

ECONOMIC REGULATION AUTHORITY

REPORT ON 2019 REVIEW OF

THE SHIRE OF LAKE GRACE SEWERAGE

ASSETS MANAGEMENT SYSTEM

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EXECUTIVE SUMMARY

Licence, Business and Major Changes

The town of Lake Grace is located some 350 Km south east of Perth, in the south-west region of Western Australia. The town's sewerage system, which serves approximately 300 persons, resident in the townsite, features approximately 78 Km of collecting sewers, four pumping stations and a basic wastewater treatment processes comprised of settlement in an Imhoff tank, and sludge drying, followed by oxygenation in two aeration lagoons. Treated effluent is disposed of by natural evaporation and by overflow to a salt affected depression adjacent to the plant.

The town's main industries are associated with providing sales, repair and transport services to agricultural operations in the surrounding area. A major CBH wheat receival facility is located in the town.

Shire of Lake Grace was granted a Water Services Operating Licence (WSOL on the 29th April 1996. The licence authorises the Shire to provide sewerage and non- potable water supply services.

The legislation governing the licensing of water service providers is the Water Services Act 2012 (Act).

During this review period, the Shire provided Sewerage services under the provisions of Version 4 of its Licence No. WL 22 , dated 1st July 2016. The Shire has ceased providing Non-Potable water services - although licenced to do so.

No major change in the business of Shire of Lake Grace took place during the Audit Period.

Shire of Lake Grace's Actions on Previous Audit Report Recommendations

This Review assessed the actions taken by Shire of Lake Grace in response to the recommendations included in the Paxon Report dated 27th March 2018.

This Review determined that of the eight recommendations in the Paxon report, two were partly resolved and six remain unresolved.

Details of the recommendations included in the Paxon report, their current status and any further action required is included in Table 4 entitled: "Previous Review: Non-Compliances and Recommendations".

Asset Management System Effectiveness Review

Review Objective

The Water Services Act 2012 s.24(2) and Shire of Lake Grace's Water Services Licence No. WL 22 (Version 4) requires that the Shire provides for and maintains an asset management system. The Act requires that Shire provide ERA with a report by an independent expert on the effectiveness of the system.

This asset management system effectiveness Review will provide ERA with an independent opinion on whether or not Shire of Lake Grace has in place the appropriate systems for the planning, construction, operation and maintenance of its water services assets.

A detailed description of the scope of the review and the methodology adopted is provided in Section 2 of this report.

The Review covered the period from the 1st December 2017 to 30th November 2019

Summary of Conclusions

This review concludes that Shire of Lake Grace operates its sewerage collection, treatment and disposal systems in a casual manner. The Shire has consistently failed to address issues raised during recent reviews, or to implement action recommended in such reviews.

During the recent three years period in which Reviewer has visited Lake Grace - either as an ERA appointed Inspector or Reviewer, there has been a turnover of some six senior staff having management responsibility for the sewerage system. This turnover has doubtless contributed to the lack of ongoing continuity and response. Only one of these appointees had previous experience in the provision of sewerage services.

For this 2019 review, the AMP and support documentation from the 2017 review was re-presented without the changes recommended in the earlier review - despite an elapsed interval of two years. Reviewer scored one of the twelve process as A1 and three B2. Of the remaining eight processes, Reviewer was obliged to score one as C2 and seven as C3. As a result, this report contains eight recommendations for improvement in both process and performance .

The above recommendations are associated with *Asset Planning, Operations, Maintenance, Risk Assessment, Contingency Planning, Financial and Capital Expenditure Planning, and Review of the Asset Management Syst*

The individual recommendations are listed in Section 3.4 - Current Review - Deficiencies and Recommendations of this report

In view of the above, this review concludes that the Shire of Lake Grace Asset Management System for its sewerage services is ineffective in terms of its policies, processes and performance

Licence Compliance

Tables 8 & 9 of ERA's: "Audit and Review Guidelines: Water Licences – March 2019" provided the basis for assessment of the effectiveness rating levels associated with "Asset Management Process and Policy Definition" and "Asset Management Performance" during the Review.

The Reviewer's assessment (based on the above tables) of the effectiveness of Shire of Lake Grace's Asset Management System is summarised in Table 1 (overleaf) entitled: "Summary of Review Findings."

Summary of Review Findings								
Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
Asset Planning			√				√	
Asset Creation and Acquisition		√				√		
Asset Disposal		√				√		
Environmental Analysis	√				√			
Asset Operations			√				√	
Asset Maintenance			√				√	
Asset Management Information System		√				√		
Risk Management			√				√	
Contingency Planning			√			√		
Financial Planning			√				√	
Capital Expenditure Planning			√				√	
Review of Asset Management System			√				√	

Table 1: Summary of Review Findings – Prime Components

1 SCOPE OF WORK

1.1 Objectives

Asset Management System Effectiveness Review

The Water Services Act 2012 (WA) requires that Shire of Lake Grace provide for and maintain an asset management system. The system should set out the processes to be taken by Shire of Lake Grace to ensure the proper planning, operation, financing, maintenance, repair and renewal of its assets and for monitoring of its water services. The Act requires Shire of Lake Grace to provide the ERA with a report by an independent expert on the effectiveness of the system.

This review will provide the Authority with an independent opinion on whether or not Shire of Lake Grace has in place the appropriate systems for the planning, construction, operation and maintenance of its water services assets.

This Review Report identifies areas where improvement is required and recommends corrective action (see Table 6 entitled: “Current Review: Deficiencies and Recommendations” as in section 5 of this Report).

