

⁶⁷ C-S03501 Woodman Point WWTP Sludge Treatment Upgrade 120TDS - Concept Design - Service Agreement.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> • Basis of Design Report. • Operability/Constructability Workshop. • Multi-Assessment Criteria Workshop. • As-constructed 3D Model. • Concept Design Drawings and Report. • SiD (Safety in Design) Report. • Third Party Review Report. • Input to Business Case and/or Works Approval. <p>Review of the <i>Concept Design Report</i> confirms that the outcomes of (for example) the Safety in Design Review, Operability and Constructability Review Workshop and Third-Party Review are documented as appendices to the report.</p> <p>Documentation provided in respect of the Vasse Diversion Drain Upgrade project included:</p> <ul style="list-style-type: none"> • <i>Vasse Diversion Drain; Planning Review 2015</i>⁶⁸ – this report documents a detailed assessment of the catchment hydrology, taking into account the impact of previously constructed flood attenuation basins, and an hydraulic analysis of the diversion drain, a comprehensive risk assessment of the Vasse Diversion Weir and downstream levee banks, and an evaluation of upgrade options to achieve 1% AEP flood security. <p>As a result, three upgrade options including a ‘standards upgrade’, ‘risk reduction upgrade’ and ‘risk reduction staged upgrade’ for the provision of piping and slope protection and 1% AEP flood capacity with freeboard were assessed. The ‘risk reduction upgrade’ was recommended as the preferred option and carried forward into delivery.</p> <ul style="list-style-type: none"> • <i>Vasse Diversion Drain Upgrade; Engineering Summary Report</i>⁶⁹ – this extensive report details the engineering design undertaken for the recommended upgrade option, and details the work to be undertaken in each reach of the drain. <p>These reports demonstrate the robustness of the engineering design work undertaken (where required) to enable the assessment of alternative infrastructure upgrade/development options and to detail the proposed works in preparation for delivery (construction).</p> <p>Water Corporation also provided the following sample documentation to demonstrate that documented engineering design processes had been implemented:</p> <ul style="list-style-type: none"> • <i>Safety in Design Risk Register for the Margaret River WWTP Upgrade</i>⁷⁰ – this demonstrates that the safety in design process involves the identification of hazards and potential consequences, identification and assessment of mitigation measures and the assignment of responsibility and timeline for resolution. Design, construction and commissioning, and operations and maintenance stages of the design life cycle were all assessed. 		

⁶⁸ R2950_Vasse_Diversion_Drain_Planning_Review_2015.pdf.

⁶⁹ R3157_Vasse_Diversion_Drain_Upgrade_Engineering_Summary_Report_Rev_1_-_Issued_4_Aug_2017.pdf.

⁷⁰ CS01153 Margaret River WWTP - 3MLD Upgrade - Safety in Design Risk Register Rev 4 As Constructed.xlsx.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Internal Quality Audit Report – CS02357 Woodman Pt WWTP Upgrade to 180 MLD⁷¹ – this audit found that, although the project was undertaken as an alliance project which differs from the normal design process, it appeared to be well executed to the time of the audit and conformed to the applicable requirement of the documented design process. An observation was made in respect of timely completion of the Design Job Checklist. Design Process Audit Report – CS01249 Balannup PS A Upgrade M&E and PM Keane Rd⁷² – this audit, which addressed Engineering Design process activities 6 (Detailed Design) and 7 (Tender and Construction advice), as well as a desktop audit of activities 1 (Investigation and Advice stages) and 5 (Engineering Design stages) which had been completed under a previous design manager, identified one opportunity for improvement (no nonconformances or observations). <p>In summary, Water Corporation demonstrated that its engineering design process, which has been developed to ensure that projects are developed on the basis of sound engineering and informed business decisions, is effectively implemented.</p>		
2.4	Commissioning tests are documented and completed	4	<p>Summary: Water Corporation demonstrated that it has processes in place to ensure that commissioning tests are undertaken and documented for all new and refurbished assets. Sample documentation in relation to the Margaret River WWTP Upgrade project demonstrated that commissioning tests are documented and completed as required.</p> <p>Process and policy: As noted above, Water Corporation requires that commissioning and acceptance testing of assets is undertaken for all new and refurbished assets, consistent with the requirements of the <i>Asset Commissioning Guideline</i>.⁷³ Commissioning is defined as the process of planning, testing, proving and finally verification that an asset or asset system functions and performs in accordance with specified requirements. The process is initiated with the production of a plan in the Activation phase of the project and finishes when Project Practical Completion is achieved.</p> <p>The <i>Asset Commissioning Guideline</i> outlines a process comprising commissioning planning, supply verification, construction verification, pre-commissioning, equipment commissioning, integration commissioning and performance testing, proof testing and preparation of a commissioning verification report. The requirements for each stage of the commissioning process are detailed, and proof testing requirements for various asset types are identified.</p> <p>Asset commissioning is undertaken to verify that functional and performance requirements of the asset, identified as the requirements baseline, have been met. An approved requirements baseline (statement of the business requirements for a new system or asset), established using a system Requirements Management approach at the start of a new project, clearly identifies the functionality of performance requirements against which the project is assessed.</p>	A	1

⁷¹ CS02357 Woodman Pt WWTP Upgrade to 180 MLD - Audit - Design Mgmt. - 09 May 2017 - Audit no 2017-019.pdf.

⁷² CS01249_Balannup PS A Upgrade M&E & PM Keane Rd - Design Management Audit Report.pdf.

⁷³ Asset Commissioning Guideline.pdf #58540095 28 November 2019.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>The asset commissioning process is one element of the Asset Handover process, which is undertaken in accordance with the <i>Asset Data Handover Guideline</i>.⁷⁴ This process is aimed at ensuring that all project information is captured in the various corporate information systems; however, it also serves to ensure that the required processes, including commissioning, have been completed and documented.</p> <p>The Asset Handover process is managed using the <i>Asset Handover Checklist</i>,⁷⁵ which identifies all documentation /data handover requirements and the project stages at which progressive handover of the information is to occur. In addition to requirements in respect of Occupational Health and Safety, Asset Data, Maintenance Planning, Operations and Maintenance Manuals, Spare Parts, Defects and Warranty Management, Training, Drawings, Decommissioning and Disposal of Assets, Site Security and Fire Processes, Licences and Approvals, SCADA, and Operational Contingency Plans, documentation/data requirements include Commissioning documentation comprising a Commissioning Plan and Commissioning Report.</p> <p>It is therefore apparent that Water Corporation has processes in place to ensure that commissioning tests are undertaken and documented for all new and refurbished assets.</p> <p>Performance: Water Corporation provided copies of the commissioning documentation in respect of the Margaret River WWTP Upgrade project, including the following:</p> <ul style="list-style-type: none"> • <i>Asset Commissioning Plan</i>⁷⁶ – this document details the proposed methodology for commissioning the upgrade works to a fully operational state. It details the commissioning strategy and details the activities to be undertaken during each stage of the commissioning process, which includes: <ul style="list-style-type: none"> ○ Supply and Construction Verification (Inspection & Tests). ○ Pre-commissioning (Dry Commissioning). ○ Performance/Equipment Commissioning. ○ Performance and Reliability Testing (Integration Commissioning/Process Proving Period). <p>Commissioning packages for the purposes of function and performance testing are identified, operational characteristics described, and test requirements nominated. A work procedure for process link-ins, electrical cut-overs and integration of the new work is included, and arrangements for biomass establishment described.</p> <p>Roles and responsibilities are defined, along with details of the commissioning sequence, milestones and timelines. The outcomes of a commissioning risk assessment, including proposed mitigation measures is also presented.</p> <p>This document provides a clear plan for commissioning of the upgraded plant and verifying performance against the approved requirements baseline, which is included as an appendix.</p>		

⁷⁴ Asset Handover Guideline.pdf #58553531 09 June 2021.

⁷⁵ Asset Handover Checklist Template.pdf #58546657 v.8 24 April 2020.

⁷⁶ CS01153-PLN-005-Comm_RevA_20190902.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>A separate <i>Process Performance Test Plan</i>⁷⁷ documented the treatment plant performance criteria and detailed the proposed arrangements for biological process performance testing. It also detailed the proposed sampling and testing regime for the eight week performance period.</p> <ul style="list-style-type: none"> • <i>Process Commissioning Results</i>⁷⁸ – this MS Excel spreadsheet record provides a consolidated record of results of process tests undertaken during the performance testing stage of the commissioning process. Design criteria are identified and test results for the various process steps are recorded. • <i>Commissioning Reports – Asset Commissioning</i>⁷⁹ and <i>Process Commissioning</i>⁸⁰ - these reports detail the results/outcomes of the commissioning process. The <i>Process Commissioning Report</i> (for example) presents and discusses the results in respect of each stage of the treatment process in comparison to the design criteria. It was noted that treated effluent produced during the proving period exceeded all required regulatory conditions, with one (single test result) explainable exception. Plant (oxidation ditch) performance was found to be extremely reliable and robust. Sludge handling equipment was also found to perform above design expectations and proved to be reliable, robust and operator friendly. <p>These commissioning related records, which were identified in the <i>Handover Checklist</i>,⁸¹ demonstrate that the new assets meet the <i>Approved Requirements Baseline</i>, as attached to the <i>Project Delivery Business Case</i>.⁸² Requirements were identified in respect of Performance, Operations and Maintenance, Asset Support, and Local Constraints. For each detailed requirement, the system element to which it relates, the requirement type, an identifier and the rationale for the requirement are documented. The requirements included (for example):</p> <ul style="list-style-type: none"> • Performance – R1: Increase Margaret River Treatment Plant capacity to 3 ML/d; Rationale: Accommodating future flows up to 2032 as per Margaret River Wastewater System WD210 Planning Report June 2010 AquaDoc #3571495. • Operations and Maintenance – R37: Design of control system to allow for site not “manned” 24/7; Rationale: Control system needs to have sufficient automation to not require operators to be on site continuously. • Criticality – R6: Provision of suitable materials to handle the highly corrosive environment; Rationale: Appropriate corrosion control in high H2S areas. • Asset Support: R20: Region input into review of critical spares; Rationale: Ensure appropriate spares are procured. • Local Constraints – R46: The plant must continue to operate during construction; Rationale: To minimise impact on treatment process. 		

⁷⁷ Margaret River WWTP 3ML_d Upgrade (CS01153) - Process Performance Test Plan (April 2018).pdf.

⁷⁸ Copy of Margaret River WWTP 3ML_d Upgrade (CS01153) Process Commissioning Results.xlsx.

⁷⁹ CS01153 - Margaret River WWTP 3MLD Upgrade - Commissioning Report.pdf #589767 07 June 2016.

⁸⁰ Margaret River WWTP 3ML_d Upgrade (CS01153) Process Commissioning Report (April 2020).pdf #95326069.

⁸¹ Asset Handover Checklist Template.pdf #58546657 v.8 24 April 2020.

⁸² CS01153_-_Margaret_River_WWTP_Upgrade_to_3_MLD_-_Project_Delivery_Business_Case.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			In summary, sample documentation in relation to the Margaret River WWTP Upgrade project demonstrated that commissioning tests are documented and completed for new assets/infrastructure created or acquired by Water Corporation.		
2.5	Ongoing legal / environmental / safety obligations of the asset owner are assigned and understood	4	<p>Summary:</p> <p>Water Corporation demonstrated that it has in place robust processes/procedures for ensuring that legal, environmental and safety obligations as they apply to the creation of assets are effectively managed (i.e. they are assigned and understood). It has an external approvals process that is used to manage all the obligations associated with new assets. The evidence reviewed demonstrated that Water Corporation has effectively implemented its documented processes.</p> <p>Process and policy:</p> <p>Water Corporation advised that legal, environmental and safety obligations as they apply to the assets are managed using its External Approvals process. This process is managed by an External Approvals team, which works in conjunction with planning and delivery teams as the project progresses through the asset creation and acquisition process.</p> <p>The <i>External Approvals Manual</i>⁸³ identifies and explains the various external approvals that may be required and provides advice regarding timing and notification of works proposals in the asset creation stages. It includes a summary of the extensive range of approvals that may be required, identifying for each external agency the approval or consultation that is required, the Water Corporation relationship manager, the primary contact, the applicable Act or Regulation, notification/approval timing requirements and references to relevant information/documentation. More specific guidance in respect of engagement with each of the agencies is also provided.</p> <p>The <i>External Approvals Manual</i> also describes the interaction between the external approvals and asset acquisition processes, which is also shown in the <i>Asset Acquisition Process – Overview of External Approvals Activities</i>⁸⁴ diagram. These identify the following:</p> <ul style="list-style-type: none"> • External approval activity is undertaken principally during the Asset Investment Planning and Development phases of the asset creation process; approvals are obtained during the Engineering phase. • Early initiation of the external approvals process is required to manage risk through all stages of project development. • Activities to be undertaken during the Asset Investment Planning phase include constraints mapping, preparation of a preliminary External Approvals Tracking Sheet, and identification of requirements in respect of external surveys. This information is presented in support of development business cases. • Project information collected in the External Approvals Tracking Sheet is used to inform planning and risk management during the Select and Program Formulation and Development phases. • Formal approvals are obtained during the Engineering phase, noting that the outcomes of the approval process may impact project scope. 	A	1

⁸³ External Approvals Manual; External Approvals for Engineering Infrastructure, #58806596 March 2021.

⁸⁴ Asset Acquisition Process - External Approvals Overview (slide for approval SMEs).pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Any approval conditions are to be managed and implemented through the Engineering and Delivery phases, and where the conditions are ongoing should be captured within the relevant corporate systems during the handover phase. <p>Constraints mapping can be recorded using the <i>Constraints Mapping and External Approval Advice for Planning Phase Template</i>,⁸⁵ which is required to be submitted in support of Development business cases. This template identifies thirteen potential constraint categories, including (for example) 'Existing infrastructure and assets (including utilities)', 'State Environmental Matters' and 'Native Title', and identifies potential constraints/opportunities that are to be identified/assessed by desktop mapping.</p> <p>The <i>External Approvals Tracking Spreadsheet</i>⁸⁶ reflects the summary of approval requirements by agency presented in the <i>External Approvals Manual</i> and has provision/provides guidance in respect of comments, consequences of not obtaining the required approvals, risk mitigation, issue ownership and approval status. This is the primary instrument for managing the external approvals for a project; it is a requisite support document for both the Development (draft) and Investment business cases.</p> <p>It is noted (from the Revision Record included in the document) that the <i>External Approvals Manual</i> is regularly updated, with changes generally reflecting updates to external agency requirements (policy, guidelines, etc.). The <i>Manual</i> is updated in accordance with the <i>External Approvals Manual Work Instruction</i>,⁸⁷ which details requirements in respect of justification/traceability of any change.</p> <p>In summary, Water Corporation has in place robust processes/procedures for ensuring that legal, environmental and safety obligations as they apply to the creation of assets are effectively managed (i.e. they are assigned and understood).</p> <p>Performance:</p> <p>Referring to the business case documentation that was discussed in respect of Criterion 2.1 reveals that in each case the required <i>External Approvals Tracking Spreadsheet</i> had been provided in support of both Development and Investment business cases as required. For example:</p> <ul style="list-style-type: none"> Scoping Business Case for MC Dedari 32 ML Storage⁸⁸ – applicable external requirements included Ministerial authorisation of Major Works; obligations in respect of contaminated sites; Worksafe obligations in respect of asbestos; notification of service providers (in this case Western Power); and engagement with external stakeholders. Issues in respect of which further investigation/consultation was required (unsure of requirements) included obligations in respect of Water Allocation Licences; Native Title; public water supplies and poisons permits (Department of Health); dangerous goods; and tilt-up construction (Worksafe). Project Delivery Business Case for the Margaret River WWTP Upgrade⁸⁹ – applicable external requirements included Ministerial authorisation of 		

⁸⁵ Template - Constraints Mapping and External Approval Advice for Planning Phase_ Development Business Case.pdf.

⁸⁶ Template - External Approvals Tracking Spreadsheet (13963566).pdf.

⁸⁷ External Approvals Manual Work Instruction.pdf.

⁸⁸ C-W02188_-_MC_Dedari_32ML_Storage_-_Project_Scoping_Business_Case.pdf.

⁸⁹ CS01153_-_Margaret_River_WWTP_Upgrade_to_3_MLD_-_Project_Delivery_Business_Case.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Major Works and for securing land; Department of Environment Regulation Works Approval and Licensing; notification of the Department of Health in respect of the proposed wastewater works; obligations in respect of Native Title; approval of works on Crown Land; notification of service providers; and engagement with external stakeholders.</p> <p>Additional evidence of process implementation included:</p> <ul style="list-style-type: none"> Constraint Mapping and EA advice for the Kwinana Brownell Crescent Wastewater Pumping Station Project⁹⁰ – this advice, which was provided in email format, addressed the various requirements identified in the Constraints Mapping and External Approval Advice for Planning Phase Template. Twelve recommendations were made by the External Approvals Planner that completed the assessment. <i>External Approvals Tracking Spreadsheet for Busselton Water Corporation Bridge 56 Replacement</i>⁹¹ – this spreadsheet (which was provided in colour) clearly showed project specific annotations and colour coded “Approval Complete” cells (green shading to indicate complete; yellow shading where action was ongoing). Photographic records and plans (as for other examples) were attached. <p>The evidence reviewed demonstrated that Water Corporation has effectively implemented its documented processes in respect of the management of its legal, legal, environmental and safety obligations as they apply to the creation of assets.</p>		
3	Asset disposal Asset disposal is the consideration of alternatives for the disposal of surplus, obsolete, under-performing or unserviceable assets.			A	1
3.1	Under-utilised and under-performing assets are identified as part of a regular systematic review process	4	<p>Summary:</p> <p>On the basis of the evidence reviewed, it is apparent that Water Corporation has systematic review processes for monitoring asset condition and performance, which ensures that under-performing or under-utilised assets are proactively identified. Water Corporation’s systems also provide response mechanisms when asset performance or utilisation issues are identified reactively.</p> <p>Furthermore, it is apparent that its asset monitoring processes are effectively implemented.</p> <p>Process and policy:</p> <p>Asset performance and utilisation is systematically monitored and reviewed as part of the <i>Plan Assets Framework</i>,⁹² and more specifically the Asset Investment Planning process. Asset monitoring, the first phase of the asset investment planning process, comprises asset performance monitoring, management of asset condition, management of asset deficiencies, planning/implementation of asset investigations, and environmental scans (which identifies external factors that affect management of the asset portfolio; this is discussed in detail in respect of asset management process 4).</p>	A	1

⁹⁰ 7. CS02008 Kwinana Brownell Cr PS Storage - EA Maps and Advice.pdf.

⁹¹ CD00177 Busselton WC Bridge 56 Replacement - External Approvals Tracking Spreadsheet.pdf.

⁹² Plan Assets Framework #58584892 v.17/11/2020.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Asset performance is monitored in accordance with the <i>Monitor Asset Performance Guideline</i>.⁹³ This guideline details the monitoring processes that Water Corporation implements to proactively identify asset deficiencies which, if not addressed, could potentially lead to unacceptable risk to maintaining agreed levels of service. The monitoring process involves: assigning a lifecycle management strategy; completing an asset criticality assessment and determining the level of performance monitoring that is required; identifying/developing the appropriate monitoring program (including the identification of funding/budget requirements); implementing the monitoring program and assessing performance against pre-defined triggers; and where a deficiency (or risk) is identified, preparation of an asset deficiency report.</p> <p>Asset condition is monitored/assessed in accordance with the <i>Manage Asset Condition Guideline</i>.⁹⁴ This guideline details a management process which involves:</p> <ul style="list-style-type: none"> • Identification of condition assessment methodologies, based principally on asset class. • Identification of candidates for condition assessment. This process is informed by factors including (for example) observations during periodic operational inspection; changes to system servicing requirements; asset criticality; asset life modelling; and asset failure. • Risk based prioritisation of assets identified for condition assessment (once the requirement is triggered). • Scoping and planning of the condition assessment work. This is typically initially undertaken at a high level for planning and budgeting purposes, and in more detail prior to implementation (effectively a 'Delivery Business Case'). • Finalisation of the monitoring program and approval of funding (annually). • Implementation of the approved asset condition assessment program for each financial year. Ad hoc and/or opportunistic condition assessments can be undertaken where identified necessary/appropriate; resultant adjustments to the annual assessment program are subject to risk/benefit based assessment. • Incorporation of the condition assessment data into the overall planning process, specifically via the deficiency management process. • Relevant stakeholders are engaged throughout the process. <p>The asset performance and condition monitoring processes outlined above are implemented proactively. Asset deficiencies can also be identified reactively by field operations personnel, principally as a result of asset failure but also from observed performance and/or condition.</p> <p>Once an actual or potential deficiency (issue/risk/opportunity) has been identified, it is managed in accordance with the <i>Manage Asset Deficiency Guideline</i>.⁹⁵ This guideline details how the deficiency is recorded and</p>		

⁹³ Monitor Asset Performance Guideline # 58582513 v.29/06/2021.

⁹⁴ Manage Asset Condition Guideline #8717283 v.11/09/2018.

⁹⁵ Manage Asset Deficiency Guideline #17958113 v.21/12/2017.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>managed, and how it is documented for further assessment in the Asset Investigation Process. The process involves:</p> <ul style="list-style-type: none"> For deficiencies identified through performance monitoring (proactive), and deficiencies identified through asset failure (reactive) that cannot be resolved by Field Operations, an Asset Deficiency Report is prepared. Such report includes details of the deficient asset; details of the deficiency (description, photographs, sketches, etc.); an assessment of the associated risks; possible corrective actions (if apparent); an estimate of the likely costs to resolve; and any other relevant information. Asset Deficiency Reports are reviewed on the basis of risk to assess the need for, and prioritisation of, further investigation. A 'filtering' process is used to identify issues that can be addressed/closed out without the need for engagement through the prioritisation process, thereby relieving the engagement of prioritisation and investigation resources. Issues identified for further investigation are captured in an Asset Deficiency Register. They are then prioritised for investigation using a collaborative, risk-based process, which is conducted monthly across all regions. The status of deficiency investigations and outcomes is monitored to ensure that actions are captured and implemented through planned investment, and deficiencies are 'closed out' once all actions are complete. <p>On the basis of the evidence reviewed, it is apparent that Water Corporation has systematic review processes for monitoring asset condition and performance, which ensures that under-performing or under-utilised assets are proactively identified. Water Corporation's systems also provide response mechanisms when asset performance or utilisation issues are identified reactively (for example, in the case of an asset failure).</p> <p>The next phase of the Asset Investment Planning/Asset Monitoring process as it relates to identified asset deficiencies is the planning and implementation of an Asset Investigation, which is discussed in respect of Criterion 3.2.</p> <p>Performance:</p> <p>As an example of performance, Water Corporation provided a copy of a condition assessment report in respect of the Laverton town water supply bore 3/03. This report, <i>Laverton Bore 3/03 Treatment 2020 for Water Corporation; December, 2020</i>,⁹⁶ was prepared by an external service provider in conjunction with undertaking an iron bacteria treatment. It included details of the condition of the bore facility, including details such as cracking in the concrete surround; unsealed wiring conduits; and the existence of a moulded bracket that causes difficulties during pump removal and may cause catastrophic damage to the bore casing. Removal of the moulded bracket or replacement of the pump was recommended.</p> <p>The report also discussed the need for purging to remove sediment on pump start-up, and suggested modifications (physical and operational) that may simplify and improve operational performance.</p>		

⁹⁶ Laverton Bore 3/03 Chemical Treatment – 2020 Global Groundwater Ref:\\1437gWCorpLaverton3_03Treatment.docx.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>An extract from the online <i>Asset Deficiency Register</i> provided a sample of entries. These included (for example):⁹⁷</p> <ul style="list-style-type: none"> Hester Dam (Functional location W0045837) – “A section on the right side of Hester Dam wall is saturated and some erosion has occurred.” Robin Street, Eaton WTP (Functional location W0045236) – “Eaton WTP was built in the 1950’s and the current facilities are inadequate for current practices. Operator has no Lab or Work area to perform testing as required by the Corporation, limited storage, no lunch facilities for operator, maintenance and civil staff and toilet facilities are very poor.” Bridgetown WWTP 2 (Functional location S8022027) – issues in relation to the impact of rainfall on sludge drying beds which results in large supernatant flows with high algae loading, which impacts the biological processes of the plant. <p>In respect of under-utilised assets, Water Corporation advised that these can be identified and managed in a variety of ways, for example:</p> <ul style="list-style-type: none"> Optimisation of system operation may result in the identification and subsequent removal of assets that are no longer required to meet performance /level of service objectives (e.g. Karratha water supply system). In the case of a water storage tank that is assessed to be oversized (demand has reduced in comparison to original design assumptions): <ul style="list-style-type: none"> operating levels can be adjusted to ensure that turnover parameters for water quality purposes are met; or the storage can be replaced with a smaller tank. <p>Water Corporation also advised that its online Performance Dashboards, which reflect real-time monitoring via SCADA (for example) provide an initial indication of performance deficiencies.</p> <p>On the basis of the evidence reviewed and discussions with Water Corporation personnel, it is apparent that its asset monitoring processes are effectively implemented.</p>		
3.2	The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken	4	<p>Summary:</p> <p>Water Corporation has documented arrangements in place that should facilitate robust examination of under-utilisation or poor performance of assets and ensure that appropriate corrective action, including disposal when found appropriate, is implemented. A review of sample documentation in relation to flow metering in the Bremer Bay Water Supply system demonstrated that the asset investigation process had been appropriately implemented in respect of identified flow meter inaccuracies, and that the recommended actions (replacement of meters confirmed to be recording inaccurately) had been completed.</p> <p>Process and Policy:</p> <p>As noted in respect of Criterion 3.1, identification of an asset deficiency, risk, or improvement opportunity will result in the preparation of an Asset Deficiency Report. Following an initial ‘filtering’ process, issues are captured in an <i>Asset Deficiency Register</i>⁹⁸ and then prioritised for investigation using a collaborative, risk-based process.</p>	A	1

⁹⁷ Asset Deficiency Register screen shot.