1.2 Scope

1.2.1 Asset Management System Effectiveness Review

The Review focused on the asset management system, including asset management plans and supporting documentation, which set out the measures that are to be taken by Shire of Lake Grace for the proper operation and maintenance of assets. The plans must convey Shire of Lake Grace’s business strategies to ensure the effective management of assets over at least a five-year period. The scope of the Review included an assessment of the adequacy and effectiveness of the asset management system by evaluation of the 12 key asset management processes mandated, being:

- Asset planning;
- Asset creation/acquisition;
- Asset disposal;
- Environmental analysis;
- Asset operations;
- Asset maintenance;
- Asset management information system;
- Risk management;
- Contingency planning;
- Financial planning;
- Capital expenditure planning; and
- Asset management system.

Further references to the Review scope is covered in detail in this section of the Report.

1.3 Review Methodology

1.3.1 Review Plan

A risk-based approach was used to develop the Review Plan, to assess the appropriate risk factors in order to focus the Review on higher risk areas, with less intensive coverage of medium and lower risk areas.

1.3.2 Fieldwork

The Review fieldwork consisted of the following steps:

- In company with the relevant Shire staff and contract Plumber, inspected selected access chambers and sewers in the collection area, four pumping stations and the treatment facilities.
Discussed general operation practises and strategies, process implications, production and quality monitoring.
- Reviewed the adequacy or otherwise of the outputs of the system - including documentation of performance standards and statutory requirements, system opportunities and threats, preparation of operations manuals, maintenance schedules and action records, registers of the location, condition, age etc. of assets;
- Examined the extent to which the risks associated with the system environment and/or unexpected system failures have been assessed, quantified, documented as contingency plans and reduced by specific practices - such as stocking selected spare parts or, equipment items subject to extended delivery or repair periods, additional storage etc.;
- Reviewed the existence and effectiveness of systems implemented for the assessment, planning, financing and construction of new, replacement and major maintenance works and disposal of redundant assets;
- Assessed whether or not the system has been subject to regular internal review; with systems in place to ensure that plans are regularly updated to current status, provide for prior identification of new or replacement assets, their implementation; and initiatives to improve the overall effectiveness of the asset management system; and
- Assessed the Shire of Lake Grace's response to the recommendations made in previous reviews.

1.3.3 Review Reporting

The Review reporting consisted of the following steps:

- Discussed, prior to the conclusion of the Review visit, any observations and recommendations with the representative(s) of Shire of Lake Grace to confirm understanding of the issues.;
- Provided a draft Review Report to ERA for review. ERA provided comments on the Draft Review Report to Reviewer who considered the ERA's comments and made amendments to the Draft Review Report, as appropriate; and
- Provided the final Review Report to ERA.
- ERA forwarded the draft Review Report, with its comments to Shire of Lake Grace for their comment. ERA will procure the post-audit implementation plan from Shire of Lake Grace.

1.4 Time Interval Covered in Review

The Review covered the period from the 1st December 2017 to the 30th November 2019.

1.5 Review Dates

The Review fieldwork was conducted at Shire of Lake Grace's offices during the 9th and 10th January 2020.

Shire of Lake Grace representatives who participated in the Review are as follows:

Shire of Lake Grace Representatives - Review	
Staff Member	Position
Mr. Alan George	Deputy Chief Executive Officer
Mr. Craig Elefson	Acting Manager Infrastructure Services
Mr Jason Lip	Technical Officer
Mr. Joe Trevenen	Proprietor Lake Grace Plumbing

Table 2: Shire of Lake Grace Representatives - Review

1.6 Key Documents and Other Information Sources

1.6.1 Review

Details of key documents and other information sources examined during the course of the Review are as follows:

1.6.2 Asset Management Information System

Details of key documents and other information sources examined during the course of the Review are as follows:

- Water Services Operating Licence – Shire of Lake Grace WL22– Version 4, dated 1st July 2016
- Economic Regulation Authority – Audit & Review Guidelines, Water Licences – March 2019
- Paxon Group Operating Licence and Asset Management Review – Performance Audit Report – Shire of Lake Grace – 27th March 2018
- Shire of Lake Grace - Annual Reports for 2017/18 and 2018/19
- Shire of Lake Grace – Ten –year Financial Plan – 2017/18, (not current)
- Shire of Lake Grace – Ten-year Capital Expenditure Plan 2017/18, (not current)
- Haynes Norton - Accountants - Shire of Lake Grace Long Term Financial Plan 2014 to 2019
- Shire of Lake Grace – Asset Management Plan 2016
- Shire of Lake Grace – Risk Analysis
- Shire of Lake Grace – ERA Compliance Reports - 2018, 2019

- Shire of Lake Grace – Asset and Condition Register
- Shire of Lake Grace – Incident Response Plan

1.7 Review Team Members and Hours Utilised

Audit/Review Team Members and Hours Utilised	
Review Team Member	Hours
Barry Robbins – Barry Robbins Engineering & Project Management	40
TOTAL	40

Table 3: Review Team Members and Hours Utilised

2 LICENSEE'S RESPONSE TO PREVIOUS RECOMMENDATIONS

2.1 Previous Review: Deficiencies and Recommendations

Table 4: Previous Review: Deficiencies and Recommendations					
Previous Review: Deficiencies and Recommendations					
A. Resolved Before End of Previous Review Period					
Reference (no./year)	Asset Management System Effectiveness Rating	Reviewer's Recommendation or Action Taken	Date Resolved	Further Action Required (Yes/No/Not Applicable)	
	Asset Management System Component			Details of Further Action Required (Including Current Recommendation Reference if Applicable)	
	Criteria/Details of Asset Management System Deficiency				

There is no content in Part A. - The Shire did not complete any previous recommendations before the end of the previous review period

Table 4 Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations				
B. Resolved During Current Review Period				
Reference (no./year)	Asset Management System Effectiveness Rating	Reviewer's Recommendation	Date Resolved	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component			Details of Further Action Required (Including Current Recommendation Reference if Applicable)
	Criteria/Details of Asset Management System Deficiency			
2017 Review				
There is no content in Part. B - The Shire did not complete any previous recommendations during the current review period				

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
1/2017	<p>Asset Planning</p> <p>Although presented as a December 2017 document, the AMP requires editing and updating. General information regarding procedures are also adequate - without evidence of implementation in many cases such as operations, maintenance and documentation review; and</p>	<p>Recommendation 1/2017</p> <p>(a) - That the AMP be reviewed and updated as recommended elsewhere in this report including the following obvious items: o The AMP is dated December 2017. However, the document cover is titled September 2016</p> <p>(b) - Appendix A (Contingency Plan) and Appendix B (Personnel Contact Information) contain the names of Shire contacts no longer employed by the Shire - and should be replaced by the current Shire staff.</p>	<p>(a) - Yes Implement the recommendation See Recommendation No.1/2019 of this report</p> <p>(b) - Yes Implement the recommendation See Recommendation No.1/2019 of this report</p>
2/2017	<p>Asset Operations</p> <p>Operation and Maintenance tasks are essentially common in small basic sewerage systems such as that at Lake Grace. The AMP outlines the tasks reasonably well but with insufficient information in some cases e.g. Imhoff tank de-sludging procedures. The contract plumber undertakes the checking and maintenance and repairs associated with the collection system, pumping station and the Imhoff Tank. No Shire staff are</p>	<p>Recommendation 2/2017:</p> <ul style="list-style-type: none"> It is recommended that: <p>(a) Collection System - the Shire should include the condition of access chambers in its Asset Register. The Shire should also arrange for a CCTV inspection of the condition of all sewers and note the results in a separate column of the Asset Register. The Shire should</p>	<p>(a) - Yes Implement the recommendation See Recommendation No.2/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
	<p>designated to undertake checking and maintenance activities at the WWTP;</p> <ul style="list-style-type: none"> • Staff training and qualifications, certificates held, training records etc. are recorded and coordinated by the Shire's Training Officer. In addition to induction and OSH training, specific job task training and re-training is recorded and arranged. There is no specific training related to the sewerage system operations; • The list of assets in the asset register appears up to date. The condition of pumping equipment and WWTP are stated as good. Although the plumber undertook a condition check of access chambers in 2016 (and reported generally as good), there is no column in the asset register to record access chamber or pipe condition. The condition of pipes has not been assessed, as the Shire prefers to note pipe condition at failure locations. Reviewer is aware that a Dumbleyung plumber now has CCTV equipment for pipeline inspections. The Shire should therefore avail itself of the opportunity to engage a contractor to assess the condition of its sewer pipe system; <p>Reviewer considers the Technical Officer - appointed in 2016 to coordinate asset management monitoring and recording documentation, ERA licence reporting for the sewerage system, is clearly overloaded by the duties for which he was appointed, plus those seemingly unrelated duties that have since been assigned to him. He clearly requires backup;</p>	<p>flush the sewer collection system with clean water on an annual basis;</p> <p>(b)- Signage – a sign for the main pumping station should be mounted on the enclosure fencing;</p> <p>(c) - Pumping stations - locks should be fitted to the main pumping station access covers as recommended following the September 2016 Inspection. The hours run value of pumps at each of the four pumping stations should be recorded weekly and the value, date and time recorded in the existing spread sheet, which currently contains data for the main pumping station only. The water outlets next to all pumping stations should be fitted with a backflow prevention device;</p> <p>(d) - Treatment plant – weeds on embankment walls should be poisoned regularly. Shrubs and trees on the embankment should be removed and the surfaces restored. Bulrushes in pond No.2 should be poisoned or removed;</p> <p>(e) - Treatment plant – the Shire should seek the agreement of owner of the property on the east side of the WWTP to continue the</p>	<p>(b) = Yes Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(a) - Yes Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(b) - Yes Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(e) - Yes</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
	<ul style="list-style-type: none"> The Technical Officer is very competent as indicated by the improved level of monitoring and documentation of sewerage operations and maintenance. However, he currently has no experience in the operation and maintenance of sewerage systems, nor the authority to identify, initiate and coordinate such works. The Shire should consider the appointment of an officer with the authority (via the Works Manager) to direct and coordinate all practical aspects of the sewerage operations and maintenance. Appointment of an Environmental Health Officer ("EHO") is not considered appropriate for such a role as they normally only visit the Shire on a fortnightly basis; During April, and September 2016, Reviewer was appointed an ERA Inspector to report on progress made by the Shire in implementing nine of the recommendations of Quantum's 2014 Review Report; From the above it was concluded that a number of recommendations had been implemented or partly implemented. However, further action was recommended in the following areas: Staff Training; Asset Condition Assessment; Reticulation System Flushing; Erosion Protection of the pond banks at the WWTP and removal of bulrushes; Contingency Planning; and Formal Agreement for maintenance works; Since discontinuing irrigation of the Shire's recreation areas with WWTP effluent, the water level in the ponds has increased to well above the design level. During wet weather months, effluent discharges via the emergency overflow to a low-lying 	<p>discharge of overflow effluent to the salt affected low point on his property. Assuming agreement will be received, the Shire should seek the approval to continue the from the Department of Environmental Regulation;</p> <p>(f) - Treatment plant – the Shire should pump down the pond water levels sufficiently to determine and implement a suitable wave erosion treatment for the inner face of the ponds. The current overflow pipe from pond No.2 should be re-located to the north east corner of the pond;</p> <p>(g) - Treatment plant – the AMP should contain a sequence and description of procedures for the general operation and de-sludging of the Imhoff Tank;</p> <p>(h) - Planned maintenance - the Shire should verify that the planned maintenance schedule corresponds with maintenance tasks undertaken by the plumber and agree to and document changes where necessary. The Shire should negotiate a fee for each of the planned maintenance tasks and a cost basis for unplanned maintenance and repairs; and</p>	<p>Informal agreement only</p> <p>.Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(f) - Yes</p> <p>Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(g) - Yes</p> <p>Implement the recommendation See Recommendation No.2/2019 of this report</p> <p>(h) - Yes</p> <p>Implement the recommendation See Recommendation No.2/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
3/2017	<p>salt affected area within the adjacent private property immediately east of the WWTP;</p> <ul style="list-style-type: none"> As far as Reviewer is aware the owner of the property has not agreed to discharge onto the land. Similarly, neither the Health Department nor the Department of Environmental Regulation are aware of or have approved the practice. A side issue of the increase in the pond level is that erosion of the banks has occurred above the design top water level. During 2017, Reviewer reported to the Shire on this issue and made recommendations regarding the legal aspects of the practice and repair of the embankments; and The following recommendations are relevant to the initial comments above, together with the recommendations of the two Inspector's reports and Reviewer's 2017 report to the Shire regarding the WWTP: 	<p>(i) - The Shire should consider the appointment of an officer with the authority (via the Works Manager) to direct and coordinate all practical aspects of the sewerage operations and maintenance.</p>	<p>No An appointee commenced mid 2019</p>
	<p>Asset Maintenance</p> <ul style="list-style-type: none"> The AMP contains a good schedule of maintenance tasks over each twelve-month period. The order and frequency of maintenance (and operations) tasks are based on a combination of operational experience, industry practise, manufacturer's recommendations where appropriate and the likely risk 	<p>Recommendation 3/2017:</p> <p>(a) - The planned maintenance schedules should have provision for confirming that maintenance has occurred and the date.</p> <p>Recommendation 2/2017 above is also applicable to maintenance.</p>	<p>(a) - Yes Implement the recommendation. See Recommendation No.3/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
4/2017	<p>implications of their delay or non-implementation. The schedule for 2015/16 includes estimate of cost for each task to be undertaken in each month. The schedule and estimates have not been prepared for 2016/17 or 2017/18. The work sheet for 2015/16 contains details of planned maintenance (but no costs) plus repair works and costs. Work sheets have not been prepared for 2016/17 or 2017/18 to date; and</p> <ul style="list-style-type: none"> The maintenance schedules do not include recording of pump run hours at all pumping stations. Similarly, the maintenance schedule should have provision for verifying that planned maintenance has been undertaken. <p>Risk Analysis</p> <ul style="list-style-type: none"> Reviewer noted the risk assessment refers to CCTV inspection of pipes as a control measure in assessing the risk of blockage as low and the controls as moderate. As Council has not implemented a CCTV inspection program the risk assessment is questionable; and Similarly, pumping station failure controls are stated to include overflow capture, advice from the public and automatic telephone advice to the Works Supervisor. Some of 	<p>Recommendation 4/2017:</p> <p>(a) - That the Risk Assessment be reviewed to verify or correct the conclusions of the analysis.</p>	<p>(a) - Yes Implement the recommendation. Implement the recommendation See Recommendation No.4/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
5/2017	<p>the pumping stations are not readily visible to the public and may not be reported. The Shire employs an Infrastructure Supervisor, not a Works Supervisor as stated at several locations in the AMP. This position is currently vacant. None of the four pumping stations has an overflow basin. Finally, loss of an embankment of a treatment pond could occur unless the Shire attends to the embankment erosion risk. In this event, the delay and cost could be far more significant than assessed.</p> <p>Contingency Planning</p> <ul style="list-style-type: none"> • The AMP contains a set of very basic contingency plans; • There is no evidence that the plans have been tested or reviewed; • The list of contacts contains the names of several persons no longer employed by the Shire. Contact details for Western Power, Police, Emergency Services, NBN, Ambulance, Liquid Waste Removal and Tankering contractor should be added to the contacts; 	<p>Recommendation 5/2017:</p> <p>(a) - That in view of the above comments, the AMP section on contingency planning be carefully reviewed, corrected and re-written.</p>	<p>(a) Yes Partly addressed. See recommendation No.5/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
		<ul style="list-style-type: none"> • Much of the contingency plans text illustrates the problems specific emergencies cause rather than the procedures necessary to allow customer service to be maintained while the normal operation is restored. In the case of a rising main failure, rather than discharge flows to the environment while possibly waiting several days or more for the delivery of pipes and for repair works to be completed, it would be far better practise to tanker wastes from the pumping station to the treatment plant or another pumping station in the interim; and • Similarly, procedures required in the event of a sewer blockage should be more detailed. While the cause and location of a blockage is determined, and excavation and repair are undertaken, it will be necessary to block an upstream access chamber to retard the flow. Incoming flow accumulating in the access chamber may be tankered away or, if the inflow is significant, it may be necessary to provide a pump to by-pass flow from the access chamber to one downstream of the blockage. 	