⁹⁸ Asset Deficiency Register screen shot.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Asset investigations in respect of prioritised deficiencies (issues/risk/opportunities) are undertaken in accordance with the <i>Plan Asset Investigation Guideline</i>.⁹⁹ This guideline describes Water Corporation's approach to the investigation and resolution of asset failures or emerging asset risks to ensure that asset management objectives are achieved.</p> <p>Asset investigations fall into one of three categories:</p> <ul style="list-style-type: none"> Reactive Issue/Risk Identification and Investigation – undertaken by Field Operations, this approach typically results in a 'like for like' replacement aimed at maintaining 'business as usual' functionality. Where the issue is not readily resolved, it is escalated to Operations Engineering using an Asset Deficiency Report for review and further action. Field Investigation – undertaken by Operations Engineering, these investigations typically address more complex issues, which can be escalated to the Asset Performance Technical Advisor if an appropriate solution cannot be identified. Asset Planning Investigation – undertaken by Asset Investment Planning, these investigations consider wider planning objectives that impact an asset replacement. These investigations are principally initiated in response to performance and/or condition monitoring activities (i.e. proactively); however, may also be initiated in response to an actual failure (reactively). <p>All investigations are undertaken in response to available asset performance and condition information and are prioritised on the basis of risk/benefit in respect of meeting Water Corporation's asset management objectives /maintaining levels of service. Accordingly, consideration is given to information including:</p> <ul style="list-style-type: none"> Asset physical condition, which may be based on observation or a surrogate measure such as age if condition cannot be readily assessed. Demand data and associated trends (growth or decline). Asset reliability/operating performance (including, for example, failure data, flow yield, overflow frequency). Levels of service data including, for example, water quality data, system flow and pressure, safety reporting data). <p>Investigations typically include the following (tailored to the specific case):</p> <ul style="list-style-type: none"> Understanding of the issue/risk and work done to date. Collection, rationalisation and validation of performance data. Validation of asset investigation criteria (confirmation of drivers). Liaison/engagement with internal stakeholders as required. Identification of constraints and opportunities. Identification of solutions. Development of an implementation plan, which should address need, scope, timing, cost, triggers and risk). Review/updating of risk assessments as a result of investigation decisions. 		

⁹⁹ Plan Asset Investigation Guideline #58582518 v.29/06/2021.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>All Field and Asset Planning Investigations are documented in an Asset Investigation Report, which is required to include details in respect of: issue/risk description; background; need; evaluation to date; decisions (in respect of investment/operational issues/acceptance of higher risk); relevant contacts; and implementation priority.</p> <p>Implementation of these arrangements should facilitate robust examination of under-utilisation or poor performance of assets and ensure that appropriate corrective action, including disposal when found appropriate, is implemented.</p> <p>Performance:</p> <p>As an example of implementation, Water Corporation provided a copy of the <i>Asset Investigation Report; Bremer Bay Water Supply; Network Performance Analysis</i>.¹⁰⁰ In this case, discrepancies in metering data, including that used for groundwater extraction compliance monitoring, was identified as an issue for investigation. Historical records were reviewed to quantify the discrepancies and potential causes identified and discussed. Comparative flow testing of all meters was proposed and undertaken; this revealed meter errors of +11%, +37% and +6.2%, all in excess of the acceptable limit of $\pm 5\%$, for three of four bore extraction meters. Replacement of the three bore meters was recommended and implemented as 'urgent work – regulatory requirement' during 2019/20.</p> <p>This report demonstrated that the asset investigation process had been appropriately implemented in respect of this identified issue/deficiency.</p> <p>A <i>Project Administration Checklist</i>¹⁰¹ for the meter replacement project was also provided. This included a summary of the project background, scope of works, and additional details that provide additional project context. Other asset creation processes, including cost estimation, project administration, delivery schedule, delivery business case, risk, and site safety, financial aspects, asset recording, and project close-out are recorded and/or referenced as appropriate.</p> <p>This example demonstrated the follow-up implementation of recommendations arising from a detailed asset investigation.</p> <p>Water Corporation also provided an example of an identified asset deficiency and associated investigation report that triggered a change in maintenance planning (as opposed to a capital (new/replacement/upgraded asset) solution). An email-based report <i>Haz-143820 Structurally unsafe radio communication towers</i>¹⁰² identified that two communication towers in the North West Region had been found to be structurally unsafe. Reference to maintenance records revealed that no planned maintenance had been undertaken on the towers. Actions implemented as a result of the identified deficiency and associated investigation included replacement of the two deficient towers; review and update of the relevant maintenance strategies; and communication of the changes in maintenance strategy throughout the Corporation.</p>		
3.3	Disposal alternatives are evaluated	5	<p>Summary:</p> <p>Water Corporation has in place documented standards and guidelines that require robust planning in respect of the disposal of assets that are no longer</p>	A	1

¹⁰⁰ Bremer Bay Water Supply; Network Performance Analysis, PM#17664350.v1 v19/09/2017.

¹⁰¹ Project Administration Checklist _ \$50k CW24701 Bremer Bay Bore Meter Renewal #82081396.

¹⁰² Haz-143820 Structurally unsafe radio communication towers.

		<p>required; this includes the need for the evaluation of disposal options. Review of a sample Decommissioning Plan demonstrated that decommissioning /disposal options are appropriately addressed consistent with procedural guidance.</p> <p>Process and Policy:</p> <p>The <i>Decommission and Dispose Assets Guideline</i>¹⁰³ describes the process and activities necessary to ensure that assets are properly decommissioned and disposed of. It also describes the processes necessary to ensure that the relevant corporate systems are updated in a timely manner.</p> <p>A decision to decommission and/or dispose of an asset, either partially or totally, is based on assessment of a number of criteria including asset condition, asset performance, growth requirements, maintenance strategy, statutory requirements, required levels of service, and Corporation policy and strategy. The evaluation of these criteria would typically be documented in an Asset Investigation Report, Planning Report, Strategic Plan, or Appropriation Request, and would potentially result in disposal, decommissioning only, or partial decommissioning of an asset no longer required to meet level of service objectives.</p> <p>The <i>Decommission and Dispose Assets Guideline</i> requires that, once an asset is identified for disposal, typically in conjunction with a broader capital project, a Decommissioning and Disposal Plan must be prepared. Such report is required to fully detail the scope of the required decommissioning works, which may involve decommissioning and disposal as part of a capital project, decommissioning of an asset for future use or disposal, partial decommissioning, or contingency use of an asset before planned disposal.</p> <p>The <i>Disposals Standard</i>¹⁰⁴ requires the evaluation of disposal options by considering the costs and benefits of each option, taking into account the requirements of/reasons for the disposal. Factors to be considered in determining the preferred disposal options include (for example):</p> <ul style="list-style-type: none"> • The type, condition and location of the asset (goods or materials). • Whether there have been offers from other potential users. • The nature of the recipient market. • Time and resource issues. • The costs and benefits provided by each disposal option. <p>Review of the relevant standard and guideline reveals that requirements for robust planning in respect of the disposal of assets that are no longer required, including the need for the evaluation of disposal options, is well documented.</p> <p>Performance:</p> <p>To demonstrate implementation, Water Corporation provided the report <i>Waroona WWTP Upgrade (CS03605) Asset Decommissioning Plan; Technical Advice</i>.¹⁰⁵ Decommissioning of assets including a woodlot, effluent channel (swale), waste stabilisation ponds, and an energy dissipation tower was required following upgrade of the wastewater treatment facility.</p> <p>Three options for the decommissioning scope (in effect disposal of the assets) were assessed; it was noted that a further two options had been eliminated following stakeholder engagement which identified that desired objectives would not be met. These were:</p> <ul style="list-style-type: none"> • Isolate inessential assets – this would require long-term ongoing maintenance of the ponds to avoid potential overflow. • Reuse the ponds – the ponds are not required as part of the upgraded facility and site safety issues would remain if retained. Unknown condition of the pond liners and the desire to release the land (after reinstatement) for alternative future use rendered this option unviable. <p>The three options assessed in detail were:</p> <ul style="list-style-type: none"> • Do nothing (Option 1) – under this option, waste soils would not be removed from site, in which case a biohazard would remain. Current and 		
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Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>further long-term maintenance would be required to avoid potential pond overflows. This option did not meet the agreed objectives.</p> <ul style="list-style-type: none"> Partial reinstatement (Option 2) – this option involved decommissioning of the woodlot, swale and ponds such that they have been cleared and emptied. Current maintenance activity would need to continue. This option did not meet the agreed objective in that the land would not be suitable for use (leasing or for future upgrades). Full reinstatement (Option 3) – this option involved decommissioning of the woodlot, swale and ponds such that they have been cleared and emptied and the area levelled (reinstated). This option did meet the agreed objective in that the land would be suitable for further use. <p>In each case, safety compliance and costs were assessed. Option 3 was adopted on the basis that it met the agreed objective whilst minimising risks whilst undertaking ongoing operation and maintenance activities. Although this option attracted a higher capital cost, estimated maintenance costs were the same as for Option 2.</p> <p>This example demonstrates that decommissioning/disposal options are appropriately addressed consistent with policy guidance.</p>		
3.4	There is a replacement strategy for assets	4	<p>Summary:</p> <p>Water Corporation’s process documentation requires that the strategic direction for each asset class, including the renewal of assets, is documented in its Asset Class Strategy, with more specific detail in respect of the asset renewal strategy for each asset class to be detailed in the relevant Asset Class Management Plan. Review of samples of both document types demonstrates that Water Corporation has in place and is effectively implementing strategies for the planned renewal of its assets.</p> <p>Process and policy:</p> <p>Water Corporation advised that its replacement strategy for assets is documented in the Asset Class Management Plans that cover all the major asset classes in its portfolio. This is consistent with the arrangements documented in the <i>Asset Management Strategy 2018-2038</i>,¹⁰⁶ which references:</p> <ul style="list-style-type: none"> Asset Class Strategies – which outline contextual information; an overview of the asset inventory; key characteristics of the cohort (such as age, material, condition); and target, actual and predicted performance. They also provide decision criteria and planning triggers to inform more detailed asset management plans which outline the specific renewal, maintenance and investigation activities required to deliver the asset class strategy. Asset Class Management Plans – which document the specific activities (renewal, maintenance, and investigation), resources and time scales required to achieve the organisation’s asset management objectives for the corresponding strategy. 	A	1

¹⁰³ Decommission & Dispose Assets Guideline #2492016 v.24/04/2018.

¹⁰⁴ S087 Disposals Standard #58539177 v.19/03/2021

¹⁰⁵ Waroona WWTP Upgrade (CS03605) Asset Decommissioning Plan; Technical Advice #103322852 v.26/02/2021

¹⁰⁶ Asset Management Strategy 2018-2038 #49235063 April 2018

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>The <i>Asset Class Strategy Guideline</i>¹⁰⁷ requires that the proposed ‘strategic direction’ for the asset class is outlined in the strategy document. This is to detail the overarching asset management approach to the asset class, including a lifecycle plan that addresses maintenance, operations, renewals and disposal.</p> <p>The <i>Water Corporation ACMP [Asset Class Management Plan] Guideline</i>¹⁰⁸ indicates that: “An Asset Class Management Plan specifies the investment, resources, responsibilities and timescales for addressing the risks and priorities identified in the ACS [Asset Class Strategy]. The Plan thereby delivers the asset classes’ contribution to WC [Water Corporation] meeting its asset management objectives and Customer Levels of Service”. More simply, an Asset Class Management Plan describes ‘how’ the Asset Class Strategy is to be implemented.</p> <p>In respect of replacement strategy, an Asset Class Management Plan is required to include a lifecycle plan which includes details of the: “... 10 year ACA [asset condition assessment], ... refurbishment/overhauls, renewals and disposal investment/intervention TOTEX [total expenditure] forecast”. Supporting information is to include available data; at least three intervention scenarios (do-nothing, constrained and unconstrained); discussion of insights, scenario gaps and maintenance records; key improvement highlights; capital forecast (new and renewal); and consideration of non-asset options.</p> <p>In summary, process documentation requires that the strategic direction for each asset class, including the renewal of assets, is documented in its Asset Class Strategy. More specific detail in respect of the asset renewal strategy for each asset class is to be detailed in the relevant Asset Class Management Plan.</p> <p>Performance:</p> <p>As evidence of implementation, Water Corporation provided copies of:</p> <ul style="list-style-type: none"> Water Storage Asset Class Strategy¹⁰⁹ – the ‘Strategic Direction’ for this asset class indicates that Water Corporation will manage its water storage assets to ensure continuity and safety of supply with a focus on managing high priority levels of service. This will be achieved by implementing actions including (amongst others): “Prioritise investment to investigate condition and proactively renew storages with extreme and high risk of customer interruption”. Bores and Borefields Asset Class Strategy¹¹⁰ – the ‘Strategic Direction’ for this asset class indicates that Water Corporation will manage its bores and borefields infrastructure in a safe, reliable and sustainable manner with a focus on managing high priority levels of service. This will be achieved by implementing actions including (amongst others): <ul style="list-style-type: none"> “- Determine risk ratings for the 218 bores which have passed their nominal life (based on the impact of the failure and whether they are part of critical ballfields). Prioritise appropriate investment plans for high risks, assess asset condition and monitor performance for the moderate risks and run-to-failure for the low-risk bores. 		

¹⁰⁷ Asset Class Strategy Guideline #15763214 02 August 2018

¹⁰⁸ Water Corporation ACMP Guideline v7 Jul 2020.pdf.

¹⁰⁹ Water Storage Asset Class Strategy.pdf.

¹¹⁰ Bores and Borefields Asset Class Strategy #19053539.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> - Prioritise investment in behind-the-meter renewables for all new and upgraded assets”. • <i>Water Storage Asset Class Management Plan</i>¹¹¹ – outlines a plan for the lifecycle management of the asset class, which considers operations, maintenance, and renewals. Renewal planning is based on risk-based modelling of interventions under ‘do-nothing’ and ‘constrained’ and ‘unconstrained’ investment scenarios. The proposed investment plan is based on the ‘constrained’ scenario; it provides for 45 renewal projects over the 5-year period commencing FY2020. Several initiatives in respect of management of the renewal plan are also identified. • <i>Bores and Borefields Asset Class Management Plan</i>¹¹² – a plan for the lifecycle management of the asset class is similarly outlined. The results of risk-based modelling of interventions under ‘do-nothing’ and ‘constrained’ and ‘unconstrained’ investment scenarios are again presented. The proposed investment plan, which is based on the ‘constrained’ investment scenario, provides for 29 renewal projects over the 10-year period from FY2020. Renewal plan improvement initiatives are again identified. <p>These examples demonstrate that Water Corporation has in place and is effectively implementing strategies for the planned renewal of its assets.</p>		
4	Environmental analysis Environmental analysis examines the asset management system environment and assesses all external factors affecting the asset management system			A	1
4.1	Opportunities and threats in the asset management system environment are assessed	4	<p>Summary: The assessment of opportunities and threats includes consideration of both internal and external issues. Strategy, Policy & Analytics and Asset Strategy Business Units are actively involved in the development of the corporate objectives and Line of Sight Framework, engaging stakeholders widely across the business. Environment scanning via Board and Executive strategy days, facilitated by external consultants. The documented process and performance were found to be robust.</p> <p>Process and Policy: <i>External Environmental Scanning Guideline</i>¹¹³ specifies how annual environmental scans are undertaken to gather information on the external environment to understand macro level factors that may impact Water Corporation delivering upon its purpose. The <i>Guideline</i> identifies the sources that are used to gather data, using the PESTE framework (Political, Economic, Social, Technology, Environment). The environmental scan work feeds into the annual business strategy in reviewing the corporate objectives.¹¹⁴ This then passes down the chain through to the <i>Asset Management Strategy</i>, levels of service and targets.¹¹⁵</p> <p>Performance: An <i>external scan</i> document was provided for 2019;¹¹⁶ this summarised the PESTE scan and reviewed mega trends from a number of external sources and</p>	A	1

¹¹¹ ACMP - Water Storage Facility - signed version.pdf.

¹¹² B&BF_Asset_Class_Management_Plan_-_Signed_Version.pdf.

¹¹³ External Environmental Scanning Guideline # 19386972.

¹¹⁴ Strategic Planning Process #113553287.

¹¹⁵ Line of Sight Framework #74631917.

¹¹⁶ External Scan July 2019.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			summarised in detail those that may impact upon Water Corporation's business. Scenario analysis has been undertaken using five key uncertainties as anchors, Supply/Demand, Tech/Competition, Post-COVID/Geopolitics, Social/Environment and External Cost Pressures. Analysis of these scenario dimensions has been undertaken and is summarised in the <i>Expected Scenario</i> ¹¹⁷ document. Extreme scenarios have then been developed, to cover a range of possibilities, and are documented. ¹¹⁸		
4.2	Performance standards (availability of service, capacity, continuity, emergency response, etc.) are measured and achieved	4	<p>Summary: An assessment of overall conformance with the levels of service targets in 2018/19 identified only 37% of targets were being met. It is for this reason the performance rate of 2 has been applied. This is considered to be a low level of conformance and, in addition, it is lower than the previous assessment of 41% achievement in 2017/18. Achieving conformance is compounded by performance being measured against future targets (i.e. a target to be achieved in 2030).</p> <p>Process and Policy: It was noted that in Table 12 of the <i>Asset Management Strategy</i> the Water Asset Portfolio level of service <i>Our customers are supplied with potable water which is safe and high quality</i> the target was "Not defined", however, in the <i>Line of Sight Framework</i> the target was "Zero by 2021". There appears to be a misalignment between the documents, which could lead to confusion. The asset class strategies contain the levels of service, and these are implemented on an asset class basis through the Asset Class Management Plans.¹¹⁹ The <i>Water Storage Asset Class Strategy</i>¹²⁰ and the <i>Bores & Borefields Asset Class Strategy</i>¹²¹ were provided as evidence.</p> <p>Performance: Performance against the levels of service was last reviewed for the 2018/19 financial year.¹²² Each of the measures were assessed against the targets for conformance and the trend in the measure was also identified. Overall, there was a compliance of 37% with the levels of service (as assessed by Water Corporation). This was a decline in the percentage of levels of service meeting targets from 41% in 2017/18. Actions to improve conformance with the levels of service are guided by the level of service priorities and considered in the Strategic Asset Investment Plans.</p>	A	2

¹¹⁷ Expected Scenario #106482833.

¹¹⁸ End-point scenarios, signposts and triggers.

¹¹⁹ Water Storage Facility Asset Class Management Plan 2019-28 #8069647.

¹²⁰ Water Storage Asset Class Strategy.

¹²¹ Bores & Borefields Asset Class Strategy.

¹²² Asset Management Strategy Levels of Service Performance: 2018-19 Report #80166075.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
4.3	Compliance with statutory and regulatory requirements	2	<p>Summary: In the <i>2018 Asset Management System Effectiveness Review</i> this criterion was given an A2 grading, due to the number of non-compliances with legal requirements. There were 43 actual or potential breaches over the review period. This grade has been maintained as the level of minor non-compliances appears not to be trending down, based on the small sample of information provided in the Breach Register extract.</p> <p>Process and Policy: Water Corporation ensures that it remains aware of current statutory and regulatory requirements through the maintenance of a <i>Legislation Register</i>¹²³ which is reviewed annually, and also through periodic external scans and regular and ongoing stakeholder engagement with regulatory bodies as per the regulator engagement plans. The register was viewed in the interviews. The <i>Water Source Compliance Framework</i>¹²⁴ and <i>Water Source Compliance – Procedure – Assurance Process</i>¹²⁵ are in place to ensure compliance with the abstraction of water from surface and bore sources. It details the roles and responsibilities in relation to compliance and legislative and regulatory requirements.</p> <p>Water Service Licence obligations are tracked through a register¹²⁶ which details the responsibility for compliance with each obligation.</p> <p>Performance: <i>Regulatory compliance</i> Breaches of regulatory requirements are reported to the Board Audit and Risk Committee, as identified in the <i>Corporate Compliance Breach Reporting Framework</i>.¹²⁷ External reporting requirements are in the <i>Legislation Register</i>. Breaches with regulatory requirements are recorded in the <i>Breach Register</i>.¹²⁸ Extracts of the <i>Breach Register</i> for:</p> <ul style="list-style-type: none"> • 2018/19 to 2019/20¹²⁹ – identified 29 breaches dating from 12 July 2018 to 7 May 2020 relating to environment, dangerous goods, water source and electricity. • 2020/21¹³⁰ – identified 14 breaches dating from 2 September 2020 to 14 April 2021 relating to occupational health and safety, environmental protection and dangerous goods. <p>All of the non-compliances were minor in nature; however, it is noted that:</p> <ul style="list-style-type: none"> • Many of the breaches appear to have been identified by the relevant regulatory authority, i.e. they have not been self-identified. • There have been repetitive breaches where (for example) there has been unauthorised taking of water. • A number of breaches from as early as July 2018 are shown as remaining ‘open’ and the status of some remains blank (i.e. status not identified). <p><i>Compliance with the licence</i> The 2020 Operational Audit Report¹³¹ was provided to demonstrate compliance with licence performance standards. There were some reporting issues identified with potable water pressure and not all performance data was sent to irrigators in the 2018/19 year. However, both issues were reported to be rectified at the time.</p> <p>Compliance with the licence is also reported annually to the ERA.¹³²</p>	A	2

¹²³ Extract from the Legislation Register (Water Services Act and Regulations).

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
4.4	Service standard (customer service levels etc) are measured and achieved.	5	<p>Summary: Customer service standards are measured and reported to the ERA annually through the compliance reporting process. In the 2019/20 reporting year, Water Corporation reported non-compliances in relation to nine of the customer service standards. There were nine requirements not compliance with in the 2019-20 reporting period, however, these were minor in nature.</p> <p>Process and Policy: Water Corporation has a <i>Support Customer Contacts Policy</i>¹³³ that commits to providing timely, meaningful and consistent responses to all customer contacts. In addition, there is a <i>Customer Complaints Policy</i>,¹³⁴ which sets out the framework to respect customers and take complaints in a positive way. Customer Service Standards are detailed in the <i>Water Service Code of Conduct (Customer Service Standards) 2018</i>. There are a number of requirements for licensees under the following parts:</p> <ul style="list-style-type: none"> • Connection of water services to land • Billing for water services • Payment for water services • Restricting the flow of water • Faults, emergencies and interruptions affecting water services • Complaints about water • Information communication services • Requirements for supply of water to persons with special requirements or needs <p>Water Corporation reports compliance against the Code as part of the annual compliance report to ERA. This report is prepared following the <i>Annual ERA Compliance Report Work Instruction</i>.¹³⁵ This report only reports on exception.</p> <p>Performance The <i>2019-20 ERA Compliance Report</i>¹³⁶ was provided as evidence. The following Code of Conduct requirements were not complied with in the reporting period:</p> <ul style="list-style-type: none"> • 98A - a bill for usage based on a meter reading must be issued at least once in every 12-month period. • 100 - Each bill must contain the prescribed information. 	A	1

¹²⁴ Water source Compliance Framework #58583298.

¹²⁵ Water Source Compliance – Procedure – Assurance Process #19378370.

¹²⁶ Water Services Licence Obligations - Responsibilities Master List #12711920.

¹²⁷ S332 Corporate Compliance Breach Reporting Framework #845435.

¹²⁸ Breach register extract 2021.

¹²⁹ MS Excel workbook: Breach Register extract 2020.xlsx.

¹³⁰ MS Excel workbook: Breach Register extract 2021.xlsx.

¹³¹ Water Corporation 2020 Operational Audit Report to the Economic Regulation Authority Western Australia.

¹³² 2019-20 Annual ERA Compliance Report (26 August 2020).

¹³³ PCY317 Support Customer Contacts #58561327.

¹³⁴ PCY225 Customer Complaints #353413.

¹³⁵ Annual ERA Compliance Report Work Instruction #49600224.

¹³⁶ 2019-20 Annual ERA Compliance Report (26 August 2020).

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> 104A - Each bill for usage to which clause 15 applies must, in addition to the requirements of clause 13, contain the prescribed information. 111A - The licensee must, within 15 business days of becoming aware of an overcharge, credit the overcharged amount to the customer's account or send the customer a notice informing the customer of the overcharging and recommending options for how the overcharged amount may be refunded or credited to the customer's account. 117 - The licensee must inform the customer of the outcome of a review of the customer's bill as soon as practicable or otherwise less than 15 business days from the day the customer's request for review was received. 133A - The licensee must not charge interest or fees for late payment of a bill by a customer in the specified circumstances. 137C - The restriction notice must include the specified information. 147 - The licensee's complaints procedure must provide for the matters specified in relation to lodgement of complaints, responding to complaints, dispute resolution arrangements and resolving complaints. 149A - When the licensee considers that a customer's complaint has been resolved the licensee must advise the customer accordingly, inform the customer that the customer has a right to apply to the water services ombudsman for a review of the complaint, and provide a Freecall telephone number for the water services ombudsman. <p>Although there were several non-compliances they were all minor in nature. The 2020 Operational Audit Final Report¹³⁷ identified small gaps in the business systems and procedures for the customer service measures in the Water Services Code of Conduct for Customer Complaints (responsiveness) which had caused low/minor impact to customers, but noted these were proactively being addressed during the audit period.</p>		
5	Asset operations Asset operations is the day-to-day running of assets (where the asset is used for its intended purpose).			A	1
5.1	Operational policies and procedures are documented and linked to service levels required.	4	<p>Summary: Water Corporation has a robust portfolio of policy and process /procedural documentation in place to guide its operational activities. Operating Plans, which include Water Safety Plans for water treatment plants and Process Control Tables for a wastewater treatment plant, are the principal documents that guide the achievement of operational objectives and performance against defined levels of service. Review of a sample of plans and the implementation of other operational arrangements demonstrated that documented procedures are implemented in a manner that ensures that service levels are achieved.</p> <p>Process and policy: Water Corporation has in place a portfolio of policy and process/procedural documentation in respect of asset operations. This includes (for example):</p>	A	1

¹³⁷ Water Corporation 2020 Operational Audit Report to the Economic Regulation Authority Western Australia 10 February 2021.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> • <i>PCY340 Manage Scheme Operations</i>¹³⁸ – this policy document details the requirement to develop and implement scheme operations plans and identifies the overarching principles that they must address. • <i>Scheme and Asset Operations Plan Guideline</i>¹³⁹ – this guideline defines the structure of scheme and asset operations plans and responsibilities for their development. It identifies the requirement for ‘high level’ scheme operations plans that are supporting by a series of more detailed, complementary plans that address the requirements of the individual components of the scheme. • <i>S110 Incident Management</i>¹⁴⁰ – this standard outlines a framework and details the process to be implemented to manage events that are identified as ‘incidents’ in accordance with the definition provided. Guidance in respect of classification (significant or major), response and roles and responsibilities is provided. • <i>Request and Develop System Change Instructions</i>¹⁴¹ – this procedure describes the process for requesting, considering, analysing, and documenting water supply scheme configuration changes required to allow the isolation/change to occur while minimising the impact to the rest of the scheme. • <i>Work Initiation and Planning Procedure</i>¹⁴² and <i>Work Initiation and Planning Commitment Procedure</i>¹⁴³ – these procedures relate to planning of operation/maintenance team’s activity load over an agreed planning window and agreeing (committing) to the plan at a weekly Commitment Meeting as the basis against which actual performance is measured for the following week (these procedures apply equally to operations and maintenance planning). • <i>Work Scheduling and Assignment Procedure</i>¹⁴⁴ – this procedure describes the process by which an operations /maintenance Team Leader prioritises and assigns/allocates work to resources such that business performance indicators and customer response expectations are met, and how a committed plan is monitored and adjusted to ensure that resources are effectively managed (this procedure applies equally to operations and maintenance planning). • <i>Planned Operations and Maintenance Prioritisation Guideline</i>¹⁴⁵ – this guideline outlines the process for prioritising operation and maintenance activities based on risk (refer Criterion 5.2 for further discussion). Risk ratings take into account the need to achieve required levels of service. <p>On the basis of these examples, it is apparent that Water Corporation has a robust portfolio of policy and process /procedural documentation in place to guide its operational activities.</p>		

¹³⁸ PCY340 Plan Scheme Operations.pdf #3955868 21 May 2021.

¹³⁹ Scheme and Asset Operations Plans Guideline.pdf #58583423 10 February 2021.

¹⁴⁰ S110 Incident Management.pdf #58553268 11 February 2021.

¹⁴¹ ESO - Request and Develop System Change Instructions.pdf #58584845 24 June 2020.

¹⁴² DRAFT - Work Initiation & Planning Procedure.pdf #98949601 18 September 2020.

¹⁴³ DRAFT - Work Initiation & Planning - Commitment Procedure.pdf #99067543 05 October 2020.

¹⁴⁴ DRAFT - Work Scheduling & Assignment Procedure.pdf #99076747 18 September 2020.

¹⁴⁵ Planned Operations and Maintenance Prioritisation Process Guideline.pdf #58583163 01 November 2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Performance:</p> <p>Water Corporation explained that it operates and maintains its assets through seven operating groups (regions), five of which service non-metropolitan areas and two that service the metropolitan area. The two metropolitan groups cover Treatment and Resource Recovery, and Perth Region Field Services; the non-metropolitan groups cover all activities with their respective regions.</p> <p>It was noted that operation and maintenance in the metropolitan (Perth) region was previously contracted out under alliance arrangements; however, this work had been brought back 'in-house' during the review period.</p> <p>Operations and maintenance are managed from an overall perspective via an Operations Centre, which is responsible for:</p> <ul style="list-style-type: none"> • SCADA alarm monitoring. • Customer complaints. • Operation of some more complex schemes in conjunction with field operations. • Involvement in reactive maintenance. <p>To demonstrate that assets are operated consistent with the relevant policies and processes, Water Corporation provided a sample of Operations Plans, including the following:</p> <ul style="list-style-type: none"> • <i>Perth Seawater Desalination Plant Water Safety Plan</i>¹⁴⁶ – water safety plans constitute the Operations Plan for water treatment facilities. The <i>Water Safety Plan</i> includes an overview of the plant operation, a process flow schematic, an outline of the operating strategy, a process control table that details the various control parameters (including location at which it is measured, measurement frequency, where data is stored, alert limits, critical limits (for critical control points) and corrective actions), key contacts, an action plan for both operational and maintenance improvements, and plan endorsement. <p>It is noted that the version of the plan provided for review was dated November 2011 and scheduled for next review in November 2015. Whilst it is unlikely that there will have been any material change to guidance presented in the plan, it is appropriate that scheduled reviews are undertaken. As a minimum, the action/improvement plan should be reviewed and updated.</p> <ul style="list-style-type: none"> • <i>Margaret River WWTP Operator Process Control Tables (Plant Operator and Recycling)</i> – process control tables constitute the Operations Plan for wastewater treatment plants. <p>The <i>Wastewater Treatment Plant Operator Process Control Table</i>¹⁴⁷ includes a process flow schematic, a listing of monitoring and sampling points, a summary of key information, a nutrient control table (which identifies probable cause and corrective action for a range of out of specification parameter combinations), process/asset monitoring details (including parameters monitored, operational targets and corrective actions), and plan endorsement.</p>		

¹⁴⁶ PR PSDP Water Safety Plan #6104609 June 2016.

¹⁴⁷ Margaret River WWTP Operator Process Control Table #82076744 01 April 2021.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>The <i>Wastewater Recycling Scheme Process Control Table</i>¹⁴⁸ includes a scheme summary, details of pre-delivery monitoring points (including parameters monitored and targets), post-delivery monitoring points (including parameters, monitoring frequency, targets and corrective actions), details of the scheme components (disinfection unit, storages and irrigation sites), incident response (including events, corrective actions and notification requirements) and relevant additional details.</p> <ul style="list-style-type: none"> • <i>GSR Frankland Water Safety Plan</i>¹⁴⁹ (including Appendix)¹⁵⁰ – this <i>Water Safety Plan</i> included similar information to that identified above in respect of the <i>Perth Seawater Desalination Plant Water Safety Plan</i>. The scheme overview identified water carting as an alternative water source; storage tank operating levels and forecast daily consumption for each month of the year were also detailed. The action plan identified a capital improvement item as well as operational and maintenance improvements. <p>The <i>Water Safety Plan Appendix</i> contains more detailed supporting documentation in respect of: Risk Registry/Summary; Scheme Description and Operation; Catchment and Source Water; Water Treatment Matrix; Water Treatment Monitoring and Control; CCP Performance; Projects and Asset/Treatment/Operational Changes; Disinfection CT Analysis; Storages; Reticulation Water Quality; Sampling Program and Monitoring Point Evaluation; and Asset Condition and Maintenance.</p> <ul style="list-style-type: none"> • <i>Laverton Water Supply High Level Operating Plan</i>¹⁵¹ – this Operating Plan provides an overview of the scheme (including a high-level operational overview, and the identification of major issues and constraints, and key operating objectives and strategies), a scheme schematic, an overview of the scheme service chain elements (scheme components), an overview of the scheme customers and water demands, and a water scheme operations plan that addresses operation of each of the scheme components. It is noted that the applicable Operational Contingency Plan is referenced (refer to Process 9). <p>In addition to these Operations Plans, facility specific operational guidance is provided in operation and maintenance manuals. For example, for the Margaret River WWTP, these include:</p> <ul style="list-style-type: none"> • <i>Margaret River Wastewater Treatment Plant; Operation and Maintenance Manual</i>¹⁵² – details arrangements for operation and maintenance of the plant. From an operational perspective, it provides an overview description of each of the primary components of the plant together with details of the various modes under which that component can operate and the impact of power/communication failures. Reference is made to other documentation, including the following, which together comprises the documented operational guidance for the plant. 		

¹⁴⁸ Margaret River Recycling PCT (12248731).

¹⁴⁹ GSR_Frankland_Water_Safety_Plan.pdf #58555637 November 2020.

¹⁵⁰ Frankland Water Safety Plan Appendix.pdf.

¹⁵¹ Laverton Water Supply High Level Scheme Operations Plan.pdf Aqua doc #18126946 July 2018.

¹⁵² PM-#19062048-v1-CS01153 Margaret River WWTP O&M_2.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Margaret River WWTP 3MLD Upgrade; ClearSCADA Operation Manual¹⁵³ – provides guidance in respect of the ClearSCADA control system for the treatment plant. <p>Operational activities were reviewed during virtual site inspections of the Perth Seawater Desalination Plant and the Margaret River WWTP. In each case, the facility was inspected by following the treatment process through the plant using pre-taken photographs at the Desalination Plant and a combination of pre-recorded and live video at Margaret River.</p> <p>The Perth Seawater Desalination Plant (PSDP) is operated under an alliance arrangement whereby Water Corporation owns the plant and the Alliance Partner (proAlliance) manages the plant operation and maintenance, including optimisation of performance (from which it shares the benefits). ‘Big ticket’ consumables such as chemicals and power are purchased by Water Corporation.</p> <p>Interaction between Water Corporation and proAlliance is undertaken in accordance with a <i>Working Protocol</i>,¹⁵⁴ which defines the roles (communication and reporting requirements) and responsibilities between the two parties as applicable to a number of areas of focus, including (for example) implementation of the IWSS Operating Strategy, and water production (capability, planning, delivery, etc.).</p> <p>proAlliance provides various operational performance reporting to Water Corporation, including (for example) monthly Governance Dashboard reporting against a range of criteria in respect of safety, maintenance, plant performance, people, environment, water quality.¹⁵⁵</p> <p>The PSDP forms part of the Integrated Water Supply Scheme (IWSS), which delivers water to Perth, the Goldfields and Agricultural Region and parts of the South West. Whilst maximum production is typically sought from the PSDP, it operates to meet production targets specified by Water Corporation. For example, a memorandum dated 28 May 2021 confirmed that:¹⁵⁶ “...the <i>Final Drinking Water Production Target for the period 01 July 2020 to 30 June 2021 has been adjusted to 45.25GL on a ‘best endeavours’ basis. The ‘best endeavours’ applies to production above 43.2GL</i>”. Water orders are placed on a weekly basis; for example, an order for the week commencing Saturday, 24 July 2021 (outside the review period) identified production requirements for each day of the week.¹⁵⁷</p> <p>From a broader perspective, a number of reports that demonstrated the operational management of the IWSS were provided for review, including:</p> <ul style="list-style-type: none"> Final Annual Plan 2020/2021¹⁵⁸ – which documents “... how scheme consumption and operating goals will be met by production from each source while remaining compliant with regulators such as the Department of Water and Environmental Regulation (DWER), as well as ensuring there is an optimal distribution of water held in storage at the various dams that supply the IWSS”. It details forecast scheme demand and growth; total production requirements; and specific detail in respect 		

¹⁵³ PD-AU-4051-001-001-MAN ClearSCADA Operation and Maintenance Manual.pdf.

¹⁵⁴ OC PSDP Working Protocol Signed.pdf #83348931 v.5.

¹⁵⁵ For example, Monthly Report-Jan21-Finalised – Dashboard.pdf (multiple examples provided).

¹⁵⁶ OC_Perth_Seawater_Desalination_Plant_2020_21_Drinking_Water_Production_Target.pdf.

¹⁵⁷ IWSS_PSDP_Order_TPS_2021_07_24.pdf.

¹⁵⁸ IWSS_Final_Annual_Plan_2020_21.pdf 31 December 2020.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>of source and storage management for each operational area serviced by the IWSS.</p> <ul style="list-style-type: none"> Operating Plan Week Commencing Saturday 12/06/2021¹⁵⁹ – which details proposed system configurations; operating goals; water orders for each source; dam status; service reservoir operating levels distribution PRV (pressure reducing valve) settings; time of pump operation in relation to power tariffs; and supply sources for Mandurah and South-West Towns for the ensuing week. IWSS Security Status Report; October Report 2020-21¹⁶⁰ – which presents an assessment of the overall water supply security as at 1st October 2020; the information is used as a guide for operational planning for the next water year. IWSS Maintenance Program; January 2020 – June 2021¹⁶¹ – which identifies all planned maintenance shutdowns during the forecast period. <p>As an example of an improvement initiative in respect of asset operation, Water Corporation provided a business case¹⁶² seeking funding of resources to develop electronic scheme and facility operating plans. This initiative initially invests the development of a framework and structure for future operating plans that will rationalise the variety of formats that are currently in use, and potentially move to an online platform that is accessible throughout the organisation. Further details of the proposed digital/online configuration were also provided.¹⁶³</p> <p>In summary, review of a sample of Operating Plans and the implementation of other operational arrangements as outlined above demonstrated that documented procedures are implemented in a manner that ensures that service levels are achieved.</p>		
5.2	Risk management is applied to prioritise operations tasks.	4	<p>Summary:</p> <p>Water Corporation has a robust risk-based process in place that facilitates prioritisation of both its operations and maintenance tasks which, in effect, are jointly managed. Implementation was demonstrated during a virtual site visit to the Leeuwin Depot; each work order (operation and maintenance) is assigned a priority rating, which is taken into account during the resource scheduling process.</p> <p>Process and policy:</p> <p>Operations and maintenance tasks are prioritised in accordance with the <i>Planned Operations and Maintenance Prioritisation Guideline</i>.¹⁶⁴ This guideline outlines a prioritisation process based on risk, taking into account that low priority work may need to be deferred in the short term in order to accommodate budget and other constraints.</p> <p>The <i>Guideline</i> describes a risk prioritisation framework whereby tasks/activity is to be undertaken in accordance with the following prioritisation:</p>	A	1

¹⁵⁹ IWSS_Ops_Plan_2021_06_12.pdf.

¹⁶⁰ IWSS_-_2020-21_-_Security_Status_Report_-_October_Report.pdf #81493029 16 December 2020.

¹⁶¹ 2020-21 IWSS Maintenance Program.pdf #83423886 04 August 2021.

¹⁶² Business Case - Operating Plans - Proposal for Resources to Develop Plans.pdf.

¹⁶³ Digital High Level Operation Plan Proposal.pdf Aqua doc #20877191.

¹⁶⁴ Planned Operations and Maintenance Prioritisation Process Guideline.pdf #58583163 01 November 2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> • Priority 1 – activity that directly contributes to compliance with statutory obligations. • Priority 2 – activity that directly contributes to compliance with the requirements of Water Corporation’s business licences (licence and regulation). • Priority 3 – activity that is business critical in relation to the enabling of Priority 1 or 2 activities and level of service type activities (reliability, safety or compliance). • Priorities 4 to 7 – activities which, if not completed, would result in extreme, high, moderate or low risk (as assessed under the corporate risk profile). • Priority 8 – activities for which the risk (consequence/likelihood) has not yet been assessed. <p>Planned operation and maintenance tasks are assigned Priority 4 to 7, with the priority of tasks associated with statutory, business licence or business critical (mandatory) activities elevated accordingly. Tasks that can be used in multiple risk settings are assigned a nominal priority of zero, which is then adjusted within allowed limits to represent the risk associated with the asset being managed by the activity.</p> <p>A prioritised tasks list, which identifies the priority for an extensive list of tasks, is included as an appendix to the Guideline. This identifies priority band limits applicable to tasks that can be used in multiple risk settings.</p> <p>The auditor questioned the prioritisation, specifically in expectation that the corporate risk profile would include prioritisation of statutory, licence and regulation, and business critical risks at the appropriate level of assessed risk. This approach appears (potentially) to override the risk assessment process in respect of these aspects. Nonetheless, Water Corporation does have a clearly defined process for prioritising operations tasks on the basis of risk.</p> <p>In summary, Water Corporation has guidance in place that facilitates the prioritisation of both operational and maintenance tasks.</p> <p>Performance:</p> <p>Implementation of the prioritisation of operational tasks was observed during a demonstration of (operational and) maintenance planning during a virtual site visit to the Leeuwin Depot at Busselton. For example, the following operational work orders identified the assigned priority:</p> <ul style="list-style-type: none"> • Work Order 96084296 – 01W Operational Check (Fri) WTP Fisher Road, Kudardup WTP (weekly operational check) – Priority 5 High Risk. • Work Order 96082295 – 01W Operate CHL WWTP Dunsborough, Anniebrook Wastewater Effluent Disposal – Priority 3 Business Mandatory. • Work Order 96081214 – 04W Operate UV Sys WTP Margret Rvr, Margaret River WTP – Priority 5 High Risk. <p>The scheduling of tasks using an online graphical interface was demonstrated. This showed how the work is assigned on the basis of priority (amongst other factors).</p> <p>These examples demonstrated that operational tasks for which work orders had been raised were assigned a priority, and that the assigned priority is</p>		

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			taken into account when scheduling the work (i.e. allocating it to the available operational staff).		
5.3	Assets are documented in an asset register including asset type, location, material, plans of components, and an assessment of assets' physical /structural condition.	4	<p>Summary: Water Corporation has in place processes to ensure that asset details are captured in its Functional Location and Equipment Register (FLER) (effectively its asset register), which has links to the GIS where assets are recorded with reference to the relevant drawings. Records of asset condition are separately maintained in an Asset Condition Assessment (ACA) Register. Review of the FLER and ACA Register confirm that the requisite records are maintained.</p> <p>Process and policy: Asset data is captured through the asset creation process and recorded into the SAP proprietary asset management system. As constructed drawings and information are entered into the GIS (Geographical Information System). Asset data capture is one element of the Asset Handover process, which is undertaken in accordance with the <i>Asset Data Handover Guideline</i>.¹⁶⁵ This process is aimed at ensuring that all project information is captured in the various corporate information systems. The Asset Handover process is managed using the <i>Asset Handover Checklist</i>,¹⁶⁶ which identifies all documentation/data handover requirements and the project stages at which progressive handover of the information is to occur. All assets are assigned an identifier (functional location) in the Functional Location and Equipment Register (FLER) early in the asset creation process. This identifier, which is also used to link the FLER (SAP) and GIS records, provides a unique identifier against which all asset records are stored. Review of the <i>Asset Handover Checklist</i> reveals that asset data to be provided includes equipment schedules and construction drawings, together with relevant financial, operational, plant information (SCADA) and operational support data/information, which is captured in other corporate information systems. Asset details are to be updated following commissioning and as-constructed drawings provided. As reported in respect of Criterion 3.1 (and also Criterion 6.2), asset condition is monitored/assessed in accordance with the <i>Manage Asset Condition Guideline</i>. Records of asset conditions assessments are not currently maintained in the FLER (Asset Register); however, they are maintained in an Asset Condition Register, with condition assessment reports providing supporting information for Level 2 and 3 (detailed) inspections/assessments. Level 1 (visual inspection for maintenance or safety purposes) condition assessments are recorded as necessary in work order closeout records. It was noted that in conjunction with the change from SAP to a Maximo asset management platform which is currently being implemented (refer Criterion 6.1), a new asset condition field, in which condition will be rated on a 1 to 5 scale, is to be incorporated. In summary, Water Corporation has in place processes to ensure that asset details are captured in its Functional Location and Equipment Register (FLER) (effectively its asset register), which has links to the GIS where assets are recorded with reference to the relevant drawings. Records of asset condition</p>	A	1

¹⁶⁵ Asset Handover Guideline.pdf #58553531 09 June 2021.

¹⁶⁶ Asset Handover Checklist Template.pdf #58546657 v.8 24 April 2020.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>are maintained; the manner in which this information is stored is dependent on the type (level) of assessment undertaken.</p> <p>Performance:</p> <p>The FLER (asset register) was reviewed online during the review interviews, with records in respect of the Margaret River WWTP, Bolgart Tank and Northam No 2 Tanks being sighted. Sample records (screenshots) were subsequently provided.¹⁶⁷</p> <p>Water Corporation implements a well-structured functional location hierarchy, as evidenced by the Functional Location Structure List for the Margaret River WWTP RAS Pumping System (FL S8023591). This includes, for example (partial listing only):</p> <ul style="list-style-type: none"> • RAS Pipework (FL S8023492): <ul style="list-style-type: none"> ○ RAS valve (FL S80224029); ○ Various other valves (FL S80224030 to S80224040); • RAS Pump 1 (FL S8023943); • RAS Pump 2 (FL S8023944); • RAS Outlet MagFlo Meter FE2201 (FL S8023945); and • RAS Electrical Installation (FL S8023948): <ul style="list-style-type: none"> ○ VSD MV52201 (FL S8024044; and ○ VSD MV52202 (FL S8024045). <p>The Margaret River WWTP comprises a total of 567 functional locations, of which 25 relate to the RAS Pumping System.¹⁶⁸</p> <p>Review of recorded asset details revealed (for example):¹⁶⁹</p> <ul style="list-style-type: none"> • RAS Pump 1 (FL S8023943) at the Margaret River WWTP is a Flygt pump model NZ3227LT 425. It has a design duty (capacity) of 55 L/s @ 5.7 mhw (metres head of water). • Bolgart Tank GL 2 (FL W4012552) is a Glass Reinforced Plastic Tank of 60 kL capacity (new tank that replaced reinforced concrete tank (FL W0040497) in August 2018). • Northam Tank (FL W0021338) is a reinforced concrete (RCC) tank of 9,000 kL nominal capacity/8,205 kL maximum usable capacity. It is not lined and has no internal coating. Top of Wall, Overflow, Top Water and Tank Floor levels are recorded. <p>An extract from the Asset Condition Assessment (ACA) Register was provided for Bolgart Tank GL 1 (FL W0040497), a reinforced concrete tank.¹⁷⁰ This revealed that a Level 1 inspection undertaken in July 2005 and a Level 2 inspection in July 2015 had assessed the overall condition to be 'fair' with an overall condition score of '7' (1 to 10 scale). A further Level 1 inspection in September 2017 assessed the condition to be 'poor' with overall condition score of '8'. Poor condition ratings related primarily to the roof and supporting structure, but also the structural integrity of the tank walls. A decision was made to replace the tank following observed sagging of the roof</p>		

¹⁶⁷ Screen shots MARGARET RIVE WWTP, BOLGART and NORTHAM TANKS.xlsx.

¹⁶⁸ ARNF CS01153 Final Notification Registered FLER Structure Margaret River WWTP Upgrade To 3000 kLd.xlsx.

¹⁶⁹ Screen shots MARGARET RIVE WWTP, BOLGART and NORTHAM TANKS.xlsx.

¹⁷⁰ ACA screen shot.xlsx.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>sheeting; the replacement glass reinforced plastic tank (Bolgart Tank GL 2 – FL W4012552) is referenced above.</p> <p>These records demonstrate that Water Corporation maintains records of asset details and condition.</p>		
5.4	Accounting data is documented for assets.	4	<p>Summary:</p> <p>Water Corporation has in place an established process for the capture of accounting data for its assets. Records of cost data capture and allocation to assets for the recent Margaret River WWTP Upgrade project demonstrated process implementation.</p> <p>Process and policy:</p> <p>Accounting data in relation to assets is initially captured through the asset creation process and is recorded into the Financial Fixed Asset Register (FFAR). This comprises one element of the Asset Handover process, which is undertaken in accordance with the <i>Asset Data Handover Guideline</i>.¹⁷¹ As previously reported, this process is aimed at ensuring that all project information is captured in the various corporate information systems.</p> <p>Financial data is to be captured on a component basis. The <i>Fixed Asset Component Template</i> (FACT)¹⁷² provides a suggested list of components, which is based on the asset classes and associated structure (hierarchy) from the Functional Location Equipment Register (FLER), against which to allocate costs associated with the new infrastructure.</p> <p>Cost data is provided to the Asset Accounting team on the basis of the Work Breakdown Structure (WBS) using <i>Notification of Asset Creation/Change Form</i>.¹⁷³ This form can also be used to capture cost data associated with any changes (additions/improvements) to an existing asset.</p> <p>Project costs are then ‘settled’, i.e. allocated to component assets. The aim is to align financial assets from the FFAR to the functional locations in the FLER, although this is not always achieved due to differing breakdowns in the two registers.</p> <p>Transfer of non-capital costs occurs at financial year end or on project accounting settlement. The decision as to whether expenditure is to be capitalised is based on assessment against criteria identified in <i>S336 Capitalisation Decision</i>.¹⁷⁴</p> <p>In summary, Water Corporation has in place an established process for the capture of accounting data for its assets.</p> <p>Performance:</p> <p>Water Corporation provided the following records to demonstrate the allocation of costs (accounting data) from capital projects to assets:</p> <ul style="list-style-type: none"> • Asset Accounting’s cost settlement working spreadsheet,¹⁷⁵ which is used for the cost allocation process. • Asset Settlement Spreadsheet,¹⁷⁶ from which data is loaded into the FFAR. 	A	1

¹⁷¹ Asset Handover Guideline.pdf #58553531 09 June 2021.

¹⁷² Fixed Asset Component Template.pdf 22 June 2021.

¹⁷³ Notification of Asset Creation or Change Form.pdf #58540065.

¹⁷⁴ S336 Capitalisation Decision.pdf #428675 12 November 2021.

¹⁷⁵ CS01153 MARGARET RIVER WWTP UPGRADE _2020April_Asset Settlement Breakdown.xlsx.

¹⁷⁶ 20.05.2020 - C-S01153 Margaret R WWTP Upgrade.xlsx.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> An extract showing the FFAR records for the Margaret River WWTP,¹⁷⁷ which shows all financial assets at the plant; assets added as a result of the recent upgrade works were highlighted for the purposes of the review. Details recorded included the Asset ID, Description, Date of capitalisation, Asset class, Asset life, Asset cost (including any revaluation), Year-to-date depreciation, Life-to-date depreciation, and Net value. 		
5.5	Operational costs are measured and monitored.	5	<p>Summary:</p> <p>Water Corporation has a system to capture operational and maintenance costs. Costs are captured through works orders, from where they are 'settled' into SAP-FICO, the corporation financial general ledger. Actual costs are reported against budget/forecast using Power BI generated reports, which are reviewed/monitored at district, region and corporate levels. Examples provided demonstrated that operational (and maintenance) costs are effectively captured and monitored.</p> <p>Process and policy:</p> <p>All costs, including operational and maintenance costs, are recorded in the SAP-FICO (SAP Finance and SAP Controlling) module, which is effectively Water Corporation's general ledger, or single source of truth, for financial reporting. Irrespective of the way they are captured or to what activity they relate, all costs are 'settled' to FICO.</p> <p>Operational (and maintenance) costs are captured through Work Orders as part of the closeout process. Work order records include details of task codes and cost centre location which determine where costs are automatically posted in FICO. Guidance such as the <i>SAP PM Business Rule No 04 - Allocating SAP PM Orders to Faults</i>¹⁷⁸ work instruction provide direction as to how a work order should be completed to ensure that data is correctly captured.</p> <p>Cost data captured in FICO is compiled for financial reporting purposes and can be monitored against forecast/budget. Power BI is then used to generate reports (including online dashboard reporting) for monitoring purposes.</p> <p>Performance:</p> <p>Review of maintenance records held in Maximo (operational costs are treated the same) demonstrated the capture of costs associated with each work order, follows:</p> <ul style="list-style-type: none"> RAS Pumping System at Margaret River WWTP – completion of Work order 95816620 for completion of Operation MSQOTM016 SERVICE MISC EQUIPMENT incurred total costs of \$732.78 (including labour and District support) and 5.48 hours of time. The entry showed that the total cost had been 'settled' (against FICO). Tank cleaning at Northam Reservoir – completion of Work Order 95936106 for completion of Operation CWTRM005 CLEAN RESERVOIR/TANK incurred total costs of \$6,007.86 for external engineering services; no in-house costs or time were recorded. The entry again showed that the total cost had been 'settled'. 	A	1

¹⁷⁷ Marg R WWTP - AMS Review.xlsx.

¹⁷⁸ SAP PM Business Rule No. 04 - Allocating SAP PM Orders to Faults.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Costs are monitored at district level at Monthly Work Program Review Meetings, for which a 'Financial overview' is a standard agenda item,¹⁷⁹ and similarly at regional level.</p> <p>Monitoring of costs at regional/corporate level was demonstrated by example screenshots of Power BI reports including:¹⁸⁰</p> <ul style="list-style-type: none"> • Work Program Comparison; High Level Regional Summary – which showed a comparison between planned and actual expenditure (year-to-date). • Governance Report 2020 (outside review period) – which showed budgeted and actual expenditure (across all expenditure types) on a monthly basis throughout the financial year, by activity and by order type (including operating, planned and corrective). <p>These examples demonstrated that operational (and maintenance) costs are effectively captured via the work order system and are monitored.</p>		
5.6	Staff resources are adequate and staff receive training commensurate with their responsibilities.	4	<p>Summary:</p> <p>Water Corporation demonstrated it has human resource management processes and procedures in place, the implementation of which ensures that it actively manages its staff resources from both capability and capacity perspectives.</p> <p>Process and policy:</p> <p>Resource management is undertaken in accordance with the <i>PCY Learning and Development Policy</i>¹⁸¹ which commits to: "... providing and maintaining best practise, compliant, and fit-for-purpose learning and development that supports our workforce in performing their role safely and competently; Ensuring that our workforce capability is aligned to the changing nature of work and appropriate accountability is demonstrated for developing self and others". This is guided by a Learning and Development Framework, which along with supporting competency frameworks and training pathways, supports the effective management of core and technical competencies across the organisation.</p> <p>The policy is implemented in accordance with the <i>S471 Learning and Development Standard</i>,¹⁸² which outlines a structured approach to defining roles and assigning responsibilities, the aim of which is to ensure consistency and quality in the way that learning and development is planned, coordinated, developed and delivered.</p> <p>The following core competencies apply to all Water Corporation roles:¹⁸³</p> <ul style="list-style-type: none"> • Communication and Relationships. • Continuous improvement and Change. • Outcomes driven and Results Orientated. • Planning and Organising. • Problem Solving and Decision making. 	A	1

¹⁷⁹ 2022 Monthly Work program Meeting – Agenda.pdf.