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
6/2017	<p>Financial Planning</p> <ul style="list-style-type: none"> The whole of life annuity spreadsheet determines an annuity of \$94,003 for maintenance. The estimated annual annuity cost is therefore in the order of $\\$65,820 + \\$94,003 = \\$159,823$ which exceeds the required annuity of \$126,146 quoted in sub-section 7.5 of the AMP; An income of \$135,069 is listed in the AMP for 2015/16 - which indicates an on-going income shortfall in the order of: $\\$159,823 - \\$135,069 = \\$24,754$ per year – unless rates are significantly increased; Reviewers spent a significant amount of time attempting to understand the difference between annuities stated in the AMP and the whole of life financial spread sheet. Reviewer was also unable to understand the overall set of figures and tables in Section 7 of the AMP; and Reviewer acknowledges that Section 7 of the AMP is intended to provide a rolling five-year forecast of income and expenditure and to indicate that financial planning is sound. However, 	<p>Recommendation 6/2017:</p> <p>(a) Section 7 of the AMP should be reviewed, clarified and edited so that cost estimates in the whole of life spread sheets and the AMP are in agreement – or any differences explained. The document should be extended annually to provide a rolling five years prediction of the financial viability of the sewerage system. Similarly, the source and relationship between amounts in the various tables of Section 7 of the AMP should be made clearer.</p>	<p>(a) - Yes Implement the recommendation See Recommendation No.6/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
	review, clarification and editing of the document is required to provide the intended outcome.		
7/2017	<p>Capital Expenditure Planning</p> <ul style="list-style-type: none"> A tabulation in the AMP shows the 2018 to 2022 capex expenditure projections of the <ul style="list-style-type: none"> (a) - Financial model of the AMIS, (b) - AMP and (c) - Shire's current budget: Reviewer noted the discrepancy between the Finance model and the AMP in the years 2018 and 2019 - which is not explained or corrected. Although both the Finance model and the AMP estimate 2018 expenditure in excess of \$230,000, the Shire's budget contains a nil provision for 2018 and subsequent years to 2022; 	<p>Recommendation 7/2017:</p> <p>(a) That the AMP and Financial model be reviewed, amended as necessary and updated annually to ensure consistency of Capex expenditure forecasting and input to financial budgets;</p> <p>(b) Ensure that sewerage asset management officers provide input to sewerage system budget preparation and that associated AMP documentation is amended if necessary, to agree with budget provisions; and</p> <p>(c) The document should be extended annually to provide a rolling five years prediction of capital expenditure requirements.</p>	<p>(a) Yes Implement the recommendation See Recommendation No.7/2019 of this report</p> <p>(b) Yes Implement the recommendation See Recommendation No.7/2019 of this report</p> <p>(c) Yes Implement the recommendation See Recommendation No.7/2019 of this report</p>