¹⁸⁰ Email dated 17 September 2021 from Water Corporation (re: *Water Corporation AMS Review - Operation and Maintenance Costs*).

¹⁸¹ PCY328 Corporate Training and Organisational Development.pdf #58557094 19 March 2020.

¹⁸² S471 Corporate Training and Organisational Development Standard.pdf #58576226 21 September 2020.

¹⁸³ Generic Competency Framework and LD Framework.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Lead and Develop People (applicable to leadership roles and the transition thereto). <p>Each is defined and has five levels of proficiency, the progression through which is cumulative: Awareness, Knowledge, Skilled, Advanced and Expert. A competency assessment process, which engages both employees and managers, is clearly defined.</p> <p>These core competencies are augmented by technical competencies applicable to a particular role/position. Technical competencies are similarly assigned levels of proficiency. Details of the requirements of core competency 'Communication and Relationships' and technical competency 'Develop Standards' were provided as examples. In each case the competency is described and the requirements for each proficiency level detailed. The 'Develop Standards' competency (for example) is described as: <i>"Develops and optimises internal standards and specifications for the delivery of uniform engineering or technical criteria, methods, processes and practices"</i>.</p> <p>Training pathways are defined; for example the <i>Technical Training Certificate II, III & IV Training Pathways; National Water Package</i>¹⁸⁴ outlines pathways for a number of profiles including Catchment and Dams, Networks, Drinking Water, Wastewater Treatment, Drinking Water and Wastewater Multi-Skilled and Dosing Scheme or Borefield. Competence modules and the associated in-house training courses are identified for each development profile.</p> <p>Competency requirements are determined for each facility and training pathways developed accordingly. Resource (staffing) requirements are determined through the business planning processes which determine resource (FTE) requirements to deliver business-as-usual and initiative work programs. For example, resource requirements are considered as part of the Operations and Maintenance Work Program Development.¹⁸⁵</p> <p>Performance:</p> <p>To demonstrate implementation of its resource management arrangements, Water Corporation demonstrated its online training portal and dashboards during the audit interviews. A sample of extracts/screenshots were provided, including extracts from the above-referenced competency framework.</p> <p>Power BI Training Dashboards and supporting records were provided as follows:</p> <ul style="list-style-type: none"> Training Overview screen, which showed that for the Operations Group, South West Region, 100% of scheduled training had been completed. Exported data showing that 100% of required training in twelve technical modules applicable to Operators at the Margaret River WWTP had been completed. These modules included (for example) Chlorine Awareness, Lab Testing, Sludge Digestion and Wastewater Treatment Processes. A listing showing operators and completion status against required training modules. This showed 100% completion, thereby supporting the above records. <p>To further demonstrate that training completion is monitored, Water Corporation provided a report <i>Operations Group; Training Completion</i></p>		

¹⁸⁴ Certificate II III IV Water Industry Training Pathways (1157121).pdf #58789625 v.11.

¹⁸⁵ OAS - Work Program Development Overview Page (ST).pdf #59095085.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p><i>Rates; April 2021.</i>¹⁸⁶ This showed compliance against high risk, medium risk and other training requirements on a regional basis. Detailed commentary was provided in respect of each Region, with an overall compliance rating for each District.</p> <p>Areas of concern at the time of report (compliance less than 50%) related to Water Industry Certification in Perth Region Field Services; VOC (Verification of Competence in relation to the highest safety risks, as assessed by a third party) in North West Region, Treatment and Resource Recovery (Perth) and the Operations Centre; and Professional Development in Goldfields and Agricultural Region. The commentary identified the reasons for the lower level of compliance and/or the action planned to address it.</p> <p>Resource level management was not specifically assessed; however, evidence that resource requirements are monitored was demonstrated by a business case¹⁸⁷ and internal presentation to the Chief Financial Officer¹⁸⁸ seeking approval of funding for non-labour activities, i.e. external labour, to complete or execute maintenance due to expertise or capacity shortfalls within the fixed labour pool (refer Criterion 6.3).</p> <p>In summary, Water Corporation demonstrated that it actively manages its staff resources from both capability and capacity perspectives.</p>		
6	Asset maintenance Asset maintenance is the upkeep of assets.			A	1
6.1	Maintenance policies and procedures are documented and linked to service levels required.	4	<p>Summary:</p> <p>Water Corporation has in place documented processes/procedures that provide a framework for the effective management of its asset maintenance activities. Definition of maintenance requirements in asset class aligned maintenance standards and use of risk-based prioritisation ensures that defined levels of service are maintained. Furthermore, Water Corporation demonstrated that it has mechanisms in place to ensure that maintenance programs are effectively managed in accordance with documented processes and procedures.</p> <p>Process and policy:</p> <p>Water Corporation has in place a portfolio of process/procedural documentation in respect of asset maintenance. This includes (for example):</p> <ul style="list-style-type: none"> • <i>Plan Asset Maintenance Guideline</i>¹⁸⁹ - the guideline outlines the Plan Asset Maintenance Process, which is the preparation of a maintenance plan for cyclic preventive maintenance and condition monitoring, condition-based maintenance and corrective maintenance; and maintenance gap treatments arising from asset condition assessments (ACA) and high cost, once-off and variable cycle activities. The process steps include: <ul style="list-style-type: none"> ○ Produce Asset Maintenance Standards and Generic Work Instructions. ○ Produce “BEST PRACTICE” Maintenance Plan (covering all maintenance).; 	A	1

¹⁸⁶ 2021 04 - Operations Group Training Completion Rates Report – April.pdf.

¹⁸⁷ Business Case - One Investment BC operations and Maintenance 21_22.pdf.

¹⁸⁸ Work_program_build_Non_labour_infrastructure_maintenance_budget_2021_22_Barry_Dean_update_170521.pdf.

¹⁸⁹ PM-17892078-v1-Plan_Asset_Maintenance_Process_and_Guideline.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Produce Asset Maintenance Budget submission. Adjust Asset Maintenance Plan for yearly budget. Manage Agreed Asset Maintenance Plan. <p>Process maps and prescriptive guidance is provided for each process step.</p> <ul style="list-style-type: none"> <i>Work Program Formulation Guideline</i>¹⁹⁰ – describes the process for formulating the annual operations work program/budget such that it aligns with the objectives of delivering value for money, providing an appropriate level of service to customers, and minimising risk. An unconstrained work program is initially developed; this is then reviewed and adjusted to match the available budget by prioritising work on the basis of risk and resources. This process, which is managed using the SAP-PM (Plant Maintenance) and SAP-FICO (Financial and Costing) modules is referred to as ‘Activity Based Planning’. <i>Process Map – Work Program Development</i>¹⁹¹ – this process map (flow chart) outlines the process for developing the annual operation and maintenance work program, reflecting the process outlined in the above referenced <i>Work Program Formulation Guideline</i>. An unconstrained work program is initially developed; this is then reviewed and adjusted to match the available budget by prioritising work on the basis of risk and resources. The process map also identifies the various groups involved in the process, which includes Asset Investment Planning, Group Finance, Operations Performance and Operations. <i>Work Program Formulation Timetable – 2020 Version</i>¹⁹² – this document outlines the timeline for development of the annual work program. <i>MS002 Maintenance Standard Development Guideline</i>¹⁹³ – this guideline details the process for developing and documenting (structure and content) maintenance standards, which are applicable to facilities (e.g. water storage complexes) or asset types (e.g. Pressure Vessels). Maintenance standards, which are discussed further below, define the maintenance strategy for the assets to which they relate, ensuring that that they reflect level of service requirements. <i>Maximo Team Leader User Guide</i>¹⁹⁴ – this document provides guidance for team leaders using the Maximo enterprise asset management software. It provides practical guidance to team leaders principally in respect of the work order management functionality of the software. <i>Work Initiation and Planning Procedure</i>¹⁹⁵ and <i>Work Initiation and Planning Commitment Procedure</i>¹⁹⁶ – these procedures relate to planning of operation/maintenance team’s activity load over an agreed planning window and agreeing (committing) to the plan at a weekly Commitment Meeting as the basis against which actual performance is 		

¹⁹⁰ Work Program Formulation Guideline.pdf.

¹⁹¹ Work Program Development Overview Page (20666282).pdf #59095085.

¹⁹² Work_Program_Development_Timeline_-_2020_Version.pdf.

¹⁹³ MS002 Maintenance Standard Development Guideline.pdf #18670589 30 March 2021.

¹⁹⁴ MAXIMO - Team_Leader_-_User_Guide_v4.1.pdf.

¹⁹⁵ DRAFT - Work Initiation & Planning Procedure.pdf #98949601 18 September 2020.

¹⁹⁶ DRAFT - Work Initiation & Planning - Commitment Procedure.pdf #99067543 05 October 2020.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>measured for the following week (these procedures apply equally to operations and maintenance planning).</p> <ul style="list-style-type: none"> • <i>Work Scheduling and Assignment Procedure</i>¹⁹⁷ – this procedure describes the process by which an operations/maintenance Team Leader prioritises and assigns/allocates work to resources such that business performance indicators and customer response expectations are met, and how a committed plan is monitored and adjusted to ensure that resources are effectively managed (this procedure applies equally to operations and maintenance planning). • <i>Planned Operations and Maintenance Prioritisation Guideline</i>¹⁹⁸ – this guideline outlines the process for prioritising operation and maintenance activities based on risk (refer Criterion 6.5 for further discussion). Risk ratings take into account the need to achieve required levels of service. <p>These examples provide a snapshot of the process/procedural documentation that is in place to manage maintenance activities. It is noted that there is commonality in the approach to managing both operation and maintenance of the assets, both of which are managed through work order processes. Operation and some ongoing maintenance activities are undertaken by the same personnel.</p> <p>Water Corporation manages its maintenance activities through a computerised maintenance management system, which provides work scheduling and work order management functionality. It is noted that Water Corporation is currently in the process of changing its asset/maintenance management functionality from the SAP Software and Solutions platform that it has been using to the Maximo asset management platform. Migration is in progress, with some asset management functionality currently still maintained on the SAP platform (e.g. the asset register) and some on the Maximo platform (e.g. maintenance management in the South West Region has been migrated to Maximo).</p> <p>Performance:</p> <p>As indicated above, Water Corporation has a portfolio of some 45 Maintenance Standards which detail its approach to maintaining its assets.¹⁹⁹ As also indicated, these relate to facilities or asset types, for example:</p> <ul style="list-style-type: none"> • S417 Maintenance Standard – Water Pumping Stations and Pressure Mains.²⁰⁰ • S418 Maintenance Standard; Water Storage Complex.²⁰¹ • S422 Maintenance Standard – Disinfection Systems – Gas Chlorination (Potable Water).²⁰² <p>In each case, these standards identify and interpret the relevant business drivers; identify strategic objectives in respect of planned preventative maintenance (both condition and time based) and corrective maintenance; identify the strategies and drivers applicable to each component of the</p>		

¹⁹⁷ DRAFT - Work Scheduling & Assignment Procedure.pdf #99076747 18 September 2020.

¹⁹⁸ Planned Operations and Maintenance Prioritisation Process Guideline.pdf #58583163 01 November 2018.

¹⁹⁹ Copy of MAINTENANCE STANDARD REGISTER (825046).pdf.

²⁰⁰ S417 Maintenance Standard - Water Pumping Stations and Pressure Mains.pdf.

²⁰¹ S418 Maintenance Standard - Water Storage Complex.pdf.

²⁰² S422 Maintenance Standard - Disinfection - Gas Chlorination - Potable Water.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>facility/asset; and outline the arrangements in respect of maintenance planning.</p> <p>Water Corporation advised that it is in the process of updating these standards based on recent Reliability Centred Maintenance (RCM) analysis. Maintenance requirements for a specific asset or facility are typically reflected in an Operation and Maintenance Manual, although details are sometimes limited to higher level and/or major maintenance requirements. As an example, the <i>Margaret River Wastewater Treatment Plant; Operation and Maintenance Manual</i>²⁰³ details arrangements for both operation and maintenance of the plant. From maintenance perspective, it outlines maintenance plans (tasks and frequency) for the principal items of equipment with reference to supplier literature for detailed description of maintenance procedures.</p> <p>Water Corporation's procedures in respect of maintenance planning and implementation, including (for example) the <i>Work Initiation and Planning Procedure</i>, <i>Work Initiation and Planning Commitment Procedure</i> and <i>Work Scheduling and Assignment Procedure</i>, set out the requirement for effective management of the process at a functional level. This is achieved through mechanisms including (for example):</p> <ul style="list-style-type: none"> • Daily Team Leader Meetings (at District level, e.g. Leeuwin Depot)²⁰⁴ – these 30 minute sessions (one of which the review attended by dial-in) involve an update in respect of planned and additional/reactive assigned work and achievement by each team leader; for the Leeuwin District this includes civil, treatment, trades and drainage team leaders. Resourcing and external service requirements are discussed; hazard/safety, environmental and any other issues or learnings are shared. • Weekly commitment meetings are held pursuant to the Work Initiation and Planning Commitment Procedure; they are attended by the District Operations Manager, Team Leaders, District Work Planner and Coordinator Work Planner. The standard agenda for these meetings indicates that they include discussion in respect of: <ul style="list-style-type: none"> ○ Maintenance activity, including planned, backlog and assigned, and performance reporting. ○ Safe job planning and review of Sentinel (incidents, hazards and actions). ○ Training. ○ Confirmation and approval of team plans for the next week. ○ Identification and recording of any new issues. • Monthly District Work Program Review Meetings, attended by Operations (Service Delivery Manager, Operations Manager, Regional Work Planner and Team Leaders), Assets (maintenance Planner) and Finance (Business Analyst). The standard agenda for these meetings indicates that they include discussion in respect of: <ul style="list-style-type: none"> ○ Projects – update on projects work in the district; 		

²⁰³ CS01153 Margaret River WWTP Maintenance Manual.pdf AquaDOC #19062048.

²⁰⁴ Daily Sheet.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Planned (PM04) Maintenance – review program outcomes for the previous months and planning for the next 2/3 months. Resources – planned maintenance performance report, corrective maintenance counts, etc. Financial overview. Actions arising. <p>These examples demonstrate that processes are being implemented to ensure that the maintenance programs are effectively managed in accordance with documented processes and procedures.</p>		
6.2	Regular inspections are undertaken of asset performance and condition.	2	<p>Summary: Water Corporation has processes in place for monitoring asset condition and performance. These include ongoing monitoring of operational performance trends and observations made in respect of asset condition whilst undertaking operation and maintenance activities. Response to observed performance or condition deterioration includes (where appropriate) more detailed condition assessment of the identification of appropriate corrective action. On the basis of the evidence reviewed and discussions with Water Corporation personnel, it is apparent that these processes are effectively implemented.</p> <p>Process and policy: As reported in respect of Criterion 3.1, asset performance is monitored in accordance with the <i>Monitor Asset Performance Guideline</i>.²⁰⁵ This guideline details the monitoring processes that Water Corporation implements to proactively identify asset deficiencies which, if not addressed, could potentially lead to unacceptable risk to maintaining agreed levels of service. The monitoring process involves: assigning a lifecycle management strategy; completing an asset criticality assessment and determining the level of performance monitoring that is required; identifying/developing the appropriate monitoring program (including the identification of funding/budget requirements); implementing the monitoring program and assessing performance against pre-defined triggers; and where a deficiency (or risk) is identified, preparation of an asset deficiency report.</p> <p>Asset condition is monitored/assessed in accordance with the <i>Manage Asset Condition Guideline</i>.²⁰⁶ This guideline details a management process which involves:</p> <ul style="list-style-type: none"> Identification of condition assessment methodologies, based principally on asset class. Identification of candidates for condition assessment. This process is informed by factors including (for example) observations during periodic operational inspection; changes to system servicing requirements; asset criticality; asset life modelling; and asset failure. Risk based prioritisation of assets identified for condition assessment (once the requirement is triggered). Scoping and planning of the condition assessment work. This is typically initially undertaken at a high level for planning and budgeting purposes, and in more detail prior to implementation (effectively a 'Delivery Business Case'). 	A	1

²⁰⁵ Monitor Asset Performance Guideline # 58582513 v.29/06/2021.

²⁰⁶ Manage Asset Condition Guideline #8717283 v.11/09/2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Finalisation of the monitoring program and approval of funding (annually). Implementation of the approved asset condition assessment program for each financial year. Ad hoc and/or opportunistic condition assessments can be undertaken where identified necessary/appropriate; resultant adjustments to the annual assessment program are subject to risk/benefit based assessment. Incorporation of the condition assessment data into the overall planning process, specifically via the deficiency management process. Relevant stakeholders are engaged throughout the process. <p>The asset performance and condition monitoring processes outlined above are implemented proactively. Asset deficiencies can also be identified reactively by field operations personnel, principally as a result of asset failure but also from observed performance and/or condition.</p> <p>As reported in respect of Criterion 5.3, records of asset conditions assessments are not currently maintained in the Asset Register (Functional Location and Equipment Register (FLER)); however, they are maintained in an Asset Condition Register, with condition assessment reports providing supporting information for Level 2 and 3 (detailed) inspections/assessments. Level 1 (visual inspection for maintenance or safety purposes) condition assessments, which are typically undertaken in conjunction with programmed maintenance tasks, are recorded as necessary in work order closeout records. It was noted that in conjunction with the change from SAP to a Maximo asset management platform which is currently being implemented (refer Criterion 6.1), a new asset condition field, in which condition will be rated on a 1 to 5 scale, is to be incorporated.</p> <p>On the basis of the evidence reviewed, it is apparent that Water Corporation has systematic review processes for monitoring asset condition and performance.</p> <p>Performance:</p> <p>As an example of implementation, Water Corporation provided (some of which have been previously referenced):</p> <ul style="list-style-type: none"> A condition assessment report in respect of the Laverton town water supply bore 3/03. This report, <i>Laverton Bore 3/03 Treatment 2020 for Water Corporation; December 2020</i>,²⁰⁷ was prepared by an external service provider in conjunction with undertaking an iron bacteria treatment. It included details of the condition of the bore facility, including details such as cracking in the concrete surround; unsealed wiring conduits; and the existence of a moulded bracket that causes difficulties during pump removal and may cause catastrophic damage to the bore casing. Removal of the moulded bracket or replacement of the pump was recommended. An extract from the online <i>Asset Deficiency Register</i>, which provided a sample of entries including (for example):²⁰⁸ 		

²⁰⁷ ACA Laverton Borefield - 1437gWCorpLaverton3_03Treatment.pdf.

²⁰⁸ Asset Deficiency Register screen shot.jpg.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> ○ Hester Dam (Functional location W0045837) – “A section on the right side of Hester Dam wall is saturated and some erosion has occurred.” ○ Robin Street, Eaton WTP (Functional location W0045236) – “Eaton WTP was built in the 1950’s and the current facilities are inadequate for current practices. Operator has no Lab or Work area to perform testing as required by the Corporation, limited storage, no lunch facilities for operator, maintenance and civil staff and toilet facilities are very poor.” ○ Bridgetown WWTP 2 (Functional location S8022027) – issues in relation to the impact of rainfall on sludge drying beds which results in large supernatant flows with high algae loading, which impacts the biological processes of the plant. <ul style="list-style-type: none"> • An extract from the <i>Asset Condition Assessment (ACA) Register</i> showing entries in respect of Bolgart Tank GL 1 (FL W0040497), a reinforced concrete tank.²⁰⁹ This revealed that a Level 1 inspection undertaken in July 2005 and a Level 2 inspection in July 2015 had assessed the overall condition to be ‘fair’ with an overall condition score of ‘7’ (1 to 10 scale). A further Level 1 inspection in September 2017 assessed the condition to be ‘poor’ with overall condition score of ‘8’. Poor condition ratings related primarily to the roof and supporting structure, but also the structural integrity of the tank walls. As reported in respect of Criterion 5.3, a decision was made to replace the tank following observed sagging of the roof sheeting. • <i>Caddadup Tank Refurbishment Inspection Report</i>,²¹⁰ which documented the findings of a Level 2 condition assessment in respect of this welded steel tank which has a metal deck roof and supporting structure. The inspection assessed all tank components including the roof, tank floor, tank shell and cathodic protection system. Refurbishment works to implemented within 12-month and three-year timeframes were recommended. • <i>Reservoir Columns Investigation; Mount Eliza Pond 1 Reservoir</i>,²¹¹ which details the findings of an investigation into cracking of precast reinforced concrete roof support columns that are used in Water Corporation reservoirs. The report detailed structural and durability investigations in respect of cracking at the base of the columns and cracking/spalling above water level at the top of the columns. Whilst further monitoring of the Mount Eliza Reservoir was not considered necessary from a structural perspective, recommendations for future reservoir roof designs were provided. Concrete test results were to be subject to further assessment from a durability perspective as part of a report addressing all reservoirs. <p>Water Corporation advised that asset performance is principally monitored using its online Performance Dashboards, but also through field observations by operation and maintenance personnel. Online dashboards reflect real-time</p>		

²⁰⁹ ACA screen shot.xlsx.

²¹⁰ Level_2_Inspection_Caddadup_tank_condition_assessment_Report_13-08-2019.pdf.

²¹¹ R3212_Mt_Eliza_Pond_1_Reservoir_Columns_Investigation_GHD_Report_March_2019_(20628733).pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>monitoring via SCADA (for example), thereby providing a clear view of performance and the ready identification of any deficiencies.</p> <p>On the basis of the evidence reviewed and discussions with Water Corporation personnel, it is apparent that asset condition and performance is regularly monitored, with more detailed condition assessments undertaken when the need is identified.</p>		
6.3	Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule.	4	<p>Summary:</p> <p>Water Corporation demonstrated that maintenance plans are developed and documented, principally as part of the asset creation and acquisition process, and that they are implemented. Maintenance completion is managed effectively through a work order management process.</p> <p>Process and policy:</p> <p>Maintenance activity is managed using a proprietary computerised maintenance management system (CMMS). As previously reported, Water Corporation is in the process of migrating its asset management support functionality from SAP to Maximo.</p> <p>Maintenance plans are developed and incorporated (documented/programmed) within the CMMS. These plans are informed by the above referenced Maintenance Standards (refer Criterion 6.1) which detail the maintenance strategy for the particular asset type/components. Maintenance requirements are typically also reflected in/or can be derived from Operation and Maintenance Manuals (typically higher level/major maintenance requirements), supplier documentation and the accumulated knowledge of asset/maintenance managers.</p> <p>Maintenance plans/schedules define the maintenance activity that is required in respect of a particular asset and the frequency at which it must be performed. Specific work instructions are linked within the CMMS (where specific guidance/instruction is required).</p> <p>It is noted that the development of maintenance plans for new assets, and the preparation of operation and maintenance manuals, is required as part of the Asset Handover Process, as defined in the <i>Asset Handover Guideline</i>²¹² and more specifically in the <i>Asset Handover Checklist template</i>;²¹³ this ensures that the maintenance regime for a new asset is clearly defined as soon as it commences operation. Guidance for identifying maintenance and related requirements is provided in a series of documents including (for example) the <i>Asset Maintenance Requirements FMEA/RCM Guideline</i>,²¹⁴ which describes the application of Failure Modes and Effects Analysis (FMEA) and Reliability Centred Maintenance (RCM) principles in developing a maintenance plan.</p> <p>Maintenance plans are implemented through the work order management process, which is detailed (for the Maximo platform) in the <i>Maximo Team Leader User Guide</i>.²¹⁵ The <i>Work Scheduling and Assignment Procedure</i>²¹⁶ describes the process by which a maintenance Team Leader prioritises and assigns/allocates work to resources such that business performance indicators and customer response expectations are met. As discussed in respect of</p>	A	1

²¹² Asset Handover Guideline.pdf #58553531 09 June 2021

²¹³ Asset Handover Checklist Template.pdf #58546657 v.8

²¹⁴ Asset Maintenance Requirements FMEA-RCM Guideline.pdf.

²¹⁵ MAXIMO_-_Team_Leader_-_User_Guide_v4.1.pdf.

²¹⁶ DRAFT - Work Scheduling & Assignment Procedure.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating																																
			<p>Criterion 6.5, maintenance activities are scheduled on a risk-based priority basis.</p> <p>The completion of maintenance activities, planned and reactive/breakdown, is monitored through corporate reporting systems at all organisational levels.</p> <p>Performance:</p> <p>Implementation of the documented arrangements in respect of maintenance plans and their implementation was assessed principally through a demonstration of Maximo functionality. For example:</p> <ul style="list-style-type: none">Review of maintenance records for the RAS Pump 1 (S8023948) at the Margaret River WWTP revealed that three maintenance plans are applicable: <table><tr><th>Maintenance Plan</th><th>Maintenance Item</th><th>Description</th><th>Priority</th></tr><tr><td>1186301</td><td>266241</td><td>52W MECH MTCE PUMPING SYS RAS WWTP 2 MAR</td><td>4</td></tr><tr><td>1186302</td><td>266242</td><td>52W MAGFLOW MTCE OUTLET RAS PS M.RVR</td><td>3</td></tr><tr><td>1186303</td><td>266243</td><td>52W ELECT MTCE NSTALL RAS PS WWTP 2 MARG</td><td>3</td></tr></table> <p>Maintenance Item 226241 (for example) has a linked work instruction <i>GW1 M00176 Pump Submersible Maintenance</i>. Review of the work instruction confirms that, in addition to a step-by-step description of the process, details of training and competency requirements and PPE, materials and equipment requirements, and relevant reference documents are also included.</p> <p>These items are scheduled to be undertaken annually; given the time that the upgraded plant has been operational, these activities have only been completed on one occasion.</p> <ul style="list-style-type: none">Maintenance records for the Bolgart Tank (W4102553) revealed that a single maintenance plan is applicable: <table><tr><th>Maintenance Plan</th><th>Maintenance Item</th><th>Description</th><th>Priority</th></tr><tr><td>1186103</td><td>265872</td><td>05Y CLEAN TANK GL 2 BOLGART EAST RD WSC</td><td>n/c²¹⁷</td></tr></table> <p>This maintenance item is scheduled to occur every five years. As this was a new tank installed in late 2018, the first call date is in 2024 and the following in 2029.</p> <ul style="list-style-type: none">Maintenance records for the Northam Tank (W0021338) again revealed that a single maintenance plan is applicable: <table><tr><th>Maintenance Plan</th><th>Maintenance Item</th><th>Description</th><th>Priority</th></tr><tr><td>1012990</td><td>58741</td><td>03Y CLEAN TANK 2 NORTHAM TOWN</td><td>n/c</td></tr></table> <p>This maintenance item has a linked work instruction <i>GW1 C00058 Clean Tank or Reservoir</i>.</p> <p>This maintenance item is scheduled to occur every three years. Records indicate that the work was completed in July 2013, March 2016, March 2018 and February 2021.</p>	Maintenance Plan	Maintenance Item	Description	Priority	1186301	266241	52W MECH MTCE PUMPING SYS RAS WWTP 2 MAR	4	1186302	266242	52W MAGFLOW MTCE OUTLET RAS PS M.RVR	3	1186303	266243	52W ELECT MTCE NSTALL RAS PS WWTP 2 MARG	3	Maintenance Plan	Maintenance Item	Description	Priority	1186103	265872	05Y CLEAN TANK GL 2 BOLGART EAST RD WSC	n/c ²¹⁷	Maintenance Plan	Maintenance Item	Description	Priority	1012990	58741	03Y CLEAN TANK 2 NORTHAM TOWN	n/c		
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²¹⁷ Detail not captured.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Maintenance at the Perth Seawater Desalination Plant (PSDP) is managed and implemented by proAlliance (Alliance partner) using an independent maintenance management system. Records included (for example):²¹⁸</p> <ul style="list-style-type: none"> Maintenance activity for 1st Pass High Level Pump 3 (PU41301) includes more than thirteen PM Schedules (maintenance plans) to be undertaken at intervals varying from one week (e.g. 1W RO Plant Lube Inspection) to six-years (e.g. 6Y HP Pump Rebuild). A sample of work history entries show that maintenance has been completed. Maintenance activity for Drinking Water Chlorine Analyser (AIT67705) includes three PM Schedules, which have been completed at the required monthly and yearly intervals. It was noted that breakdown maintenance had been undertaken in October 2020 due to the instrument reading incorrectly. <p>The scheduling of tasks using an online graphical interface was demonstrated. This showed how the work is assigned on the basis of priority (amongst other factors), with assigned time allowances and staff availability taken into account. Reactive and alarm response activities are typically reflective of an actual or impending failure, which presents a higher risk of failing to meet service requirements.</p> <p>When maintenance team members are assigned a task of high or moderate risk, they are provided with a "Work Pack" containing all documentation required to undertake the work in a safe manner. This includes relevant work instructions, a Job Hazard Analysis form for completion at the site, and Work Pack Quality Assessment cover sheet.^{220,221}</p> <p>Progress in completing assigned maintenance tasks is monitored by a team leader. For example, dashboard reporting within Maximo shows running completion of assigned tasks on a daily and weekly basis. Maintenance completion status is reviewed at daily team leader meetings (District), whilst planned maintenance performance and the completion of corrective maintenance is reviewed at Monthly Work Program Review Meetings (held at District level). Performance reporting is rolled-up through the organisation.</p> <p>Water Corporation indicated that it has identified an increasing level of 'maintenance debt', i.e. the gap between maintenance required and maintenance funded.²²² This has resulted in increasing level of asset risk and risk realisation; asset degradation and failure, compliance breaches, service interruptions, and impact on employee wellbeing; and increasing spend on corrective maintenance. As part of the 2021/22 budget build, approval of temporary funding to complete non-labour operations and maintenance activities, i.e. those that require external resources to complete or execute due to expertise or capacity shortfalls within the fixed labour model.²²³ This action demonstrates that Water Corporation has identified a shortfall in respect of its maintenance strategy/implementation and is taking action to address it.</p>		

²¹⁸ HP3 DW Analyser CMMS Screenshots.pdf.

²¹⁹ Based on the extract provided.

²²⁰ Planned Mtce Elect Work Pack.pdf.

²²¹ Reactive Elect Work Pack.pdf.

²²² Work_program_build_Non_labour_infrastructure_maintenance_budget_2021_22_Barry_Dean_update_170521.pdf.

²²³ Business Case - One Investment BC operations and Maintenance 21_22.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Maintenance performance at the PSDP is monitored internally by proAlliance and reported to Water Corporation monthly via a Governance Dashboard. Review of a selection of reports from throughout the review period showed that maintenance work backlog was generally stable at around 10 days; the proportion of preventative to total maintenance work orders completed remained in excess of 90% and more typically 95-98%. These figures are indicative of good maintenance performance.</p> <p>Observations made during the virtual site inspections revealed assets at both the PSDP and Margaret River WWTP to be in generally good condition. proAlliance identified some improvement initiatives that had been implemented in response to identified maintenance issues; for example, metal grating (and where practical, other components) throughout the plant are being replaced with fibreglass due to deterioration in the highly corrosive atmosphere. It was noted that the Alliance contract arrangements include provisions in respect of asset condition at the end of the contract term; this serves to ensure that the condition of the treatment is maintained.</p>		
6.4	Failures are analysed and operational/maintenance plans adjusted where necessary.	4	<p>Summary: Water Corporation has systematic review processes for managing asset deficiencies, including asset failures, and for the investigation of such failures and emerging risks. Furthermore, it demonstrated that the findings of an investigation will result in a change to maintenance plans when found to be appropriate.</p> <p>Process and policy: Asset deficiencies, including asset failures, are managed in accordance with the <i>Manage Asset Deficiency Guideline</i>.²²⁴ As reported in respect of Criterion 3.1, this guideline details how the deficiency is recorded and managed, and how it is documented for further assessment in the Asset Investigation Process. The asset deficiency management process involves:</p> <ul style="list-style-type: none"> For identified deficiencies, including those identified through asset failure (reactive) that cannot be resolved by Field Operations, an Asset Deficiency Report is prepared. Asset Deficiency Reports are reviewed on the basis of risk to assess the need for, and prioritisation of, further investigation. Issues identified for further investigation are captured in an Asset Deficiency Register. They are then prioritised for investigation using a collaborative, risk-based process, which is conducted monthly across all regions. The status of deficiency investigations and outcomes is monitored to ensure that actions are captured and implemented through planned investment, and deficiencies are 'closed out' once all actions are complete. <p>Asset investigations are undertaken in accordance with the <i>Plan Asset Investigation Guideline</i>.²²⁵ This guideline describes Water Corporation's approach to the investigation and resolution of asset failures or emerging asset risks to ensure that asset management objectives are achieved.</p> <p>Asset investigations fall into one of three categories:</p>	A	1

²²⁴ Manage Asset Deficiency Guideline #17958113 v.21/12/2017.

²²⁵ Plan Asset Investigation Guideline #58582518 v.29/06/2021.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Reactive Issue/Risk Identification and Investigation – undertaken by Field Operations, this approach typically results in a ‘like for like’ replacement aimed at maintaining ‘business as usual’ functionality. Where the issue is not readily resolved, it is escalated to Operations Engineering for review and further action. Field Investigation – undertaken by Operations Engineering, these investigations typically address more complex issues, which can be escalated to the Asset Performance Technical Advisor if an appropriate solution cannot be identified. Asset Planning Investigation – undertaken by Asset Investment Planning, these investigations consider wider planning objectives that impact an asset replacement. These investigations are principally initiated in response to performance and/or condition monitoring activities (i.e. proactively); however, may also be initiated in response to an actual failure (reactively). <p>All investigations are prioritised on the basis of risk/benefit in respect of meeting Water Corporation’s asset management objectives /maintaining levels of service. Accordingly, consideration is given to information including:</p> <ul style="list-style-type: none"> Asset physical condition, which may be based on observation or a surrogate measure such as age if condition cannot be readily assessed. Demand data and associated trends (growth or decline). Asset reliability/operating performance (including, for example, failure data, flow yield, overflow frequency). Levels of service data including, for example, water quality data, system flow and pressure, safety reporting data). <p>Investigations typically include the following (tailored to the specific case):</p> <ul style="list-style-type: none"> Understanding of the issue/risk and work done to date. Collection, rationalisation and validation of performance data. Validation of asset investigation criteria (confirmation of drivers). Liaison/engagement with internal stakeholders as required. Identification of constraints and opportunities. Identification of solutions. Development of an implementation plan, which should address need, scope, timing, cost, triggers and risk). Review/updating of risk assessments as a result of investigation decisions. <p>All Field and Asset Planning Investigations are documented in an Asset Investigation Report, which is required to include details in respect of: issue/risk description; background; need; evaluation to date; decisions (in respect of investment/operational issues/acceptance of higher risk); relevant contacts; and implementation priority.</p> <p>Implementation of these arrangements should facilitate robust examination of any failures and ensure that appropriate corrective action is implemented.</p> <p>Performance: As previously reported in respect of Criterion 3.2, Water Corporation provided an example of an identified asset deficiency (essentially a failure) and associated investigation report that triggered a change in maintenance</p>		

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>planning (as opposed to a capital (new/replacement/upgraded asset) solution). An email-based report <i>Haz-143820 Structurally unsafe radio communication towers</i>²²⁶ identified that two communication towers in the North West Region had been found to be structurally unsafe.</p> <p>Reference to maintenance records revealed that no planned maintenance had been undertaken on the towers. Actions implemented as a result of the identified deficiency/failure and associated investigation included replacement of the two deficient towers; review and update of the relevant maintenance strategies; and communication of the changes in maintenance strategy throughout the Corporation.</p> <p>This example demonstrates the action taken and benefit derived through implementation of Water Corporation's guidelines for the management of asset deficiencies and the investigation of asset failures or emerging risks.</p>		
6.5	Risk management is applied to prioritise maintenance tasks.	2	<p>Summary:</p> <p>Water Corporation has a robust risk-based process in place that facilitates prioritisation of both its operations and maintenance tasks which, in effect, are jointly managed. Implementation was demonstrated during a virtual site visit to the Leeuwin Depot; each work order (operation and maintenance) is assigned a priority rating, which is taken into account during the resource scheduling process.</p> <p>Process and policy:</p> <p>As reported in respect of Criterion 5.2, operations and maintenance tasks are prioritised in accordance with the <i>Planned Operations and Maintenance Prioritisation Guideline</i>.²²⁷ This guideline outlines a prioritisation process based on risk, taking into account that low priority work may need to be deferred in the short term in order to accommodate budget and other constraints.</p> <p>The Guideline describes a risk prioritisation framework whereby tasks/activity is to be undertaken in accordance with the following prioritisation:</p> <ul style="list-style-type: none"> • Priority 1 – activity that directly contributes to compliance with statutory obligations. • Priority 2 – activity that directly contributes to compliance with the requirements of Water Corporation's business licences (licence and regulation). • Priority 3 – activity that is business critical in relation to the enabling of Priority 1 or 2 activities and level of service type activities (reliability, safety or compliance). • Priorities 4 to 7 – activities which, if not completed, would result in extreme, high, moderate or low risk (as assessed under the corporate risk profile). • Priority 8 – activities for which the risk (consequence/likelihood) has not yet been assessed. <p>Planned operation and maintenance tasks are assigned Priority 4 to 7, with the priority of tasks associated with statutory, business licence or business critical (mandatory) activities elevated accordingly. Tasks that can be used in multiple risk settings are assigned a nominal priority of zero, which is then</p>	A	1

²²⁶ Haz-143820 Structurally unsafe radio communication towers.

²²⁷ Planned Operations and Maintenance Prioritisation Process Guideline.pdf #58583163 01 November 2018.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>adjusted within allowed limits to represent the risk associated with the asset being managed by the activity.</p> <p>A prioritised tasks list, which identifies the priority for an extensive list of tasks, is included as an appendix to the Guideline. This identifies priority band limits applicable to tasks that can be used in multiple risk settings.</p> <p>As also reported in respect of Criterion 5.2, the auditor questioned the prioritisation, specifically in expectation that the corporate risk profile would include prioritisation of statutory, licence and regulation, and business critical risks at the appropriate level of assessed risk. This approach appears (potentially) to override the risk assessment process in respect of these aspects. Nonetheless, Water Corporation does have a clearly defined process for prioritising operations tasks on the basis of risk.</p> <p>In summary, Water Corporation has guidance in place that facilitates the prioritisation of both operational and maintenance tasks.</p> <p>Performance:</p> <p>Implementation of the prioritisation of maintenance tasks was observed during a demonstration of maintenance planning during a virtual site visit to the Leeuwin Depot at Busselton. For example, the following maintenance work orders identified the assigned priority:</p> <ul style="list-style-type: none"> • Work Order 96054480 – 13W Civil Mtce WPS Siding Rd Quindalup, Quindalup Water Pump Station – Priority 5 High Risk. • Work Order 9604674 – 08W SSE Insp Borefield Peppermint Grove, Peppermint Grove Beach Water Borefield Abstraction – Priority 3 Business Mandatory. • Work Order 96074129 – 04W Civil Mtce Compressor 1 WTP Fisher Road, Kudardup WTP – Priority 5 High Risk. • Work Order 96075770 – 04W Clean Sprinklin Filters Reuse Eff WWT, Ambergate Wastewater Treatment Plant – Priority 5 High Risk <p>As reported in respect of Criterion 5.2, the scheduling of tasks using an online graphical interface was demonstrated. This showed how the work is assigned on the basis of priority (amongst other factors).</p> <p>These examples demonstrated that maintenance tasks for which work orders had been raised were assigned a priority, and that the assigned priority is taken into account scheduling the work (i.e. allocating it to the available maintenance staff).</p>		
6.6	Maintenance costs are measured and monitored.	5	<p>Summary:</p> <p>As reported in respect of Criterion 5.5, Water Corporation has a system to capture operational and maintenance costs. Costs are captured through works orders, from where they are 'settled' into SAP-FICO, the corporation financial general ledger. Actual costs are reported against budget/forecast using Power BI generated reports, which are reviewed/monitored at district, region and corporate levels. Examples provided demonstrated that (operational and) maintenance costs are effectively captured and monitored.</p> <p>Process and policy:</p> <p>All costs, including operational and maintenance costs, are recorded in the SAP-FICO (SAP Finance and SAP Controlling) module, which is effectively Water Corporation's general ledger, or single source of truth, for financial reporting. Irrespective of the way they are captured or to what activity they relate, all costs are 'settled' to FICO.</p>	A	1

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>(Operational and) maintenance costs are captured through Work Orders as part of the closeout process. Work order records include details of task codes and cost centre location which determine where costs are automatically posted in FICO. Guidance such as the <i>SAP PM Business Rule No 04 - Allocating SAP PM Orders to Faults</i>²²⁸ work instruction provide direction as to how a work order should be completed to ensure that data is correctly captured.</p> <p>Cost data captured in FICO is compiled for financial reporting purposes and can be monitored against forecast/budget. Power BI is then used to generate reports (including online dashboard reporting) for monitoring purposes.</p> <p>Performance: Review of maintenance records held in Maximo (operational costs are treated the same) demonstrated the capture of costs associated with each work order, follows:</p> <ul style="list-style-type: none"> RAS Pumping System at Margaret River WWTP – completion of Work order 95816620 for completion of Operation MSQOTM016 SERVICE MISC EQUIPMENT incurred total costs of \$732.78 (including labour and District support) and 5.48 hours of time. The entry showed that the total cost had been ‘settled’ (against FICO). Tank cleaning at Northam Reservoir – completion of Work Order 95936106 for completion of Operation CWTRM005 CLEAN RESERVIR/TANK incurred total costs of \$6,007.86 for external engineering services; no in-house costs or time were recorded. The entry again showed that the total cost had been ‘settled’. <p>Costs are monitored at district level at Monthly Work Program Review Meetings, for which a ‘Financial overview’ is a standard agenda item²²⁹, and similarly at regional level.</p> <p>Monitoring of costs at regional/corporate level was demonstrated by example screenshots of Power BI reports including:²³⁰</p> <ul style="list-style-type: none"> Work Program Comparison; High Level Regional Summary – which showed a comparison between planned and actual expenditure (year-to-date). Governance Report 2020 (outside review period) – which showed budgeted and actual expenditure (across all expenditure types) on a monthly basis throughout the financial year, by activity and by order type (including operating, planned and corrective). <p>These examples demonstrated that operational (and maintenance) costs are effectively captured via the work order system and are monitored.</p>		
7	Asset management information system An asset management information system is a combination of processes, data and software supporting the asset management functions.			A	1
7.1	Adequate system documentation for users and IT operators	4	<p>Summary: The assessment management information system has performed well throughout the review, no issues were observed.</p>	A	1

²²⁸ SAP PM Business Rule No. 04 - Allocating SAP PM Orders to Faults.pdf.

²²⁹ 2022 Monthly Work program Meeting – Agenda.pdf.

²³⁰ Email dated 17 September 2021 from Water Corporation (re: *Water Corporation AMS Review - Operation and Maintenance Costs*).

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>In consideration of the criteria, it could be seen that staff were well trained in the use of these systems and adequate documentation was available to perform the tasks reviewed.</p> <p>Process and Policy: In response to this criterion Water Corporation stated the following: <i>"There are multiple training packages and platforms which provide guidance and user requirements for information system operators. For Example: Operations Manuals provided to end users, SCADA training package provided to new users, new IT training platform implemented. The works management project is still underway in development phase, therefore any training packages and change management requirements will be included in the program roll out across the business."</i></p> <p>The <i>Information Governance Policy</i>²³¹ has been developed to implement effective information management through:</p> <ul style="list-style-type: none"> • Consistent, reliable relevant information. • Actionable insights and business intelligence. • Reliable, secure and well-supported information infrastructures and business systems. <p>Examples of IT system documentation for users and IT Operators include:</p> <ul style="list-style-type: none"> • Disaster Recovery Procedure UWSS & UWSS2, - PSTN, - ClearSCADA Server²³² – this document describes how to handle major network issues for SCADA. • SCADA Operator and Maintenance Manual Tamworth Hill CDP²³³ – Operation and maintenance details. • SRA User Manual.²³⁴ • Application of Maintenance Activity Types (MAT's) in SAP PM.²³⁵ • Micro Planning Guidelines, Operating Budget 2018/19 Base Load Information – Part 2236 – Details how to prepare the annual in SAP • Business <i>Performance Reporting Manual</i>²³⁷ – Administration of the business Performance Reporting system. <p>Through the digital up lift program IT systems are being upgraded. SAP-PM is still the point of truth and Maximo is being slowly rolled out and documentation developed.</p> <p>Performance: During the review interviews and virtual inspections, it was evident that staff were well versed in the operation of the asset management system software. All required information could be navigated to in a reasonable timeframe.</p> <p>Learning Management System includes training in the systems and process. Program of Delivery for Maximo and that is been delivered by IBM and access to the Maximo Academy. Training records were viewed during the interviews.</p>		

²³¹ PCY237 Information Governance #556032.

²³² Disaster Recovery Procedure UWSS & UWSS2, - PSTN, - ClearSCADA Server 03/05/2021.

²³³ SCADA Operator and Maintenance Manual Tamworth Hill CDP 29/07/2019.

²³⁴ SRA User Manual.

²³⁵ Application of Maintenance Activity Types (MAT's) in SAP PM # 4260466.

²³⁶ Micro Planning Guidelines, Operating Budget 2018/19 Base Load Information – Part 2 #14956382.

²³⁷ System Administration Manual, Business Performance Reporting (BPR) #373140.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.2	Input controls include suitable verification and validation of data entered into the system	2	<p>Summary:</p> <p>Water Corporation has a number of processes in place to verify and validate data. This is ultimately the responsibility of the Data Custodian. Throughout the review Water Corporation's systems were reviewed thoroughly and the data that was held all appeared to be of a high quality, indicating that verification and validation processes were effective.</p> <p>There is a current open recommendation, in relation to the information captured through work orders. This is being addressed through the Works Management Project, which will implement Maximo. This clause has been graded A2 until the quality of the information is improved.</p> <p>Process and Policy:</p> <p>The <i>Information Governance Policy</i>²³⁸ sets the direction for data quality; it states:</p> <p><i>"Process Managers and Data Custodians will take all reasonable steps to ensure the quality, validity and relevance of information assets within their processes or data domains (subject areas)."</i></p> <p>Water Corporation has also established the <i>Information Management – Data Policy</i>²³⁹; this specifies the minimum requirements for data quality, which include:</p> <p>"Validity – Describing what constitutes valid data. This will show how data validity is controlled and measured. This shall include a description of the business rules (expressed both as a text-based description, and technically e.g. as a regular expression) that enforce this validity. Data validity may include the range of acceptable values or combination of values across multiple attributes and tables.</p> <p>Integrity – Describing how the integrity between different data sources is maintained both within and across and business functions with a single consistent, 'master' version of corporate data for sharing throughout an organization, and minimised redundancy or disparity."</p> <p>The policy describes a Plan, Do, Check, Act process for the management of data quality and this is implemented for SCADA through a number of SCADA Data Quality Processes and Work Instructions:</p> <ul style="list-style-type: none"> • <i>Monitor OPR Data Quality Issues</i>²⁴⁰ – this is the process used to check the quality of data output by instruments used for Operational Performance Monitoring. • <i>Post Commissioning Data Checking</i>²⁴¹ – this is verification of the data collected by SCADA after commissioning of new systems. • <i>Data Corrections</i>²⁴² – this work instruction details the weekly checks that are required to validate SCADA data. The systems flags data that is out of range, gaps in data etc and these need to be checked by an operator. 	A	2

²³⁸ PCY237 Information Governance #556032.

²³⁹ S062 Information Management – Data #384094.

²⁴⁰ Monitor OPR Data Quality Issues.

²⁴¹ OC Data Analyst - Work Procedure - Post Commissioning Data Checking #12237854.

²⁴² Work Procedure - OC Data Analyst – Data Corrections #11347330.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Review Data Exception Reports²⁴³ – details the weekly checking of bore data across the state. <p>The <i>Data Integrity Guideline</i>²⁴⁴ defines the process that is to be followed to determine the quality of data that is used to produce information that is used by internal and external stakeholders for decision making purposes.</p> <p>Water Corporation has also stated that:</p> <p><i>“Throughout the asset acquisition process and asset handover we assess the data quality from asset delivery to asset operations.</i></p> <p><i>There are a number of controls in place when entering documentation into Nexus. The verification and validation occurs through this process.”</i></p> <p>Performance:</p> <p>The <i>Information Management – Data Policy</i> describes how Data Custodians responsible for the for particular datasets are to promote, improving data quality and consistency and work with process managers to identify and resolve data issues.</p> <p>During the review various types of data were reviewed:</p> <ul style="list-style-type: none"> Asset information in relation to infrastructure observed during the site inspections. Water quality data. Work orders.²⁴⁵ Document metadata. <p>On review of the work orders in SAP-FL, it seems that some of the data is very generic and this will not be improved until Maximo is implemented.</p> <p>Previous Recommendation R2/2018</p> <p>Reporting showed consistently poor data quality on some measures for work orders. This is being addressed through the implementation of the Work Management Project.</p> <p>The Work Management Project is implementing Maximo in place of SAP for the management of asset data and is being delivered in two stages. Stage 1 is the deployment of the Work Execution capability in Maximo. SAP will continue to be the master in relation to the generation of Work Orders and custodianship of Asset data. This means that Water Corporation will continue to be intrinsically linked to SAP and by default, any improvement of Asset data in legacy systems will be delayed until the Work Orders are decoupled from SAP. The current deployment (still coupled to SAP) is delivering additional operational benefits in relation to the visibility of the Planned versus Actual unit rates. This information is now dynamic, removing the need for delayed monthly reporting.</p> <p>Stage 2 involves decoupling from SAP and remastering the Asset Data Model and Asset Activity Model in Maximo, thereby allowing improvement in asset data quality.</p> <p>The Recommendation will remain open until completion of the Works Management Project.</p>		

²⁴³ Work Procedure - OC Data Analyst – Review Data Exception Reports #11347393.

²⁴⁴ Data Integrity Guideline - Guideline for establishing data quality and integrity for publications and reporting #19999185.

²⁴⁵ Pump 2 PU52202 RAS PS WWTP 2 Margaret Ri FLS8023944.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.3	Security access controls appear adequate, such as passwords	4	<p>Summary: Based on the documentation that is in place, and by observing the information management systems during the review interviews and site inspections, it could be seen that the systems were secure.</p> <p>Process and Policy: <i>The Information Systems Security Standard²⁴⁶ “specifies requirements to maintaining the integrity and confidentiality of the Corporation’s application, data and infrastructure. It defined requirements for how accounts, passwords and privileges are configured in a manner that do not expose the Corporation’s IT assets to compromise.”</i></p> <p>Performance: Water Corporation mentioned that it is continuing to work on “risk controls - e.g. unauthorised access to systems. These documents provide all the requirements for access controls and permissions”.</p> <p>During the review interviews and site inspections, access to the systems and processes was observed and it could be seen that the systems were secure and protected by usernames and passwords.</p>	A	1
7.4	Physical security access controls appear adequate	4	<p>Summary: There is a standard for the physical security of locations that contain Water Corporation data. Although locations were not physically inspected, it appeared that controls were adequate based on the observation through virtual inspections.</p> <p>Process and Policy: <i>The Information System Security Standard²⁴⁷ contains the security requirements of the data centres, which requires that “physical access control to the Corporate and SCADA rack in the data centres and unmanned site must be ensured”.</i></p> <p>Performance: Access to the data centre and Operational Technology assets are controlled. Data centres are located in Leederville and also off site (in Malaga) to reduce risk.</p> <p>SCADA provides alarms and controls which are monitored by the Operations Centre.</p> <p>As this was a virtual review, the security could not be physically inspected, but based on the evidence observed it would appear to be adequate. An example that it could be seen was that the Margaret River Wastewater Treatment Plant was fully fenced, preventing unauthorised access to equipment onsite.</p>	A	1

²⁴⁶ S507 Information Systems Security – Users Account and Systems Management #16024261.

²⁴⁷ S503 Information Systems Security – Assets Disposal and Loss Prevention #16005342.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.5	Data backup procedures appear adequate and backups are tested	4	<p>Summary: Water Corporation has a comprehensive data backup process, which appears adequate, and backups are tested.</p> <p>Process and Policy: Water Corporation has duplicate data centres, in separate locations, to improve the resilience of data storage and management.</p> <p>Offline data is backed up to the cloud through a number of providers. The <i>Storage and Backup Recovery Plan</i>²⁴⁸ document details of the disaster recovery plan for the two main storage solutions in place at Water Corporation, Unity Storage and Scale I/O. This is a master plan and links to a number of sub-recovery plans for other elements of hardware on which the Storage solution is dependent.</p> <p>Operational technologies, such as Clear SCADA, have an auto backup process that uses fileshare.</p> <p>The Nexus document management system backups don't require backup recovery, as this is a third-party cloud-based solution. Backups are the responsibility of the third-party provider.</p> <p>Performance: Restoration of production data is regularly conducted as part of business-as-usual requests. All requests are tracked via ServiceNow; evidence of the successful restoration of a database file was provided.²⁴⁹</p> <p>Data is consistently replicated\copied between the data centres and the backup repositories using NetApps, with alerts configured to notify the storage administrators of issues.</p> <p>Backup jobs are recorded in the <i>Backups Daily Storage Report</i>;²⁵⁰ this identifies the successful and unsuccessful jobs, testing the backup process.</p> <p>Monthly backup reports²⁵¹ are generated for particular services for review by Water Corporation.</p>	A	1

²⁴⁸ IT Service Recovery Plan Storage & Backup #77293054.