Table 4: Previous Review: Deficiencies and Recommendations

Previous Review: Deficiencies and Recommendations			
C. Unresolved At End of Current Review Period			
Reference (no./year)	Asset Management System Effectiveness Rating	Auditor's Recommendation	Further Action Required (Yes/No/Not Applicable)
	Asset Management System Component		Details of Further Action Required
	Criteria/Details of Asset Management System Deficiency		
	<ul style="list-style-type: none"> Whilst the AMP indicates the general areas in which Capex expenditure is intended, a more detailed breakdown of the estimates should be provided in the AMP. As noted for Item 10 - Financial Planning, the Capex plan should be extended annually to provide a rolling five years prediction of capital expenditure from the current financial year; and As noted, elsewhere in this document the AMP is out of date and should be reviewed and updated. There appears to be little or no interaction between the Shire's officers responsible for the sewerage asset management system and those preparing the annual budget. 		
8/2017	<p>Review of Asset Management System</p> <ul style="list-style-type: none"> Independent reviews of the asset management system have been undertaken by approved consultants since the issue of - and in accordance with, the requirements of the Shire's Water Services Licence; Although dated December 2017, the AMP is titled AMP – Sewerage Scheme – September 2016; 	<p>Recommendation 8/2017:</p> <p>(a) The practises and staffing of managing the assets of the Shire's sewerage system should be reviewed and revised;</p>	<p>(a) Yes Implement the recommendation See Recommendation No.8/2019 of this report</p>

- The 2016 AMP was prepared following Quantum Assurance 2014 Review and was being revised during the ERA Inspector's September 2016 visit. The document theoretically accords with Quantum's 2014 recommendation that the AMP be revised at intervals of not more than five years. Although initial work on the September 2016 AMP appeared promising, Reviewer considers that an adequate revision or review of the Asset Management System has not been undertaken; and
- However, it is incomplete, out of date in terms of its financial and capital expenditure planning and contains staff and contact errors. The control sheet at the rear of the document has no revision details, dates, or signatures.

- | | |
|---|--|
| (b) The AMP should be thoroughly reviewed, corrected and edited in accordance with any changes resulting from the above revision and the recommendations of this Report; and | (b) -Yes
Implement the recommendation See Recommendation No.8/2019 of this report |
| (c) Apart from five yearly revisions of the AMP, a desk-top review of the document should be undertaken annually – including up-dating of the financial and capital expenditure plans. The reviewer's name, review date and details of amendments should be included in the revision sheet. | (c) Yes
Implement the recommendation See Recommendation No.8/2019 of this report |

3 ASSET MANAGEMENT SYSTEM EFFECTIVENESS REVIEW: COMPREHENSIVE REPORT

3.1 Asset Management System Rating Scales

The effectiveness ratings assigned to each asset management system component as a result of the Review, are set out in the following two Tables - taken from ERA's document entitled: "Audit and Review Guidelines: Water Licences – "March 2019" (Authority's Guidelines)."