²⁴⁹ RITM0440677- Restore Database File record.

²⁵⁰ BEI Storage Backups Daily Report #9095491.

²⁵¹ Email: Backup figures for end of August 2021 with BEI-CSL-17.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.6	Computations for licensee performance reporting are accurate	5	<p>Summary:</p> <p>On review of the documentation and a sample of the data transformation, the computations for licence performance reporting appear to be accurate. This is also backed up by the 2018/19 NPR Audit Report, which found that all the indicators had been prepared and reported in accordance with the handbook.</p> <p>Process and Policy:</p> <p>The <i>Water, Sewerage and Irrigation Licence Performance Reporting Handbook</i> specifies the non-financial performance data that licensees must provide to the ERA. This includes reporting under the National Water Initiative (NWI) Urban Framework (which is used to develop the annual National Performance Report (NPR) for urban water utilities) as well as licence specific performance indicators.</p> <p>The <i>ERA and NPR Reporting Procedure</i>²⁵² details the data collection, data transformation and report location for each of the relevant NPR metrics.</p> <p>The <i>Annual Performance Reporting Work Instruction</i>²⁵³ details the process for lodging the data for the NPR. Step 7 in this process is to review the data for accuracy and consistency. This step references the “<i>Data Integrity Guideline</i>²⁵⁴, which provides the required <i>approach to facilitate greater rigour in accurate, timely and fit-for-purpose data when producing information for internal and external stakeholders and decision-making purposes</i>”. All reporting undertaken by Asset Performance follows the <i>Data Integrity Guideline</i>.</p> <p>The <i>Water, Sewerage and Irrigation Licence Performance Reporting Handbook</i> requires that Water Corporation submits datasheets to the ERA to fulfil performance reporting requirements. The process to undertake this is detailed in the <i>Annual ERA Performance Reporting Work Instruction</i>.²⁵⁵ The <i>2020-21 Performance Reporting Datasheet</i>²⁵⁶ was provided as evidence.</p> <p>Performance:</p> <p>A sample of the data transformations in Water Corporation’s <i>ERA and NPR Reporting Procedure</i> were reviewed and appeared to be accurate.</p> <p>The NPR is audited every 3 years by an external auditor. The 2018/19 audit report²⁵⁷ identifies “... that the Corporation has, in all material respects, prepared the reported NPR data for the period 1 July 2018 to 30 June 2019 in accordance with the <i>Definitions Handbook</i>”.</p>	A	1

²⁵² ERA and NPR Reporting Procedure (APM) (Economic Regulation Authority (ERA) and National Performance Reporting (NPR) metrics collection procedure) #96196099.

²⁵³ Annual Performance Reporting Bureau of Meteorology and Australian Bureau of Statistic Work Instruction #101685325.

²⁵⁴ Data Integrity Guideline: Guideline for establishing data quality and integrity for publications and reporting #19999185.

²⁵⁵ Annual ERA Performance Reporting Work Instruction #48505167.

²⁵⁶ 2020-21 Performance Reporting Datasheet.

²⁵⁷ Water Corporation, National Performance Report (NPR) Audit – 2018/19.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.7	Management reports appear adequate for the licensee to monitor licence obligations	5	<p>Summary: Water Corporation uses an online reporting tool to collate data from various locations within the business and generate performance reports. The Business Performance Reporting (BPR) appears to be more than adequate to report on licence obligations. Data is continuously being refreshed; data custodians throughout the business have to maintain their datasets and the reports are automated, once they have been created. This is an efficient process and allows for rolling updates of reports.</p> <p>Process and Policy: ERA has developed the <i>Water Compliance Reporting Manual</i>, which provides licensees with:</p> <ul style="list-style-type: none"> • A consolidated list of the licence obligations relevant to all licensees • Categorisation of licence conditions to assist with reporting obligations • A self-assessment framework for licensees to facilitate compliance with licence conditions and report non-compliances to the ERA. • The format and timing of the reports that licensees must provide to the ERA. <p>Water Corporation prepares an <i>Annual Compliance Report</i>.²⁵⁸ This report details the obligations that Water Corporation did not comply with during the reporting period.</p> <p>Water Corporation uses a web-based tool to monitor licence obligations, as well as other internal and external measures and ensure that internal measures align with corporate objectives. The Business Performance Reporting (BPR) system has numerous reports and reporting packs, which aim to streamline the reporting process. Administration of the BPR system is detailed in the <i>BRP System Administration Manual</i>.²⁵⁹ This system draws data from across the organisation to develop the reports. Finance is the custodian of the system and there are various data custodians across the business that need to update data across the business.</p> <p>The BPR Board/Executive Reporting Pack has a documented approval process²⁶⁰ to ensure that the Executive Committee supports any changes to reporting.</p> <p>Performance: The BRP system was reviewed during the interview process and appeared to be adequate for monitoring licence obligations. Anecdotally, licence obligations undergo a monthly review using the BPR system. In addition, to reviewing the system, a sample <i>Corporate Compliance Performance Report</i>²⁶¹ was reviewed.</p>	A	1

²⁵⁸ 2019-20 Annual ERA Compliance Report (26 August 2020).

²⁵⁹ System Administration Manual, Business Performance Reporting (BPR) #373140.

²⁶⁰ Approval Process for BPR Board/Executive KPI Reporting #1744243.

²⁶¹ Corporate Compliance Performance Report – June 2021.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
7.8	Adequate measures to protect asset management data from unauthorised access or theft by persons outside the organisation	4	<p>Summary: Adequate measures appear to be in place to protect asset management data. There is a specification strategy for the management of Operational Technology, which includes such things as SCADA. There is also a general standard that covers the security of IT systems.</p> <p>Process and Policy: The <i>Operational Technology Security Management Strategy</i>²⁶² provides a framework for the effective and consistent planning, management and record keeping of all operational technology related software and hardware security requirements. This is primarily related to SCADA and covers the various components of the system, including network, software, Security & ICT Security.</p> <p>In general, the <i>Information Systems Security Standard</i>²⁶³ “specifies requirements to maintaining the integrity and confidentiality of the Corporation’s application, data and infrastructure”. This provides the security framework for Water Corporation’s IT systems and, in turn, its asset management data.</p> <p>Performance: During the review interviews and site inspections, access to the systems and processes was observed and it could be seen that the systems were secure and protected by usernames and passwords.</p> <p>It could also be seen that the Margaret River Wastewater Treatment Plant was fully fenced, preventing unauthorised access to equipment onsite. Basic security measures enable Water Corporation to limit the access to systems with asset management data.</p>	A	1
8	Risk management Risk management involves the identification of risks and their management within an acceptable level of risk.			A	1
8.1	Risk management policies and procedures exist and are applied to minimise internal and external risks	2	<p>Summary: Water Corporation has developed a risk management framework that minimises external and internal risk. The risk framework includes the <i>Risk Management Policy</i>, <i>Corporate Risk Management Guidelines</i> and the <i>Asset Risk Framework</i> that interprets the Corporate framework for the asset management context.</p> <p>Process and Policy: The <i>Corporate Risk Management Framework</i>²⁶⁴ consists of six elements:</p> <ul style="list-style-type: none"> • Risk Management Policy. • Risk Management Process (methodology). • People. • Corporate Risk Assessment Criteria. • Corporate Risk Information System (CRIS). • Risk Reporting. <p>Water Corporation has a <i>Corporate Risk Management Policy</i>.²⁶⁵ The policy has the following objectives:</p>	A	1

²⁶² Operational Technology Security Management Strategy #9832921.

²⁶³ S507 Information Systems Security – Users Account and Systems Management #16024261.

²⁶⁴ Corporate Risk Management Framework #16100952.

²⁶⁵ PCY135 Corporate Risk Management #58548888.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p><i>“That risk management forms an integral part of all decision making and is adopted throughout the Corporation as a prudent management practice.</i></p> <p><i>To ensure that all employees, contractors and partners are made aware of the need to manage risk, and to promote a culture of participation in the process.</i></p> <p><i>To set the standard for the risk management process and subsequently the management of risk.</i></p> <p><i>To direct effective organisational resilience related practices including Incident Management, Emergency Management, Crisis Management, and Business Continuity Management.”</i></p> <p>The policy has a number of principles, which include the following points:</p> <ul style="list-style-type: none"> • Protection and preservation of life always has primacy. • Accountability for risk management is detailed and refers to the Accountability Framework.²⁶⁶ • A full review of the corporate and business risk profiles is to be conducted annually. • Risk assessment are to be conducted using the <i>Corporate Risk Assessment Criteria</i>²⁶⁷ and recorded in the Corporate Risk Information System (CRIS).²⁶⁸ <p>The <i>Corporate Risk Management Guidelines</i>²⁶⁹ has been developed to achieve consistent application of the corporate risk methodology. There is a detailed description of the risk assessment process, risk appetite, risk treatment and the monitoring & review of risks. The definitions of likelihood and consequence are in the <i>Corporate Risk Assessment Criteria</i>.²⁷⁰</p> <p>Water Corporation has a low-risk appetite. Only risks ranked low are acceptable. Moderate risks are to be monitored but no additional controls are required. High and Extreme risks require Risk Strategy and Actions to reduce the risk. However, a high risk can be justified if it is not feasible to treat it. The justification is to be reported.</p> <p>The <i>Asset Risk Framework</i>²⁷¹ interprets the <i>Corporate Risk Management Framework</i> into an asset specific context. It provides details on the application of consistently measured risks to allow prioritisation. It also provides further information on determining Critical Assets and Critical Facilities. It also specifies the accountabilities for risk assessment at portfolio and individual scheme level.</p> <p>Performance:</p> <p>The <i>Corporate Risk Report 2020</i>²⁷² and <i>Critical Facilities Register</i>²⁷³ were provided to demonstrate implementation of the risk assessment process. The</p>		

²⁶⁶ Water Corporation Accountability Framework #58617747.

²⁶⁷ S389 Corporate Risk Assessment Criteria #621047.

²⁶⁸ System Overview Corporate Risk Information System – Quick Reference Sheet #CRIS-QRS-001.

²⁶⁹ Corporate Risk Management Guidelines #58546991.

²⁷⁰ S389 Corporate Risk Assessment Criteria #621047.

²⁷¹ Asset Risk Framework #15272031.

²⁷² 2020 Corporate Risk Report #103690565.

²⁷³ Critical Facility Register.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			risk report includes 20 corporate risks, which are underpinned by 480 risks by 40 business units.		
8.2	Risks are documented in a risk register and treatment plans are implemented and monitored	2	<p>Summary: The risk assessment process seems to be robust. Risk is regularly reviewed and risks are reported to the Board annually. Details of the risks are held in two databases, CRIS and SRA.</p> <p>Process and Policy: Corporate Risks are documented in the Corporate Risk Information System (CRIS) (viewed during the interviews) as detailed in the <i>Corporate Risk Management Guidelines</i>.²⁷⁴ The <i>Corporate Risk Report</i>²⁷⁵ reports risks at a portfolio level and actions are monitored through the Corporate Risk Review process.²⁷⁶</p> <p>The <i>Corporate Risk Reporting Procedure</i> details two types of risk reporting updates; updates to the baseline Corporate Risk Summaries and an annual update which is then used to compile the <i>Corporate Risk Report</i>.</p> <p>Asset Risks are documented and managed in the System Risk Assessment application at an asset/component level, as detailed in the <i>Asset Risk Framework</i>.²⁷⁷ Asset Class Management Plans²⁷⁸ determine how asset class risks can be addressed.</p> <p>Performance: The Corporate Risk Report rolls up corporate risk assessments into 20 corporate risk areas, which are reported annually to the Board. There was only one of the risk areas that had an extreme risk and that was Risk 6b. <i>Customer acute health impact from drinking water quality – priority risks</i>. There were a number of other areas that had high risks. The cause of these high risks was noted as pathogens, Naegleria and nitrate. There were 10 critical controls identified and of these five require attention. Three of these were asset related and the risk treatments were a capital project to seal tanks and the optimisation of processes. This report does not identify the events that were closed.</p> <p>The <i>Water Storage Facility Asset Class Management Plan</i> identifies the need for repair of 67 unsealed roof deficiencies that will be addressed through a specific program of works.</p> <p>During the review interviews the System Risk Assessment application was reviewed, this is the register of risks for assets. The register for the Mid West Region (MWR) was observed.</p> <p>The <i>Critical Facility Register</i>²⁷⁹ has a consequence assessment for each of Water Corporation's facilities. This identified 420 as Moderately Critical, 150 as Highly Critical and 36 as Extremely Critical.</p>	A	1

²⁷⁴ Corporate Risk Management Guidelines #58546991.

²⁷⁵ 2020 Corporate Risk Report #103690565.

²⁷⁶ Corporate Risk Reporting Procedure #48637587.

²⁷⁷ Asset Risk Framework #15272031.

²⁷⁸ Water Storage Facility Asset Class Management Plan 2019-28 #8069647.

²⁷⁹ Critical Facility Register.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating																																																																																																																																																																								
8.3	Probability and consequences of asset failure are regularly assessed	2	<p>Summary:</p> <p>The Asset Class Management Plans are thorough documents that present a significant amount of information in a succinct way.</p> <p>Through the asset Class Management Plan process, the probability and consequence of asset failure are regularly assessed.</p> <p>Process and Policy:</p> <p>The risk assessment process for the Asset Class Management Plans, as documented in the <i>Asset Risk Framework</i>,²⁸⁰ detail the likelihood and consequence of asset failure</p> <p>Performance:</p> <p>The <i>Water Storage Facility Asset Class Management Plan</i>²⁸¹ has a breakdown of risk as shown in the matrix below.</p> <table><tr><th>Risk</th><th></th><th></th><th>1. Low</th><th></th><th>2. Medium</th><th></th><th>3. High</th><th></th><th>4. Extreme</th><th></th><th>Total</th></tr><tr><th>Unit_Class</th><th>#</th><th>CRC \$</th><th>#</th><th>CRC \$</th><th>#</th><th>CRC \$</th><th>#</th><th>CRC \$</th><th>#</th><th>CRC \$</th><th>#</th><th>CRC \$</th></tr><tr><td></td><td></td><td></td><td>2</td><td>\$0.3M</td><td>3</td><td>\$0.9M</td><td></td><td></td><td></td><td></td><td>5</td><td>\$1.2M</td></tr><tr><td>Unknown</td><td></td><td></td><td>2</td><td>\$0.3M</td><td>3</td><td>\$0.9M</td><td></td><td></td><td></td><td></td><td>5</td><td>\$1.2M</td></tr><tr><td>Reservoir</td><td>2</td><td>\$21.3M</td><td>12</td><td>\$56.3M</td><td>17</td><td>\$491.1M</td><td>25</td><td>\$650.4M</td><td>17</td><td>\$524.8M</td><td>73</td><td>\$1,743.9M</td></tr><tr><td>Liner</td><td>1</td><td>\$0.1M</td><td></td><td></td><td></td><td></td><td>1</td><td>\$0.1M</td><td></td><td></td><td>2</td><td>\$0.2M</td></tr><tr><td>Roof</td><td></td><td></td><td>8</td><td>\$15.7M</td><td>7</td><td>\$70.0M</td><td>13</td><td>\$171.0M</td><td>7</td><td>\$120.2M</td><td>35</td><td>\$376.9M</td></tr><tr><td>Structure</td><td>1</td><td>\$21.2M</td><td>4</td><td>\$40.7M</td><td>10</td><td>\$421.1M</td><td>11</td><td>\$479.3M</td><td>10</td><td>\$404.6M</td><td>36</td><td>\$1,366.8M</td></tr><tr><td>Tank</td><td>248</td><td>\$173.3M</td><td>712</td><td>\$688.2M</td><td>243</td><td>\$374.2M</td><td>143</td><td>\$192.3M</td><td>6</td><td>\$28.0M</td><td>1352</td><td>\$1,456.0M</td></tr><tr><td>Liner</td><td>48</td><td>\$2.5M</td><td>37</td><td>\$1.9M</td><td>3</td><td>\$0.2M</td><td>5</td><td>\$0.3M</td><td></td><td></td><td>93</td><td>\$4.8M</td></tr><tr><td>Roof</td><td>86</td><td>\$48.3M</td><td>305</td><td>\$171.4M</td><td>129</td><td>\$128.0M</td><td>86</td><td>\$73.7M</td><td>4</td><td>\$10.9M</td><td>610</td><td>\$432.3M</td></tr><tr><td>Structure</td><td>114</td><td>\$122.5M</td><td>370</td><td>\$514.9M</td><td>111</td><td>\$246.0M</td><td>52</td><td>\$118.4M</td><td>2</td><td>\$17.1M</td><td>649</td><td>\$1,018.9M</td></tr><tr><td>Total</td><td>250</td><td>\$194.6M</td><td>726</td><td>\$744.8M</td><td>263</td><td>\$866.2M</td><td>168</td><td>\$842.7M</td><td>23</td><td>\$552.8M</td><td>1430</td><td>\$3,201.1M</td></tr></table> <p>This shows the Current Replacement Cost for all the storage facilities by component and risk, which is based in the probability and consequence of failure. This not only identifies the number of assets that require risk treatments, but also the potential cost of those risk treatments.</p> <p>Risk assessments are updated quarterly, and an approach for undertaking this process automatically based on the available asset data, is currently being investigated.</p>	Risk			1. Low		2. Medium		3. High		4. Extreme		Total	Unit_Class	#	CRC \$	#	CRC \$	#	CRC \$	#	CRC \$	#	CRC \$	#	CRC \$				2	\$0.3M	3	\$0.9M					5	\$1.2M	Unknown			2	\$0.3M	3	\$0.9M					5	\$1.2M	Reservoir	2	\$21.3M	12	\$56.3M	17	\$491.1M	25	\$650.4M	17	\$524.8M	73	\$1,743.9M	Liner	1	\$0.1M					1	\$0.1M			2	\$0.2M	Roof			8	\$15.7M	7	\$70.0M	13	\$171.0M	7	\$120.2M	35	\$376.9M	Structure	1	\$21.2M	4	\$40.7M	10	\$421.1M	11	\$479.3M	10	\$404.6M	36	\$1,366.8M	Tank	248	\$173.3M	712	\$688.2M	243	\$374.2M	143	\$192.3M	6	\$28.0M	1352	\$1,456.0M	Liner	48	\$2.5M	37	\$1.9M	3	\$0.2M	5	\$0.3M			93	\$4.8M	Roof	86	\$48.3M	305	\$171.4M	129	\$128.0M	86	\$73.7M	4	\$10.9M	610	\$432.3M	Structure	114	\$122.5M	370	\$514.9M	111	\$246.0M	52	\$118.4M	2	\$17.1M	649	\$1,018.9M	Total	250	\$194.6M	726	\$744.8M	263	\$866.2M	168	\$842.7M	23	\$552.8M	1430	\$3,201.1M	A	1
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Structure	114	\$122.5M	370	\$514.9M	111	\$246.0M	52	\$118.4M	2	\$17.1M	649	\$1,018.9M																																																																																																																																																																	
Total	250	\$194.6M	726	\$744.8M	263	\$866.2M	168	\$842.7M	23	\$552.8M	1430	\$3,201.1M																																																																																																																																																																	
9	Contingency planning			A	1																																																																																																																																																																								
	Contingency plans document the steps to deal with the unexpected failure of an asset.																																																																																																																																																																												
9.1	Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks	2	<p>Summary:</p> <p>Water Corporation has a portfolio of Operational Contingency Plans including 'Custom' plans that are applicable to unique and/or more complex facilities and 'Standard' plans that are applicable to specific asset classes. The requirement for and type of Operational Contingency Plan for a facility is dependent upon the assessed criticality (level of risk of failure). To ensure their effectiveness, periodic testing of Operational Contingency Plans is required; this may be undertaken as 'Functional' (practical) and/or 'Discussion' (desktop) exercises, depending on the criticality rating of the facility. Plans are updated to reflect any improvements identified through the testing process.</p> <p>Evidence was provided to demonstrate that previous recommendation R3/2018 (which superseded R5/2015), which required the testing of Operational Contingency Plans for all Criticality 5 and Criticality 4 facilities within nominated timelines, had been resolved.</p>	A	1																																																																																																																																																																								

²⁸⁰ Asset Risk Framework #15272031.

²⁸¹ Water Storage Facility Asset Class Management Plan #8069647.

		<p>Process and Policy:</p> <p>Water Corporation advised that it has fully defined the extent to which contingency plans are required to enable adequate mitigation of risks to the continuity of service or management of incidents. As indicated in the <i>Operational Contingency Planning Standard</i>,²⁸² the requirement for contingency plans has been determined on the basis of asset criticality, as identified in the <i>Critical Facilities Register</i>,²⁸³ thereby ensuring alignment with assessed levels of risk. It is noted that contingency planning is undertaken at facility level; asset criticality is assessed in accordance with the <i>Critical Assets Assessment Procedure</i>.²⁸⁴</p> <p>The <i>Operational Contingency Planning Standard</i> indicates that the requirement for, and where required, the type of Operational Contingency Plan (OCP) is based on an Asset Facility Assessment, i.e. an assessment of the uniqueness, complexity and criticality of the facility, which is typically undertaken as part of the asset creation (or substantial upgrade) process. Either a 'Custom' or 'Standard' OCP is required for all critical assets (those having a moderate or higher criticality rating), whilst the provision of an OCP for non-critical facilities is 'Optional'. The requirement for 'Custom' or 'Standard' OCPs for critical facilities is dependent on uniqueness (number of similar facilities within a region) and complexity (failure modes not adequately represented by the failure modes/contingency activities of the relevant 'Standard' OCP). On this basis, all facilities having a criticality rating of 3, 4 or 5 must have an OCP ('Standard' or 'Custom') in place.</p> <p>The <i>Operational Contingency Planning Standard</i> identifies a total of 71 required 'Custom' OCPs; this is consistent with the number of facilities identified in the <i>Critical Facilities Register</i>. It also indicates that 7 "Standard" OCPs are required; however, the total number of facilities covered appears to include those for which OCPs are identified as 'Optional' in the <i>Critical Asset Register</i>. 'Standard' OCPs are applicable, across the organisation, to an entire asset class at facility level.</p> <p>The <i>Operational Contingency Planning Standard</i> identifies the content that is to be included in all OCPs, as well as specific requirements of both 'Standard' and 'Custom' OCPs. The content of an OCP is informed by the outcomes of a Business Impact Assessment, which considers potential failure modes, impacts and response recovery strategies taking into account minimum level of service requirements and maximum acceptable outage durations.</p> <p>The <i>Operational Contingency Planning Standard</i> also sets out requirements in respect of implementation and testing, monitoring and review, and continual improvement. It is the responsibility of the relevant Regional/Alliance Manager to ensure that a program of testing is implemented, with the frequency of testing based on the criticality rating of the facility.</p> <p>Additional detail in respect of the requirements outlined in the <i>Operational Contingency Planning Standard</i> is provided in the <i>Operational Contingency Plans: Development, testing and review procedure</i>.²⁸⁵ This procedure documents more specific requirements in respect of conducting Asset Facility Assessments and Business Impact Assessments, developing both 'Custom' and 'Standard' OCPs, exercising (testing) of OCPs, and reviewing OCPs. For example, it indicates that both 'Discussion' (desktop) and 'Functional' (practical) exercises should be conducted annually for Criticality 5 facilities and every three years for Criticality 4 facilities; 'Discussion' exercises should be conducted every three years and 'Functional' exercises are not required (at Regional Manager's discretion) for Criticality 3 facilities.</p> <p>It is noted that contingency planning forms part of and is integrated with Water Corporation's overall approach to both risk and incident management. The <i>Corporate Incident Management Standard</i>²⁸⁶ outlines Water Corporation's framework for the effective leadership, coordination and management of incidents. Water Corporation's approach to risk management is discussed above in respect of asset management process 8.</p> <p>Other supporting documentation includes:</p>		
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Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> Operational Contingency Plans – Exercise and Test²⁸⁷ work instruction, which outlines the process for planning, scheduling, and undertaking exercises to test OCPs and reporting on and actioning any outcomes. Operational Contingency Planning Handover Guideline,²⁸⁸ which outlines how the development of OCPs is integrated with the asset development/creation and handover process for new assets. Incident Command and Control System Guidelines,²⁸⁹ which details the application of an Incident Command and Control System for the purposes of managing incidents. Crisis Management Plan,²⁹⁰ which documents the arrangements implemented by Water Corporation in respect of crisis management capability, and forms part of its incident management framework. A crisis is defined as an “<i>Abnormal and unstable situation that threatens the organisation’s strategic objectives, reputation or viability</i>”. <p>Water Corporation has also developed a specific <i>COVID-19 Pandemic Management Plan</i>²⁹¹, which details a framework for managing its response to the pandemic in a manner that enables it to fulfil its responsibilities in respect of emergency management and the ongoing provision of services.</p> <p>Performance: Review of the <i>Critical Facilities Register</i> reveals:²⁹²</p> <ul style="list-style-type: none"> There are some 2,863 facilities identified, although comments indicate that some are included with other facilities for contingency planning purposes; for example, a clear water pumping station at functional location W0059625 is identified as being included in the water treatment plant facility at that location. There are 36 facilities with a criticality rating of 5. Of these, 4 are identified as having ‘Custom’ OCPs, 11 are covered by ‘Standard’ OCPs, and OCPs are identified as being ‘Optional’ for the remaining 21. There are 150 facilities with a criticality rating of 4. Of these, 23 are identified as having ‘Custom’ OCPs, 107 are covered by ‘Standard’ OCPs, and OCPs are identified as being ‘Optional’ for the remaining 20. For the 419 criticality rated 3 facilities, 44 have ‘Custom’ OCPs, 361 are covered by ‘Standard’ OCPs, and OCPs are identified as being ‘Optional’ for the remaining 14 facilities. There are 3 criticality rated 2 facilities for which ‘Standard’ OCPs have been nominated; OCPs for all other 2,257 criticality rated 0, 1 & 2 facilities are identified as being ‘Optional’. 		

²⁸² S498 Operational Contingency Planning #14812496 v.04/04/2018.

²⁸³ Critical Facility Register (Asset Facility Assessment Register).

²⁸⁴ Critical Assets Assessment Procedure #16898644 v.15/01/2019.

²⁸⁵ Operational Contingency Plan Development, Testing and Review Procedure #15108780 v.09/05/2018.

²⁸⁶ S110 Corporate Incident Management #58553268 v.11/02/2021.

²⁸⁷ Operational Contingency Plans – Exercise and Test #58582478 v.30/06/2021.

²⁸⁸ Operational Contingency Planning Handover Guideline #58584924 v.22/04/2020.