Asset Management Process and Policy Definition Adequacy Ratings

Authority's Guidelines: Table No. 9

Rating	Description	Criteria
A	<ul style="list-style-type: none"> Adequately defined 	<ul style="list-style-type: none"> Processes and polices 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 that are being managed.
B	<ul style="list-style-type: none"> Requires some improvement 	<ul style="list-style-type: none"> Process and policy documentation requires 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) require minor improvements (taking into consideration the assets that are being managed).
C	<ul style="list-style-type: none"> Requires significant improvement 	<ul style="list-style-type: none"> Process and policy documentation is incomplete or requires significant improvement. Processes and policies do not document the required performance of the assets. Processes and policies are significantly out of date. The asset management information system(s) require significant improvements (taking into consideration the assets that are being managed).
D	<ul style="list-style-type: none"> 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 that are being managed).

ERA Table 9: Asset Management Process and Policy Definition Adequacy Ratings

Asset Management Performance Ratings

Authority's Guidelines: Table No 10

Rating	Description	Criteria
1	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Opportunity for improvement 	<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. Process improvement opportunities are not actioned.
3	<ul style="list-style-type: none"> Corrective action required 	<ul style="list-style-type: none"> The performance of the process requires significant improvement to meet the required level. Process effectiveness reviews are performed irregularly, or not at all. Process improvement opportunities are not actioned.
4	<ul style="list-style-type: none"> Serious action required 	<ul style="list-style-type: none"> Process is not performed, or the performance is so poor that the process is considered to be ineffective.

ERA Table 10: Asset Management Performance Ratings

3.2 Asset Management System: Effectiveness Ratings

The effectiveness ratings for prime components, together with the ratings of their relevant effectiveness criteria, are indicated in Table 5 below:

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
Asset Planning			√				√	
• Asset Management Plan covers key requirements;		√				√		
• Planning process and objectives reflect the needs of all stakeholders and is integrated with business planning;			√			√		
• Service levels are defined;	√				√			
• Non asset options are considered;		√				√		
• Life cycle costs of owning and operating the assets are assessed;			√				√	
• Funding options are evaluated;		√			√			
• Costs are justified and cost drivers identified;		√				√		
• Likelihood and consequences of asset failure are predicted; and			√			√		
• Plans are regularly reviewed and updated.			√				√	
• Asset Creation and Acquisition		√				√		

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
• Full project evaluations are undertaken for new assets including comparative estimates of non-asset solutions;			√			√		
• Evaluations include all lifecycle costs;			√			√		
• Projects reflect sound engineering and business decisions;		√			√			
• Commissioning tests are documented and completed; and		√				√		
• On-going legal/environmental/safety obligations of the asset owner are assigned and understood.		√				√		
Asset Disposal		√				√		
• Under performing and under utilised assets are identified as part of a regular systematic review process;		√				√		
• The reasons for under-utilisation or poor performance are critically examined and corrective action or disposal undertaken;		√				√		
• Disposal alternatives are evaluated; and		√				√		
• There is a replacement strategy for assets.		√				√		
Environmental Analysis	√				√			

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
• Opportunities and threats in the system are assessed;		√				√		
• Performance standards (availability of service, capacity, continuity, emergency response etc.) are measured and achieved;	√					√		
• Compliance with statutory and regulatory requirements; and	√				√			
• Achievement of customer service levels.	√				√			
Asset Operations			√				√	
• Operational procedures and policies are documented and linked to service levels required;			√				√	
• Risk management is applied to prioritise operations tasks;		√				√		
• Assets are documented in an asset register including asset type, location, material, plans of components and assessment of assets physical /structural condition and accounting data;			√				√	
• Operational costs are measured and monitored; and		√				√		
• Staff resources are adequate and staff receive training commensurate with their responsibilities.		√				√		
Asset Maintenance			√				√	

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
• Maintenance policies and procedures are documented and linked to service levels required;			√				√	
• Regular inspections are undertaken of asset performance and condition;			√				√	
• Maintenance plans (emergency, corrective and preventative) are documented and completed on schedule;			√				√	
• Failures are analysed and operation /maintenance plans are adjusted where necessary;		√				√		
• Risk management is applied to prioritise maintenance tasks; and			√			√		
• Maintenance costs are measured and monitored.			√			√		
Asset Management Information System		√				√		
• Adequate system documentation for users and IT operators;			√			√		
• Input controls include appropriate verification and validation of data entered into the system;		√			√			
• Logical access controls appear adequate such as passwords;			√			√		
• Physical security access controls appear adequate;			√				√	

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
• Data back-up procedures appear adequate and back-ups are tested;			√				√	
• Key computations related to Licensee performance reporting are materially accurate; and		√				√		
• Management reports appear adequate for the Licensee to monitor licence obligations.		√				√		
Risk Management			√				√	
• Risk management policies and procedures exist and are being applied to minimise internal and external risk associated with the asset management system;			√				√	
• Risks are documented in a risk register and treatment plans are actioned and monitored; and			√			√		
• The probability and consequences of asset failure are regularly assessed.			√			√		
Contingency Planning			√			√		
• Contingency plans are documented, understood and tested to confirm their operability and to cover higher risks.			√			√		
Financial Planning			√				√	
• The financial plan states the financial objectives and strategies			√			√		

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
and actions to achieve the objectives;								
• The financial plan identifies the source of funds for capital expenditure and recurrent costs;		√				√		
• The financial plan provides projections of operating statements (profit and loss) and financial position (balance sheet);		√			√			
• The financial plan provides firm predictions of income for the next five years and reasonable indicative predictions beyond this period;			√			√		
• The financial plan provides for the operation, maintenance, administration and capital expenditure requirements of the services; and			√			√		
• Significant variances in actual/budget income and expenses are identified and corrective action taken where necessary.		√				√		
Capital Expenditure Planning			√				√	
• There is a capital expenditure plan that covers issues to be addressed, actions proposed responsibilities and dates;			√				√	
• The plan provides reasons for capital expenditure and timing of expenditure;			√				√	

Asset Management System	Asset Management Process and Policy Definition Adequacy Rating				Asset Management Performance Rating			
Component	Adequately Defined	Requires Some Improvement	• Requires Significant Improvement	• Inadequate	Performing Effectively	Opportunity for Improvement	Corrective Action Required	Serious Action Required
	A	B	C	D	1	2	3	4
<ul style="list-style-type: none"> The capital expenditure plan is consistent with the asset life and condition identified in the asset management plan; and 		√					√	
<ul style="list-style-type: none"> There is an adequate process to ensure that the capital expenditure plan is regularly updated and actioned. 			√				√	
Review of Asset Management System			√				√	
<ul style="list-style-type: none"> A review process is in place to ensure that the asset management plan and the asset management system described therein are kept current; and 			√				√	
<ul style="list-style-type: none"> Independent reviews (eg, internal audit) are performed of the asset management system. 			√				√	

Table 5 Asset Management System: Effectiveness Ratings - Prime Components and Effectiveness Criteria

3.3 Review Observations and Recommendations

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
1 - Asset Planning	<ul style="list-style-type: none"> As for the 2016 review, Reviewer was provided with a copy of the 2016 Asset Management plan prepared by GHD. The AMP is considered adequate in concept – but is significantly out of date. Future activities and maintenance are proposed for dates prior to, or during the previous review period - and in most cases were not implemented. There is little or no documented evidence of implementation in many cases such as operations, maintenance, financial or capital expenditure planning, or review of documents within the AMP. The AMP should be thoroughly reviewed and updated subject to comments and recommendations outlined in the 2016 review - and repeated in this 2019 review The Asset Renewal Strategy in the AMP tabulates the long-life expectancy of most assets. As the Shire has no current need for significant planned replacement of its assets, its asset-based expenditure will be on maintenance, refurbishment and repair where necessary; The Shire has a specific policy for cost limits on quotes, tenders and a regional price preference associated with new or replacement assets. The policy is based on the requirements of the Local Government Act; and Future planning by the Shire for its sewerage scheme development is constrained by minimal growth of the town's population and connections to the sewerage scheme over recent years. The population, number of connections and sewage flows are therefore expected to be unchanged for the foreseeable future. Capital works will therefore be based on replacement of assets as required by age or condition rather than due to the necessity to increase the capacity of existing assets. The AMP states (item 3.1.1): <i>“The forecast demand for sewerage services is not expected to increase”</i>. 	C	3

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<p>Recommendation 1/2019:</p> <ul style="list-style-type: none"> • That the AMP be thoroughly reviewed and updated as recommended elsewhere in this report including the following obvious items: The AMP is dated 2017 and is clearly out of date - as are many of its component sections.; and • Appendix A (Contingency Plan) and Appendix B (Personnel Contact Information) contain the names of Shire contacts no longer employed by the Shire - and should be replaced by the current Shire staff. 		
2 - Asset Creation and Acquisition	<ul style="list-style-type: none"> • The Asset Renewal Strategy in the AMP tabulates the long-life expectancy of most assets. The Shire has no current need for significant planned replacement of its assets. Its asset expenditure is essentially based on maintenance, refurbishment and repair where necessary; • Reviewer noted that just prior to the review inspection the Shire replaced all pumps, controls and float switches in its four pumping stations. Spare pumps for each pumping station were also purchased and some guide rails replaced. Reviewer understands that some pumps had been in service for up to sixteen years. • The Shire has a specific policy for cost limits on quotes, tenders and a regional price preference associated with new or replacement assets. The policy is based on the requirements of the Local Government Act; and • Alternative strategies of refurbishment or replacement are the prime considerations. Given the minor nature and cost involved, any alternatives are compared informally and appropriately outlined in reports to the Council. 	B	2

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
3 - Asset Disposal	<ul style="list-style-type: none"> The Shire has not previously disposed of sewerage assets. Consequently, there is no specific policy or procedure documented. Reviewer was advised that health issues would preclude the sale of assets previously in contact with sewage. Such assets would therefore be disposed of to landfill in the general case. However, pipes and other buried assets would simply be left “in the ground”. 	B	2
4 - Environmental Analysis	<ul style="list-style-type: none"> The AMP adequately sets out the physical, community, commercial, geological and climate environment of Lake Grace. A brief description of the sewerage assets is included; Customer service standards i.e. complaints, emergencies, hardship policy etc are set out in the AMP and the Customer Service documentation. The documentation also provides information regarding the Shire’s obligations and powers associated with operating and maintenance of the sewerage system; and The AMP provides concise information regarding the Legislative environment supporting the Shire’s water services licence and the general responsibility of the Shire in terms of Departments of Health, Department of Water and Environmental Regulation and the Local Government Act. 	A	1