²⁸⁹ Incident Command and Control System Guidelines #16924453 v.04/08/2017.

²⁹⁰ Crisis Management Plan #110641143 v.08/03/2021.

²⁹¹ COVID-19 Pandemic Management Plan #98053996 v.20/06/2021.

²⁹² Copy of Critical Facilities Register.xlsx.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Water Corporation advised that, in respect of Criticality 4 and 5 facilities which are required to be covered by either a 'Custom' or 'Standard' OCP, designation as 'Optional' in the <i>Critical Facilities Register</i> means that the choice of OCP type is at the discretion of the relevant Region. It is noted that the 'Optional' designation is also applied in respect of dam facilities, which are separately covered by Dam Safety Plans. It would be useful if the adopted type of OCP, i.e. 'Custom', 'Standard' or 'Dam Safety Plan', is recorded in the <i>Register</i> once the selection is made.</p> <p>A sample of OCPs and exercise and test records were provided as evidence, as follows:</p> <ul style="list-style-type: none"> The Perth Seawater Desalination Plant OCP (Custom)²⁹³ – this addresses the specified content requirements, including details of purpose and scope; prevention and preparedness; and response and recovery. It also includes a description and layout schematic of the facility and a contingency plan summary table that provides an initial point of reference. <p>Failure scenarios in respect of the seawater intake, filtration, reverse osmosis (first and second pass), potabilisation, waste management, site services processes are documented.</p> <p>This OCP was most recently updated in September 2020; the Revision History indicates that there were no changes made subsequent to exercises conducted in April 2019 and August 2020 (i.e. nominally annually, which is consistent with the requirements).</p> <ul style="list-style-type: none"> An <i>Operations Delivery – Post Incident Data Collection</i> record in respect of the Perth Seawater Desalination Plant²⁹⁴ – this documented a real-life scenario that was used as a 'Functional' exercise. The OCP was implemented in response to a mechanical failure of a high-pressure pump on 16 August 2020. The record details the scenario and actions taken; it also indicates that the response, which was in alignment with the OCP, went well, noting that the operator had taken a good approach, the Operations Centre had been notified of a level of service failure, and that all involved had worked together effectively. There were no identified requirements for training or other improvements. The <i>Operational Contingency Plan (Custom): Harris Dam CDP</i> (Chemical Dosing Plant)²⁹⁵ – this 'Custom' OCP again addresses the specified content requirements, including details of purpose and scope; prevention and preparedness; and response and recovery, and includes a description and layout schematic of the facility and a contingency plan summary table. Responses to failures in the chemical dosing, chlorinator and general systems are detailed. <p>Revision details indicate that this OCP was reviewed in June 2020 following completion of a 'Functional' test exercise simulating a power supply failure, which is detailed in the <i>Harris Dam Chemical Dosing Plant Functional Exercise Plan</i>²⁹⁶ and associated <i>Post Exercise Data Collection</i> records.</p>		

²⁹³ Operational Contingency Plan (Custom): Perth Seawater Desalination Plant #58583920 v.09/09/2020.

²⁹⁴ OCP Exercise POSTE - SSDP – 20200817.pdf.

²⁹⁵ Operational Contingency Plan (Custom): Harris Dam Chemical Dosing Plant – W0046403 #58586356.

²⁹⁶ Harris Dam Chemical Dosing Plant - Functional Exercise 19 Feb 2020 OCPaqua#16093921.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> The <i>Business Impact Analysis – Harris Dam CDP</i>²⁹⁷ – this spreadsheet-based record demonstrates that the impact analysis involves the assessment of failure modes, consequences and maximum outage time for process units and identifies mitigation actions. Review of the OCP confirms that mitigation actions have been reflected therein. A Functional Exercise Plan; Cresswell Road, Dianella Sewer Pump Station (SPS)²⁹⁸ – this document details the planning for an exercise that required the installation of bypass pumps in response to a pumping station failure, which was undertaken on 19 November 2019. A <i>Post Incident Data Collection</i> record, which detailed observations made and findings of the exercise was included with the plan. As a result of the exercise, it was recommended that a documented work instruction was required for inclusion in the OCP. The OCP was subsequently updated by the nominated due date of November 2020. The <i>Wastewater Pump Station Standard OCP</i>²⁹⁹ – this ‘Standard’ OCP outlines responses in respect of failure modes including power failure, pump failure, pressure main (including air and isolation valves) failure, civil (including pipework, isolation/non-return valves) failure, switchboard failure, and RTU (control system) failure. Provision is made for facility specific information to be included via drop down menus and manual entry. Details such as the location of the nearest depot are taken to address the preparedness requirements. The revision status indicates that this OCP was updated in May 2021 and that the next review is due in May 2024 (i.e. after a period of three years). Internal email correspondence confirming that the <i>Wastewater Pump Station Standard OCP</i>³⁰⁰ had been reviewed through a process of workshopping and regional review in September 2017. This review effectively comprised the Business Impact Assessment for this asset class; as advised by Water Corporation: “<i>The process to develop BIAs for Wastewater pump stations Standard OCPs involved a Wastewater Engineer developing mitigations for failures at a wastewater pumping station, which was then review by wastewater experts across the business.</i>” <p>It is noted that the <i>Operational Contingency Planning Standard</i> requires internal reporting on the status of operational contingency planning processes. The <i>Standard</i> has recently (post review period) been updated to reflect a change from annual reporting to reflect current practice whereby monitoring and regular reporting against KPIs (a sample report was sighted) and internal audits of the OCP process form part of the asset management system governance arrangements. This new approach ensures that the effectiveness and maturity of contingency planning is effectively monitored.</p>		

²⁹⁷ Business Impact Analysis – Harris Dam CDP - FL W0046403.

²⁹⁸ Perth Region Field Services (PRFS) Operational Contingency Plan S0030110 Cresswell Rd SPS #58581176 v.02/10/2020.

²⁹⁹ Wastewater Pump Station Standard OCP #58585221 May/2021.

³⁰⁰ WWPS - Standard Contingency Plan review process email.

		<p>Previous Recommendation R3/2018:</p> <p>In its response to the <i>Information Request</i>, Water Corporation advised that:</p> <p><i>“ASBU [Asset Strategy Business Unit] have been managing the Exercise & test program from early 2019, liaising with regions on programs of Exercises as per the frequency of OCP Procedure. A number of exercises have been undertaken, with and exercise and test documentation stored in Nexus:</i></p> <ol style="list-style-type: none"> 1. PSDP - OCP updated on 09 September 2020. E&T³⁰¹ completed based on real life asset failure on 16 August 2020. <p><i>Exercise & test documentation:</i></p> <ol style="list-style-type: none"> 2. SSDP - OCP updated on 31 July 2020. E&T³⁰² completed based on real life asset failure on 24 July 2020. 3. Allanoooka Borefield - OCP³⁰³ updated on 25 May 2020. E&T³⁰⁴ completed on 12 March 2020. 4. Carnarvon Borefield - OCP³⁰⁵ updated on 27 May 2020. E&T³⁰⁶ completed on 10 March 2020. 5. TARR - Wanneroo GWTP - OCP³⁰⁷ updated on 27/05/2020; E & T³⁰⁸ conducted on 25/02/2020. 6. TARR - KWRP - OCP³⁰⁹ updated on 25/09/2020; E&T³¹⁰ conducted on 24/06/2020. 7. PRFS - Murdoch Drive SPS: OCP³¹¹ reviewed and no updates required; E&T³¹² conducted on 26/05/2020. 8. PRFS - Creswell SPS: OCP³¹³ reviewed with regional manager sign off; E&T³¹⁴ conducted on July 2019. 9. PRFS - Claisebrook SPS: OCP reviewed and no updates required; E&T³¹⁵ conducted on Feb 2020 based on real life event. 10. TARR: Subiaco WWTP - OCP³¹⁶ updated on 14/02/2020; E&T³¹⁷ conducted on 18/12/2019. 11. SWR: Harris dam CDP - OCP³¹⁸ updated on 19/06/2020; E&T³¹⁹ conducted on 19/02/2020. 12. SWR: Harris dam WPS - OCP³²⁰ updated on 19/06/2020; E&T³²¹ conducted on 19/02/2020. 13. SWR: Bingham WPS - OCP³²² updated on 19/6/2020; E&T³²³ conducted on 21/05/2020.” <p>Review of a sample of these documents has been outlined above. Further review of the documentation provided confirms completion as outlined by Water Corporation in its response (although there appear to be some minor discrepancies between dates recorded in the documents and the response in one or two cases).</p> <p>Evidence that all Criticality 5 contingency plans were tested by December 2019 and all Criticality 4 plans were tested by June 2020, and that the outcomes of the testing are documented and updates to the plans arising from the lessons learned are actioned was assessed by reviewing the <i>OCP Exercise and test program</i> record (MS Excel workbook).³²⁴ This revealed that all Criticality 5 Custom OCPs had been exercised, either by discussion, functionally or both, prior to December 2019 and all Criticality 4 Custom OCPs (except where limited by practical constraints) had been exercised prior to June 2020. For example, Perth Central SPS OCP could not be exercised during 2019/20 as planned due to failure of the Sepia Depression Ocean Outlet Landline (SDOOL); a functional exercise was subsequently completed in September 2020.</p> <p>On this basis, it is assessed that Recommendation R3/2018 was resolved during the review period.</p>		
10	<p>Financial planning</p> <p>Financial brings together the financial elements of the service delivery to ensure its financial viability over the long term.</p>		A	1

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
10.1	The financial plan states the financial objectives and identifies strategies and actions to achieve those	4	<p>Summary: The Corporation submits an annual Budget submission to the Western Australia Treasury, in addition to the <i>Strategic Asset Plan</i>. Both support the <i>Statement of Corporate Intent</i> and <i>Strategic Development Plan</i> and outline Water Corporation's financial objectives and identify actions to achieve strategic objectives.</p> <p>Process and Policy: The <i>Strategic Development Plan</i> (SDP)³²⁵ and <i>Statement of Corporate Intent</i> (SCI)³²⁶ are Water Corporation's primary documents for financial planning. <i>Macro Budget Guidelines</i>³²⁷ are prepared to ensure that Water Corporation undertakes the budget process in line with the Whole of Government Budget Cycle. It contains the relevant information for the next budget to be prepared. This includes:</p> <ul style="list-style-type: none"> • Key milestones • Key assumptions <ul style="list-style-type: none"> ○ Inflation ○ Efficiency targets ○ Water production strategy ○ Wastewater flows ○ Growth in the number of services. • Other inputs: 	A	1

³⁰¹ Operations Delivery – Post Incident Data Collection PSDP_OCP_Exercise_2020_-_POSTE.

³⁰² Operations Delivery – Post Incident Data Collection OCP Exercise POSTE - SSDP - 20200817.

³⁰³ Operational Contingency Plan (Custom): Borefield Allanoooka - W0039083 #58583889 v.28/0/2020.

³⁰⁴ OCP Exercise Final Report - Desktop Allanoooka Borefield OCP – W0039083 - #58583889.

³⁰⁵ Operational Contingency Plan (Custom): Carnarvon Borefield - W0038055 #58583889.

³⁰⁶ OCP Exercise Final Report - Carnarvon Borefield – W0038055.

³⁰⁷ Operational Contingency Plan (Custom): Wanneroo Groundwater Treatment Plant - W0005854 #58583914 v.27/05/2020.

³⁰⁸ 2020 - TARR - MO - WO - Report - Wanneroo GWTP Operational Contingency Plan Exercise - Chlorination Failure.

³⁰⁹ Operational Contingency Plan (Custom): Kwinana Water Recycling Plant – S001-001-025 #58583852 v.11/05/2021.

³¹⁰ Discussion Exercise - INC-059782.

³¹¹ Perth Region Field Services Operational Contingency Plan S0044740 Murdoch Dr SPS #58584316 v.31/01/2019.

³¹² PRA - Operational Contingency Plan - Murdoch drive, Greenfields - Exercise Plan - May 2020.

³¹³ Perth Region Field Services (PRFS) Operational Contingency Plan S0030110 Cresswell Rd SPS #58581176 v.02/10/2020.

³¹⁴ Functional Exercise Plan - PRA - Operational Contingency Plan - Creswell Rd, - Exercise Plan - July 2019 v.19/11/2019.

³¹⁵ PRA - Operational Contingency Plan - Claisebrook, East Perth - Exercise Plan - Sept 2020.

³¹⁶ Operational Contingency Plan (Custom): Subiaco Waste Water Treatment Plant S001-001-018 #58586062 v.28/04/2020.

³¹⁷ Subiaco WWTP Functional Exercise 18-12-19.

³¹⁸ Operational Contingency Plan (Custom): Harris Dam Chemical Dosing Plant – W0046403 #58586356 v.19/06/2020.

³¹⁹ Harris Dam CDP Exercise and Test Aqua Doc #16093921.

³²⁰ Operational Contingency Plan (Custom): Harris Dam Water Pumping Station – W0046387 #58586356 v.19/06/2020.

³²¹ Harris Dam WPS Exercise and Test Aqua Doc #16094246.

³²² Operational Contingency Plan (Custom): Bingham Yourdamung Lake Water Pumping Station – W0046381 #58582605 v.19/06/2020.

³²³ Bingham WPS OCP Exercise and Test Aqua Doc #15272850.

³²⁴ OCP Exercise and test program.xlsx.

³²⁵ Strategic Development Plan (including Statement of Expectations) 2020-21 to 2024-25 #81702677.

³²⁶ Statement of Corporate Intent 2020-21 #80979970.

³²⁷ Macro Budget Guidelines 2021/22 #46397651.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<ul style="list-style-type: none"> ○ including the Asset Investment Program and operating expenditure. ○ Increases to allocated capital ○ Depreciation ○ Fleet and Plant ● Human resources and overheads <p>The <i>Micro Planning Guidelines</i>^{328,329,330} are prepared to assist Groups/Regions/Business Units with preparation of operating expenses and revenue (excludes capital expenditure). This information is input into the <i>Business Financial Model</i>.³³¹</p> <p>Upon completion of the budget, it is incorporated into the SCI for Board approval.</p> <p>The SCI represents an agreement between the Board and Minister for Water on Water Corporation's expected level of performance for the financial year and is prepared to meet the requirements of the <i>Water Corporations Act 1995</i>. This document highlights the "Drivers of Change", which are the macro environmental factors that will influence financial planning. Section 5 of the SCI identifies the Strategic Priorities for the next 5 years, which are linked back to the business objectives; these equate to the financial objectives. Section 8 of the SCI discusses asset management, including the Asset Investment Program, allocated funds and major projects.</p> <p>The <i>Strategic Development Plan</i> details high-level strategic priorities based on the Business Objectives. Actions have been identified to achieve those objectives.</p> <p>Performance:</p> <p>The macro and micro budgeting guidelines have been prepared and, based on the onsite interviews and review of the documentation, appear to be adequate for the development of the budget submission to the Board.³³²</p> <p>The SCI for the 2021/22 financial year has been signed off by both the Board Chair and the CEO on 29 October 2020 in time for the Treasurer's Concurrence on 10 November 2020.</p> <p>Performance against the budget is presented to the Board and for the 2019/20³³³ year Water Corporation was within budget.</p> <p>The Annual Report,³³⁴ as well as Mid-Year Review³³⁵ and quarterly reports,³³⁶ which all detail performance against the SCI are provided to the Minister.</p>		

³²⁸ Water Corporation Micro Planning Guidelines – Operating Budget 2021/22 Key Assumptions & Inputs – Part 1 #114774653.

³²⁹ Water Corporation Micro Planning Guidelines - Operating Budget 2021/22 – Base Load Information – Part 2 #14956382.

³³⁰ Micro Budget Timetable 2021/22.

³³¹ Budgeting Financial Model (BFM) Period 2020/21 – 2024/25.

³³² Water Corporation 2021/22 Budget Submission Operating Budget Pack Board Meeting 16 December 2020.

³³³ Annual Results Report 2019/20 - Board Meeting #99926296.

³³⁴ Water Corporation Annual Report 2020.

³³⁵ Briefing Note for the Minister for Water, Water Corporation 2020-21 Mid-Year Review Financial Adjustments.

³³⁶ Minister's Qtr Report Source Map (2020).

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
10.2	The financial plan identifies the source of funds for capital expenditure and recurrent costs	4	<p>Summary: The financial plan identifies the source of funds for capital expenditure and recurrent costs. The source of funding is self-generated (rates and volumetric charges, developer headworks) with minor borrowings.</p> <p>Process and Policy: Water Corporation is state owned. All operational funding is generated through customer charges, volumetric and headworks. There is a small amount of loans for capital projects. Borrowing amounts are set by and loaned from Treasury. The Macro³³⁷ and Micro^{338,339,340} budgeting processes, as discussed in of Criterion 10.1, identify and budget for recurrent costs.</p> <p>Performance: The budget submission³⁴¹ discusses the impact on the State's Net Debt due to changes in the amount of borrowing. The <i>Statement of Corporate Intent</i> (SCI)³⁴² 2020-21 identifies that the Asset Investment Program is funded from operational cashflows, borrowings and a financial arrangement under a Public Private Partnership for the Mundaring Water Treatment Plant. The financial forecast identifies \$114M of borrowings for 2020-21. High-level details of the Asset Investment Program are in the SCI.</p>	A	1

³³⁷ Macro Budget Guidelines 2021/22 #46397651.

³³⁸ Water Corporation Micro Planning Guidelines – Operating Budget 2021/22 Key Assumptions & Inputs – Part 1 #114774653.

³³⁹ Water Corporation Micro Planning Guidelines - Operating Budget 2021/22 – Base Loan Information – Part 2 #14956382.

³⁴⁰ Micro Budget Timetable 2021/22.

³⁴¹ Water Corporation 2021/22 Budget Submission Operating Budget Pack Board Meeting 16 December 2020.

³⁴² Statement of Corporate Intent 2020-21 #80979970.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
10.3	The financial plan provides projections of operating statements (profit and loss) and statement of financial position (balance sheets)	5	<p>Summary: Financial projections are included in the Corporate Financial Model, which has detailed balance sheets to outline the Corporation's financial position.</p> <p>Process and Policy: The Corporate Financial Model is based on a spreadsheet and is used to forecast Water Corporation's financial position. Once it is developed, the proposed model is submitted to the Board for approval³⁴³ and then to Treasury through the <i>Statement of Corporate Intent</i>.³⁴⁴ The Macro³⁴⁵ and Micro^{346,347, 348} budgeting processes, as discussed in respect of Criterion 10.1, is the process by which the information is gathered to develop the Corporate Financial Model. The model has detailed balance sheets to outline the Corporation's financial position. This was reviewed during the interview process.</p> <p>Performance: The Chief Financial Officer's report^{349,350} to the Board provides an update on performance against the forecast profit and loss and financial position (balance sheet), Asset Investment Program expenditure and borrowings. Water Corporation also provides a mid-year Review and Annual submission to Treasury.</p>	A	1

³⁴³ Water Corporation 2021/22 Budget Submission Operating Budget Pack Board Meeting 16 December 2020.

³⁴⁴ Statement of Corporate Intent 2020-21 #80979970.

³⁴⁵ Macro Budget Guidelines 2021/22 #46397651.

³⁴⁶ Water Corporation Micro Planning Guidelines – Operating Budget 2021/22 Key Assumptions & Inputs – Part 1 #114774653.

³⁴⁷ Water Corporation Micro Planning Guidelines - Operating Budget 2021/22 – Base Load Information – Part 2 #14956382.

³⁴⁸ Micro Budget Timetable 2021/22.

³⁴⁹ Chief Financial Officer Report, November 2020 Results, 16 December 2020 Board Meeting.

³⁵⁰ Chief Financial Officer Report, May 2021 Results, 21 June 2021 Board Meeting.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
10.4	The financial plan provides firm predictions on income for the next five years and reasonable predictions beyond this period	5	<p>Summary: The Corporate Financial Model provides firm projections of income for the next 5 years. However, there is no forecasting beyond this point as it is not considered to add value. The lack of reasonable predictions beyond five years, as required by the criterion, is the reason for the B grade.</p> <p>Process and Policy: The Macro³⁵¹ and Micro^{352,353,354} budgeting processes, as discussed in respect of Criterion 10.1, is the process by which the information is gathered to develop the Corporate Financial Model (CFM). The CFM includes projections of the forthcoming 5 years revenue. Water Corporation responded as follows in relation to having 5 year forecasts: <i>“Regulated revenue (Services Fees & Charges and Volumetric Charges) are the stable component of our revenue streams and are forecast within their own model. Other regulated revenue components are more volatile such as Operating Subsidies, Developer Contributions, Special Agreements and commercial contracts and require information other than simple model updates. Therefore these components may not be suited to having simplified assumptions applied beyond a 5 year horizon.”</i></p> <p>Performance: Details of the Corporate Financial Model have been reviewed and it does contain firm predictions for the next five years. Annual revenue is agreed upon in the <i>Statement of Corporate Intent</i>.³⁵⁵ Progress is reported to Treasury on a quarterly basis. On review of these reports^{356,357,358} it can be seen that the predictions of revenue are firm.</p>	B	1
10.5	The financial plan provides for the operations and maintenance, administration and capital expenditure requirements of the services	4	<p>Summary: The <i>Strategic Development Plan</i>³⁵⁹ and the <i>Statement of Corporate Intent</i>³⁶⁰ are underpinned by Corporate Financial Models. The corporate budget is calculated on a 5-year rolling program. Each year there is a process of internal review of the previous year’s budget, with adjustments for inflation, growth, efficiency and any additional items. This is approved by the Board and agreed with the State Treasury through the <i>Statement of Corporate Intent</i>. Budgets down to the unit level are calculated using a bottom-up approach based on operational and maintenance programs in SAP. Water Corporation reports to monthly to the board and quarterly to Treasury on performance against the budget. It is then reported publicly through the annual report. The process appears to be very mature and working well.</p> <p>Process and Policy:</p>	A	1

³⁵¹ Macro Budget Guidelines 2021/22 #46397651.

³⁵² Water Corporation Micro Planning Guidelines – Operating Budget 2021/22 Key Assumptions & Inputs – Part 1 #114774653.

³⁵³ Water Corporation Micro Planning Guidelines - Operating Budget 2021/22 – Base Load Information – Part 2 #14956382.

³⁵⁴ Micro Budget Timetable 2021/22.

³⁵⁵ Statement of Corporate Intent 2020-21 #80979970.

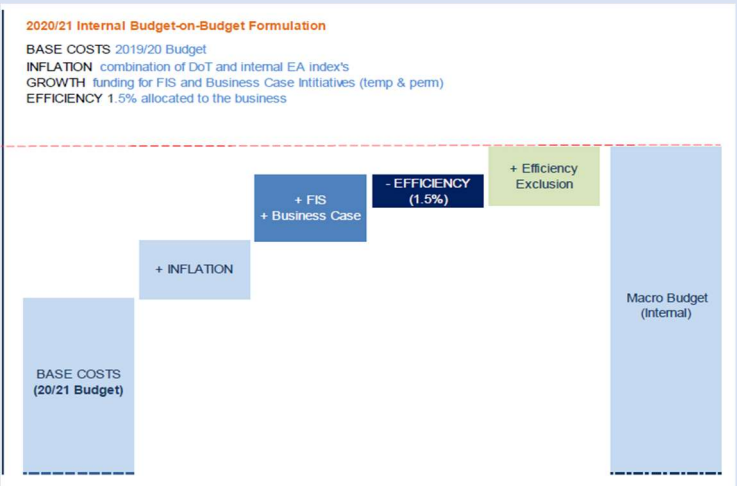
³⁵⁶ Quarterly Performance Report September 2020.

³⁵⁷ Quarterly Performance Report December 2020.

³⁵⁸ Quarterly Performance Report March 2021.

³⁵⁹ Strategic Development Plan (including Statement of Expectations) 2020-21 to 2024-25.

³⁶⁰ Statement of Corporate Intent 2020-21 #80979970.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Water Corporation stated that: “Operational expenditure is based on Activity Based Planning (ABP). This is a bottom-up budget build by count, activities and risk-based prioritisation approach”.</p> <p>Groups/Regions/Business units prepare detailed financial plans using SAP.</p> <p>The <i>Macro Planning Guidelines</i>³⁶¹ identifies the budgeting process for groups within Water Corporation. Following this process, a high-level budget is developed through using a budget-on-budget approach. This process takes the previous year’s budget and adjusts it for inflation, efficiency and any additional items. This process is shown below.</p>  <p>The expenditure in this includes operation and maintenance of assets. The capital budget in the Asset Investment Program includes base capital maintenance that is for works required for renewal, repair or improvement of assets to maintain condition or performance, as well as general capital expenditure.</p> <p>Treasury has prescribed the efficiency requirements, whereby expenses should be less than the previous year through improvement and efficiencies. Efficiency exclusions are pass-through costs that are in addition to the base Operating Expenditure.</p> <p>The sources of water for drinking water and volumes of wastewater are estimated, as this can have a significant impact on the cost of treatment and distribution/collection.</p> <p>Administration budgeting is covered in the Macro budgeting process, which covers administration costs. Water Corporation has stated that: “Administration is conducted through a centralised Labour Based Model (representing an estimated 40% of our total budget/expenses)”.</p> <p>In addition to the maintenance of existing assets, the capital budget includes the acquisition of new assets. Projects are approved and included in the Asset Improvement Program and, once approved, the associated capital costs and additional operating costs are added to the budget.</p>		

³⁶¹ Macro Budget Guidelines 2021/22 #46397651.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Corporate Finance agree the budget with the Board³⁶² and with Treasury through the <i>Statement of Corporate Intent</i>.³⁶³</p> <p>Once the budget has been agreed, the funds are allocated at the unit level using the Micro Planning Guidelines.^{364,365} This is a bottom-up process whereby the baseload operation and maintenance is prepared using the work breakdown structure for items coded as:</p> <ul style="list-style-type: none"> • Operations • Planned • Unplanned • Reimbursements • Operational support <p>Performance:</p> <p>The Water Corporation Annual Reports³⁶⁶ provide a five-year statistical summary of financial data, which includes total revenue and direct operating expenses.</p> <p>Performance against the budget is reported to the Board on a monthly^{367,368,369} basis and reported to Treasury^{370,371,372} on a quarterly basis. On review of these reports, it can be seen that operations and maintenance, administration and capital expenditure have been accurately accounted for.</p>		
10.6	Large variances in actual/budget income and expenses are identified and corrective action taken where necessary	4	<p>Summary:</p> <p>Variances between actual/budget income and expenses are monitored at a number of levels. Monthly reports are provided to the Water Corporation Board and Quarterly reports to the Minister for Water. The Mid-year Review is the major review step in between the annual budget approval process. Any variance to the Department of Treasury budget requires justification and endorsement by the Water Corporation CEO and Minister for Water. These are investigated as the data is being gathered for the monthly CFO Report.</p> <p>Process and Policy:</p> <p>Variances between actual/budget income and expenses are monitored at a number of levels. The <i>Statement of Corporate Intent</i>³⁷³ states:</p> <p><i>“Reports which monitor performance against the targets outlined under the SCI are provided to the Minister quarterly. In addition, the Board and Chief Executive Officer advise the Minister of any significant variations in our performance. Reporting of operational performance to various authorities and departments of Government occurs in addition to this.</i></p>	A	1

³⁶² 2021/22 Budget Submission Operating Budget Pack, 16 December 2020 #103649294.

³⁶³ Statement of Corporate Intent 2020-21 #80979970.

³⁶⁴ Water Corporation Micro Planning Guidelines – Operating Budget 2021/22 Key Assumptions & Inputs – Part 1 #114774653.

³⁶⁵ Water Corporation Micro Planning Guidelines - Operating Budget 2021/22 – Base Load Information – Part 2 #14956382.

³⁶⁶ Annual Report 2019, Annual Report 2020.

³⁶⁷ Corporate Performance Report Corporate Scorecard & Financial Performance June 2020 #99825769.

³⁶⁸ Chief Financial Officer Report November 2020 Results 16 December 2020 Board Meeting.

³⁶⁹ Chief Financial Officer Report, May 2021 Results 21 June 2021 Board Meeting.

³⁷⁰ Quarterly Performance Report September 2020.

³⁷¹ Quarterly Performance Report December 2020.

³⁷² Quarterly Performance Report March 2021.

³⁷³ Statement of Corporate Intent 2020-21 #80979970.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p><i>The Corporation's Annual Report is provided to the Minister within the timeframe specified by the Water Corporations Act 1995."</i></p> <p>During the interview it was explained that, if there is a material change to the budget, a deep dive is undertaken to understand the reason for the variation. This is done through the monthly CFO financial report. The monthly CFO's report^{374,375} provides a year-to-date update on the budget and actual results, highlighting the variance. Data for this report is generated through the Business Performance Reporting system. A full year forecast is also provided and the estimated variation for the budget, which is explained in the report.</p> <p>The <i>Mid-Year Review Guideline</i>³⁷⁶ details the process of updating the Corporate Financial Model based on actual information and adjusting the forecasts. Any adjustments to the forecast that change against the current Department of Treasury's budget require justification and commentary in the submitted review.</p> <p>Quarterly reports to the Minister are generated using the <i>Minister's Quarterly Report Source Map</i>,³⁷⁷ which is a spreadsheet that draws information out of the systems and calculates the measures used to report to the Minister.</p> <p>Performance:</p> <p>Severe Tropical Cyclone Seroja, which crossed land at Kalbarri on 11 April 2021, caused significant damage and disruption to Water Corporation's infrastructure and activities. It was noted in the June 2021 CFO's report to the Board that there was a \$3.7M unfavourable variance due to external plant hire for damage to water and wastewater assets. There was also an unfavourable variation of \$6.3M, mainly due to increase in in materials for corrective maintenance across the State. The cyclone and other similar events also resulted in an increase in insurance premiums of \$1.1M. In this instance, higher volumetric water sales, the sale of land and increased developer revenue has resulted in the forecast for the full year to have a favourable variation of \$80.9M.</p> <p>The Minister is provided with a quarterly review that details changes to the financial forecasts. The <i>2020-21 Mid-Year Review</i>³⁷⁸ indicates a positive variation and therefore there are no corrective actions. The mid-year reviews are endorsed by both the Water Corporation CEO and the Minister for Water.</p>		
11	Capital expenditure planning The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure for these works 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 five years would usually be based on firm estimates.			A	1
11.1	There is a capital expenditure plan covering works to be undertaken, actions proposed,	4	<p>Summary:</p> <p>Water Corporation has a rolling 5-year capital expenditure plan, and a 10-year investment forecast, that are documented at a macro level in a <i>Strategic Asset Plan</i>. This <i>Plan</i> is prepared annually and submitted to Government for approval.</p>	A	1

³⁷⁴ Chief Financial Officer Report November 2020 Results 16 December 2020 Board Meeting.

³⁷⁵ Chief Financial Officer Report May 2021 Results 21 June 2021 Board Meeting.

³⁷⁶ Mid-Year Review Guideline #58575978.

³⁷⁷ Minister's Quarterly Report Source Map.

³⁷⁸ Mid-Year Review Guideline #58575978.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
	responsibilities and dates.		<p>The <i>Strategic Asset Plan</i> is underpinned by project identification, evaluation and prioritisation undertaken as part of the 'Asset creation and acquisition process' (which has been previously discussed). Specific investment requirements (projects and timing) are captured in <i>Asset Class Management Plans</i> (amongst other instruments).</p> <p>Process and policy: Capital expenditure planning is undertaken in accordance with the <i>Program Management Guideline</i>,³⁷⁹ which provides clear guidance in respect of the overall Program Management process, including program formulation, program delivery and program monitoring/reporting. The Capital Investment Program details proposed expenditure in respect of individual projects, programs (which comprise a group of projects that are managed under a single profit centre) and portfolios (which comprise a group of investments related to a Strategic Business Case, which is in turn aligned to one of the five reporting categories/primary areas of business, i.e. water, wastewater, irrigation, drainage or corporate).</p> <p>The need for specific capital investment projects is identified, evaluated and prioritised through the 'Asset planning' and 'Asset creation and acquisition' asset management processes, which are discussed in detail previously in this report. More specifically, the project evaluation processes discussed in respect of Criteria 2.1 and 2.2 ensure the justification and risk-prioritisation of projects for inclusion in the forward capital program.</p> <p>The Capital Investment Program is prepared on a rolling 5-year basis, with a forward look over the remainder of a 10-year forecast period. The program is presented at high (portfolio) level in the annually prepared <i>Strategic Asset Plan</i>,³⁸⁰ which together with the <i>Statement of Corporate Intent</i>,³⁸¹ is submitted to Government for approval. The 5-year investment plan correlates with the strategic direction outlined in the <i>Strategic Development Plan</i>, which is also submitted to Government for approval.</p> <p>The Capital Investment Program is managed through the SAP-IM (Investment Management) module, in which a 'live' capital program that aligns to the 5-year Board-Approved Budget (BAB) is maintained. More specific detail of programs is also found in the relevant Asset Class Management Plans.</p> <p>Performance: Water Corporation's <i>Strategic Asset Plan 2021-22</i> provides details of its investment program for the 5-year period 2021/22 to 2025/26 and an overview of the 10-year program to 2030/31. Supporting information, including a breakdown of the 5-year program by investment category and year of expenditure, is provided in a submission for Board approval of the <i>Asset Investment Program 2021/22 to 2025/26</i>.³⁸²</p> <p>The detailed capital program as extracted from SAP-PM was provided for review.³⁸³ Review of the extract reveals that each expenditure item is coded to identify the investment reason, an Objective Risk Assessment (ORA) number³⁸⁴ and the forecast investment over the period to "2033 and</p>		

³⁷⁹ Program Management Guidelines.pdf.

³⁸⁰ Final Strategic Asset Plan 2021-22_v2 AIP updates April 2021.pdf.

³⁸¹ FINAL_SIGNED_2020-2021_Statement_of_Corporate_Intent_(SCI).pdf.

³⁸² 6.2 Asset Investment Program 2021_22 to 2025_26 - Board Meeting - 24 November 2020.pdf.

³⁸³ Copy of Capital Program for AMSR - SAP 20th September 2021.pdf.

³⁸⁴ This is not always provided for projects for which all expenditure is beyond the 5-year horizon.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>following". Water Corporation noted that it does not manage a 10-year program to any fixed budget and therefore the projects with planned spend beyond the 5-year forecast should be taken as indicative only.</p> <p>Water Corporation also noted that investments proposed in the 5-year capital program align with 5-year portfolio summaries, which are presented to the Strategic Investment Committee in support of the proposed budget and allocation as part of the annual budget development process. The <i>5-Year Capital Budget and Allocation; Supporting Paper to Strategic Investment Committee</i>,³⁸⁵ which included portfolio summaries, was reviewed.</p> <p>Information at asset/project level is also provided in (for example) the <i>Water Storage Asset Class Management Plan</i>³⁸⁶ and <i>Bores and Borefields Asset Class Management Plan</i>,³⁸⁷ which both identify capital expenditure requirements over a 10-year forecast period (from FY19/20).</p>		
11.2	The capital expenditure plan provides reasons for capital expenditure and timing of expenditure	4	<p>Summary: Water Corporation identifies the reasons for and timing of capital expenditure from a high level (macro) perspective in its <i>Strategic Asset Plan</i>. More specific details are provided in the underlying business cases through which the requirements in terms of both purpose and timing are justified.</p> <p>Process and policy: The <i>Strategic Asset Plan</i>,³⁸⁸ which reflects the proposed Asset Improvement Plan, provides a high level (macro) view of the reasons for capital expenditure and the required timing. The <i>Plan</i> is, however, informed by the outcomes of the 'Asset planning' and 'Asset creation and acquisition' asset management processes during which the need for specific capital investment projects is identified, evaluated and prioritised.</p> <p>The project evaluation processes previously discussed in respect of Criteria 2.1 and 2.2 ensure the justification and risk-prioritisation of projects for inclusion in the forward capital program. More specifically, investment projects are justified through the series of approval gateways as they pass through the initial phases of the asset acquisition and investment process, as follows:</p> <ul style="list-style-type: none"> Asset Investment Planning Phase – this phase involves planning activities to ensure that both existing and future assets have the capacity to meet the current and future expectations of Water Corporation's customers. This phase leads to the Appropriation Request Approval gateway. Select and Program Formulation (Prioritisation) Phase – this phase involves confirmation, through a prioritisation process, of projects to be included in the 5-year Asset Investment Plan. This phase leads to the Approval to Develop gateway. <p>Project justification is reaffirmed during subsequent phases of the asset creation and acquisition process, until such time as the project is approved for delivery, as follows:</p> <ul style="list-style-type: none"> Development Phase – this phase involves the development of projects that have been accepted into the 5-year Asset Investment Plan to a sufficient level of detail and certainty that a robust single option can be 	A	1

³⁸⁵ 5 Year Formulation - FY22-26.pdf.

³⁸⁶ ACMP - Water Storage Facility - signed version.pdf.

³⁸⁷ B&BF_Asset_Class_Management_Plan_-_Signed_Version.pdf.

³⁸⁸ Final Strategic Asset Plan 2021-22_v2 AIP updates April 2021.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>taken forward into the Engineering and Delivery phases. This phase leads to the Approval to Invest gateway.</p> <ul style="list-style-type: none"> Engineering Phase – involves the detailed work required to further develop the project in preparation for the delivery phase. This phase leads to the Approval to Deliver gateway. <p>These processes ensure that capital investments and their timing are justified prior to prioritisation for inclusion in the 5-year Asset Investment Plan, and that justification is reaffirmed at each stage of progression until approved for delivery.</p> <p>Performance: Water Corporation's <i>Strategic Asset Plan 2021-22</i>³⁸⁹ (in conjunction with the <i>Statement of Corporate Intent</i>)³⁹⁰ provides a high-level overview of the drivers of capital investment during the 5-year period 2021/22 to 2025/26 and extending to the 10-year program to 2030/31. Additional detail is provided in respect of proposed investments greater than \$25 million. Supporting information, including more explicit details of drivers and emerging issues, is provided in a submission for Board approval of the <i>Asset Investment Program 2021/22 to 2025/26</i>.³⁹¹</p> <p>Examples of business case approvals at the various asset creation and acquisition process gateways for the following projects have been discussed in some detail in respect of Criterion 2.1, so are not repeated here:</p> <ul style="list-style-type: none"> Margaret River WWTP Upgrade project. MC Dedari 32 ML Storage. Kwinana Brownell Crescent Wastewater Pumping Station Project. <p>Although the Margaret River and Dedari projects were developed under asset creation and acquisition process arrangements that have now been revised, the underlying requirements in respect of project justification have remained consistent as can be seen by reviewing the relevant business cases (or pre-select checklists).</p>		
11.3	The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan	4	<p>Summary: Capital investments for asset intervention (refurbishment/renewal) projects are based on assessments of asset condition and remaining life, which inform the investment prioritisation process through the submission of business cases. Linkages between investment requirements and asset condition are identified through Asset Class Management Plans and supporting detailed information.</p> <p>Process and policy: As outlined in detail in respect of the 'Asset creation and acquisition' and 'Asset disposal' asset management processes, asset condition is a primary consideration when assessing existing asset intervention (refurbishment/renewal) projects for inclusion in the Asset Investment Program. This process, which invariably includes an assessment of remaining life, is discussed in detail in respect of Criterion 3.1.</p>	A	1

³⁸⁹ Final Strategic Asset Plan 2021-22_v2 AIP updates April 2021.pdf.

³⁹⁰ FINAL_SIGNED_2020-2021_Statement_of_Corporate_Intent_(SCI).pdf.

³⁹¹ 6.2 Asset Investment Program 2021_22 to 2025_26 - Board Meeting - 24 November 2020.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>As reported above, project justification is documented in the relevant business cases. Asset condition is discussed in detail in cases where it is a contributing factor.</p> <p>The linkage between capital investments and asset condition/remaining life is identified/highlighted in the various Asset Class Management Plans. These provide a summary assessment of the state of the assets, including an assessment of asset age profile and health, as well as outlining the required capital investment requirements over a 5/10-year forecast period. Asset Class Management Plan supporting information provides a more detailed assessment of asset condition/remaining life, and the associated expenditure requirements, at asset level.</p> <p>Performance:</p> <p>As an example of a project in which asset condition was the primary driver of investment, Water Corporation provided the Investment Business Case for the Port Hedland Lot 2519 Water Storage Tank, which indicated that:³⁹²</p> <p><i>“A Level 2 ACA [Asset Condition Assessment] undertaken in 2018 by Duratec confirmed that the roof structure and columns were in very poor condition with areas of 100% sectional loss and failed connections. As a temporary measure to prevent the roof from lifting off resulting in a water quality and public liability risk, the roof was tied down with steel cables in November 2019 and has survived the 2019/20 cyclone season. This project is the permanent solution to address this risk as well as the condition of the tank by extending the remaining asset service life.”</i></p> <p>The business case further indicated that, based on the assessed condition of the tank, the probability of failure of the roof was considered ‘Almost Certain’ whilst failure of the structure was considered ‘Unlikely’. These assessments were reflected in the Asset Class Management Plan.</p> <p>The <i>Water Storage Asset Class Management Plan</i>³⁹³ (which provides a summary assessment and plans for the asset class) provides an assessment of remaining life and condition (by component) for the asset class and outlines the forward investment program, which includes the Port Hedland Lot 2519 Water Storage Tank Upgrade project. More specific detail is available in supporting documentation; for example, a data extract revealed that each asset associated with water storages was assessed in terms of remaining life, and probability and cost of failure.³⁹⁴ A risk rating and score, which are used for prioritisation purposes, are assigned.</p> <p>The <i>Bores and Borefields Asset Class Management Plan</i>³⁹⁵ also details the equivalent summary information. It indicates (for example) that 13.5% of boresite units and 6.4% of bore mains (by length) are estimated to be past their service life.</p>		
11.4	There is an adequate process to ensure the capital expenditure plan is regularly	4	<p>Summary:</p> <p>Water Corporation implements a robust monitoring and reporting regime in respect of performance against its Asset Investment Program (capital expenditure plan). With focus on both the current year and the forward 5-</p>	A	1

³⁹² CW03347- Hedland Lot 2519 Tank 3 Refurbishment - Investment BC & BR 5ENG.pdf.

³⁹³ ACMP - Water Storage Facility - signed version.pdf.

³⁹⁴ ACMP Water Storage Complex - Raw Data Extract.pdf.

³⁹⁵ B&BF_Asset_Class_Management_Plan_-_Signed_Version.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
	updated and implemented		<p>year plan, monthly and quarterly reporting/reviews include mechanisms for re-prioritisation both within and across investment portfolios.</p> <p>Process and policy: The <i>Program Management Guideline</i>³⁹⁶ outlines a robust capital program monitoring and reporting and regime, with focus on both the current year and 5-year scenarios.</p> <p>Monitoring and reporting in respect of the current year program includes:</p> <ul style="list-style-type: none"> Monthly progress reporting of performance against a number of metrics, which is used to identify variance in actual spend, project plan or project activations compared to the baseline for the year. The reasons for variances are to be investigated, trends across projects or programs identified and corrective action initiated where appropriate. Quarterly program reviews involve a review of current year spend for each profit centre. This includes a review of planned spend, monthly cashflow, milestone dates, etc.; discussion of progress of active projects to confirm progress against schedule, that the plan is up-to-date, contingency is appropriately profiled, etc.; estimates of capital spend for the current and following year for each project and appropriation request; and identification of opportunities and risks to current spend at a project level. <p>This review results in an end of year forecast for each profit centre, which is then reported to and reviewed with the Head of Asset Investment Business Unit.</p> <p>Monitoring and reporting in respect of the 5-year capital program includes:</p> <ul style="list-style-type: none"> Monthly report of performance against a number of metrics including 5-year total plan (total and by portfolio) against Board-approved budget, and total plan by year (total and by portfolio) against Board-approved budget. This report, which is distributed to all relevant stakeholders, is used to identify variance in profit centre plans compared to the Board-approved budget. Where any variance exceeds 5% above the approved budget, reprioritisation of the respective profit centre projects is to be facilitated to reduce the overall plan to within the 5% tolerance. A 5-year portfolio report is submitted quarterly to the Investment Governance Committee (IGC) to demonstrate alignment of the program to the Board-approved budget. Recommendations to trigger re-prioritisation across portfolios should be made as appropriate. Any such re-prioritisation would be undertaken in accordance with the risk-based Investment Decision Framework. <p>Performance: Water Corporation demonstrated implementation of the capital program monitoring and reporting requirements by providing a copy of the <i>IGC Quarter 1 Asset Investment Program Review Outcome</i>³⁹⁷ report (for the period ending 30 September 2020) as submitted to the Executive for approval. An end of financial year outturn approximately 4% in excess of budget was forecast and revised portfolio level funding allocations for the current year were recommended. The report showed a breakdown of the assessment against</p>		

³⁹⁶ Program Management Guidelines.pdf.

³⁹⁷ 4.1.1 IGC Quarter 1 Asset Investment Program Review Outcome - Executive Meeting - 6 October 2020.pdf.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>each portfolio; this included current funding allocation, outturn forecast, recommended revised funding allocation and commentary in each case.</p> <p>An assessment of portfolio status as at the end of October 2020 was also provided.³⁹⁸ This showed variance between actual expenditure and the end-of-month baseline for each portfolio; an underspend of approximately 5% was identified at that time.</p>		
12	Review of AMS		The asset management system is regularly reviewed and updated.	A	1
12.1	A review process is in place to ensure the asset management plan and the asset management system described in it remain current	4	<p>Summary:</p> <p>There are a number of processes that have been put in place to ensure that the asset management system remains current. The framework for this is established by the <i>Infrastructure Asset Management Policy</i> and implemented through the <i>Asset Management System Manual</i>.</p> <p>The Management Review and Audit program is the main process by which the asset management system currency is maintained.</p> <p>Throughout the audit it was noted that all documents had been reviewed and were up to date. Key documents are in the Cordocs system managed through the <i>Development and Review of Cordocs Documents Procedure</i>.³⁹⁹ The review process is managed through monthly emails.</p> <p>Actions in the Improvement Plan were at risk of slipping past the due date and monitoring and reporting against the improvement actions seems to be ad hoc, which is the reason for a performance grade of 2 for this criterion.</p> <p>Process and Policy:</p> <p>The <i>Infrastructure Asset Management Policy</i>⁴⁰⁰ has the following principles:</p> <ul style="list-style-type: none"> • Regularly assess the effectiveness of our asset management system and the implementation of this policy. • Continuously improve the effectiveness of our asset management system through innovation and application of industry best practice. <p>These establish the requirement to review the asset management plan/system and maintain currency.</p> <p>The review process is documented in the <i>Asset Management System Manual</i>⁴⁰¹ and is summarised in Table 4. This includes the following processes:</p> <ul style="list-style-type: none"> • Corporate Risk Review (annual). • Management Review and Audit program (annual). • External benchmarking (four-yearly). • Asset management Maturity Assessment (annual and quarterly). • Quality assurance reviews (ad hoc). • Internal audit (annual). • Corporate Assurance Map to Risk (annual). • Letter of Representation (annual). • Asset Management System External Review (three-yearly). 	A	2

³⁹⁸ 2021 IGC Detail Q1.pdf.

³⁹⁹ S222 Development and Review of CorDocs Documents #58544922.

⁴⁰⁰ PCY392 Infrastructure Asset Management Policy #102902595.

⁴⁰¹ Asset Management System Manual #58587247.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>The <i>Asset Management System Manual</i> also identifies the <i>Asset Management System Improvement Plan</i> for items identified through the above processes. It also mentions the AMSR Post Review Implementation Plan for improvement items identified externally through the asset management system external review.</p> <p>The <i>Asset Management Maturity Assessment Procedure</i>⁴⁰² details the process to be undertaken. Up until 2019, the AMCL's Asset Management Excellence Model Light ("AMEM Light") was used. Water Corporation has since switched to use the WSAA Upmark tool, which is consistent with IAM's maturity assessment guideline.</p> <p>Performance:</p> <p>The Corporate risk Review is covered in the assessment of criteria underpinning asset management process 8.</p> <p>The Management Review and Audit Programs^{403,404,405} for the review period have been supplied. The audit program is Corporation-wide and each year it covers elements of the asset management system.</p> <p>The asset maturity assessment has been undertaken annually⁴⁰⁶ and the average ratings charted.⁴⁰⁷ The chart indicates a year-on-year improvement is the asset management system maturity.</p> <p>Through the review process and maturity assessments Water Corporation has identified some areas for development. These have been mapped out in the <i>Assessment Management Improvement Plan 2021 – 2024</i>.⁴⁰⁸ This aims to uplift the asset management system maturity. The Asset Class Management Plans have been developed over the audit period and the Asset Information Strategy is currently being reviewed. Progress of the improvement program was reported in a memo.⁴⁰⁹ There were a number of items in the improvement plan that appeared to be at risk of slipping past the due date and four of 18 actions were on hold, two of which were due to a lack of resources. The process of tracking the improvement program actions seems to be ad hoc.</p> <p>While conducting the audit, it was noted that all the supplied documents were mostly current. All of the key documents in the asset management system are in Cordocs. This system sends a monthly email regarding the review of documents.</p>		
12.2	Independent reviews (e.g. internal audit) are performed of the asset management system	5	<p>Summary:</p> <p>The Management Review & Audit framework sets out how internal audits are conducted on elements of the business such as the asset management system. These are conducted on a regular basis in accordance with the Management Review and Audit Program.</p>	A	1

⁴⁰² Asset Management Maturity Assessment Procedure #58584004.

⁴⁰³ MR&A Review and Audit Program 18/19 #49181632.

⁴⁰⁴ MR&A Review and Audit Program 19/20 #76031621.

⁴⁰⁵ MR&A Review and Audit Program 20/21 #98707969.

⁴⁰⁶ Maturity Journey.

⁴⁰⁷ Maturity uplift graph #113330984.

⁴⁰⁸ Asset Management System Improvement Plan 2021 – 2024.

⁴⁰⁹ Asset Management System (AMS) Improvement Plan 2019-20 – Status Update 5 July 2019.

Reference no.	Asset management process or effectiveness criterion	Review priority	Observations and Recommendations	Process and policy rating	Performance rating
			<p>Process and Policy:</p> <p>The <i>Asset Management System Manual</i>⁴¹⁰ details the internal audit process. Responsibility for the program is as follows:</p> <p><i>“The Audit and Risk Sub Committee (ARC) of the Board oversees the Corporation’s compliance with internal and external requirements. This is supported by the Risk Management Committee (RMC) which comprises all of Executive.”</i></p> <p>Details of the Audit and Risk Committee’s role in overseeing the internal audit program is in the <i>Charter Audit & Risk Committee of the Board of the Water Corporation</i>.⁴¹¹ The <i>Management Review and Audit Charter</i>⁴¹² is aligned with section 5 and 6 of the <i>Audit & Risk Committee Charter</i> and establish the purpose, authority and responsibility of the internal audit function. It specifies that the audits and reviews are to be independent and review the adequacy, efficiency and effectiveness of internal controls. Reviews are undertaken by a separate section of Water Corporation, as follows:</p> <p><i>“Management Review and Audit section in Risk and Assurance Business Unit performs the internal audit and assurance function for the Corporation. This includes the development and execution of an annual plan to provide a rolling review of all processes, including those pertaining to asset management.”</i></p> <p>An overview of the whole process is detailed in the <i>MR&A Internal Audit Framework</i>,⁴¹³ including delivery of the program and methodology. The Head of the Risk & Assurance Business Unit is to report periodically to the Audit and Risk Committee.</p> <p>Performance:</p> <p>The Management Review and Audit Programs^{414,415,416} for the review period have been supplied.</p> <p>The Management Review & Audit Activity Report for the Audit & Risk Committee was provided and covers 1 November 2019 – 29 February 2020.⁴¹⁷ This provides high-level detail of progress against the Management Review and Audit program, which was reported as being on track.</p> <p>Internal review and audits may be conducted by external parties. A Cyber Security review⁴¹⁸ was provided as evidence of a completed review from the 2018-19 Review and Audit Program.</p> <p>Water Corporation from time to time undertakes an external assessment of the internal auditing function; this was last undertaken in 2017 by EY.⁴¹⁹ It was noted that Water Corporation was graded as ‘Established’ and performed better than the average Western Australian Government organisations on every internal audit scope area.</p>		

⁴¹⁰ Asset Management System Manual #58587247.

⁴¹¹ Charter Audit & Risk Committee of the Board of the Water Corporation #116488413.

⁴¹² Charter Management Review & Audit #103648534.

⁴¹³ MR&A Internal Audit Framework #79980044.

⁴¹⁴ MR&A Review and Audit Program 18/19 #49181632.

⁴¹⁵ MR&A Review and Audit Program 19/20 #76031621.

⁴¹⁶ MR&A Review and Audit Program 20/21 #98707969.

⁴¹⁷ Management Review & Audit Activity Report for the Audit & Risk Committee #93663720.

⁴¹⁸ Water Corporation Security Review February 2019.

⁴¹⁹ Water Corporation Internal Audit Function Independent Review July 2017.

8. RECOMMENDATIONS

There were no recommendations from this review as there were no performance rating of 3 or 4 or any process and policy ratings of C or D.

Table 9 Recommendations to address current asset system deficiencies

A. Resolved during current review period			
Reference99 / Recommendation reference from previous review (if applicable)	Process and policy deficiency / Performance deficiency (Rating / Asset management process & effectiveness criterion / Details of deficiency)	Date resolved & action taken by the licensee	Auditor's Comments
B. Unresolved at end of current review period			
Recommendation reference (no./year)	Process and policy deficiency / Performance deficiency (Rating / Asset management process & effectiveness criterion / Details of deficiency)	Auditor's comments	Action taken by the licensee by the end of the audit period

9. APPROVAL OF THE REPORT BY THE AUDITOR

We confirm that the review of Water Corporation's asset management system and documented in this report is an accurate presentation of our findings and opinions.

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