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
<p>5 - Asset Operations</p>	<ul style="list-style-type: none"> • Operation and Maintenance tasks are generally identical procedures in small basic sewerage systems such as that at Lake Grace. The AMP outlines the tasks reasonably well but with insufficient information in some cases - such as de-sludging the Imhoff Tank. Also, the AMP describes specific operations and maintenance tasks and their frequency. However, these tasks have not been undertaken • The contract plumber undertakes the inspection, maintenance and repairs associated with the collection system, pumping station and the Imhoff Tank. A Shire staff member is designated to undertake checking and recording of maintenance and repair activities. However, checking is only done following receipt of the plumber's account and the works are not recorded on job sheets or maintenance schedules. • The contract plumber has a sound knowledge of the overall system and appears to initiate maintenance works with little or no reference to Shire Officers. At the Shire's request, the Imhoff Tank was recently emptied and cleaned. Unfortunately, the accumulated sludge (which Imhoff Tanks remove from the sewage flow prior to its entry to the ponds) were discharged to the pond system, resulting in significant additional Biochemical Oxygen Demand (BOD), Solids and bacterial load likely to result in substantial decrease in the quality of effluent. • Four access chambers were inspected during the field review. In three cases the covers were overlain with soil and weed and would not have been located but for the local knowledge of the plumber. All covers should be greased. The benching in one chamber was broken and the access step irons in another dangerously corroded. The condition of all chambers should be assessed, covers greased and a maintenance/repair program implemented. • The Shire has provided a septage disposal pit adjacent to the pumping station near the swimming pool. Waste contractors may discharge wastes to the pit simply by opening the hinged cover. Reviewer considers the cover should be fitted with a padlock to prevent improper dumping of unsuitable wastes and vandalism. Bona fide users would be required to request a nominated Shire officer to unlock the cover and verify the quality of waste discharged. • Sludge deposited in an Imhoff Tank takes about thirty days to digest - changing in colour from brown to black. Sludge should therefore be discharged to the drying bed at monthly intervals. Flow should be terminated when 	<p>C</p>	<p>3</p>

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Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<p>the out-flow colour changes from black to brown. This procedure should be included in the maintenance schedule.</p> <ul style="list-style-type: none"> • Staff training and qualifications, certificates held, training records etc. are coordinated by the Shire’s Training Officer. In addition to induction and OSH training, specific job task training and re-training is recorded and arranged. There is no specific training related to the sewerage system operations; • The list of assets in the asset register appears up to date. However, records of asset condition are out of date and should be re-assessed. e.g. : <ul style="list-style-type: none"> • Access Chambers were last inspected in 2016. Their condition was not rated and remains un-rated. Work carried out during the 2016 inspection and additional work required was noted. However, there is no indication as to whether or not this additional work was undertaken. • Pumping equipment and WWTP were last inspected in 2010 when condition was rated as fair and good. Reviewer noted that pumps, control equipment and associated equipment (including spare pumps) were replaced during November December 2019. Not all of this information has been included in the asset register. • The condition of pipes has not been assessed, as the Shire prefers to note pipe condition at failure locations inspections. As recommended in the previous review, the Shire should engage a contractor to conduct a CCTV inspection to assess the condition of its sewer pipe system; • During mid - 2019, the Shire appointed a Senior Technical Officer with sewerage system experience, to coordinate asset management monitoring and recording documentation, ERA licence reporting for the sewerage system. He will be supported by the existing Technical Officer who was previously overloaded and without experience in the processes, operation and maintenance of sewerage systems, • Appointment of an Environmental Health Officer (“EHO”) is not considered appropriate for such a role as they normally only visit the Shire on a fortnightly basis; 		

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management Including Recommendations	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	<ul style="list-style-type: none"> • Since discontinuing irrigation of the Shire’s recreation areas with WWTP effluent in 2014, the water level in the second pond has increased to the emergency overflow pipe water level of RL 284.84 metres AHD during the higher rainfall months i.e. 46 cm. above the design level of RL 284.38. metres AHD. During this period, treated effluent has discharged to a salt affected basin on private property immediately west of the WWTP. Reviewer was advised that the owner of the property adjacent to the WWTP has agreed to the discharge of treated effluent to the salt affected hollow on his land. It is unclear as to whether or not the Health Department , or Department of Water and Environmental Regulation are aware of, or, have approved the practice <p>A side issue of the increase in the pond level is that erosion of the banks has occurred above the design top water level - allowing significant seepage from the second pond at the northern end. During 2017, Reviewer reported to the Shire on this issue and made recommendations regarding the legal aspects of the practice and repair of the embankments. No action was taken.</p> <ul style="list-style-type: none"> • Currently, evaporation has reduced both ponds to a level below their design level. Consequently, there is no discharge from the plant and no seepage occurring from the northern embankment of Pond No.2. At this point the Shire should urgently construct an additional overflow pipe at the north west corner of Pond No.2 at an invert level of RL 234.34. This will ensure that future pond No.2 levels do not exceed the original design level, should arrest the ongoing bank erosion and possibly leakage from the pond. A protective layer of say, 75mm stone placed against the now vertical internal face of the northern wall of pond No.2 would provide additional stability and dissipate any future eroding wave energy. • If, following the above procedure, erosion and/or seepage is continuing, the Shire should consider lining Pond No.2. It is suggested that the pond be pumped empty, allowed to dry out and lined with a suitable membrane - after which it can be returned to service. This procedure should be undertaken during the summer months when 		

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<p>both pond levels are low. Any flow into Pond No.1 not removed by evaporation could simply be discharged to the adjacent salt affected hollow.</p> <p>The following recommendations are relevant to the initial comments above, together with the recommendations of the two Inspector's reports and Reviewer's 2017 report to the Shire regarding the WWTP:</p> <p>Recommendation 2/2019:</p> <ul style="list-style-type: none"> It is recommended that: <p>Collection System - the Shire conduct and record a condition inspection of access chambers in its Asset Register. The Shire should also arrange for a CCTV inspection of the condition of all sewers. The results of the condition inspections should be recorded in the asset register. Items requiring repair or maintenance should also be recorded, prioritised and actioned. The Shire should flush the sewer collection system with clean water on an annual basis;</p> <p>The cover to the septage discharge point should be fitted with a padlock - and a Shire office appointed to unlock the cover and to verify the waste material and oversee its discharged to the sewerage system</p> <p>Signage – a sign for the main pumping station should be removed from the switchboard cabinet and be re-mounted mounted on the enclosure fencing;</p> <p>Weekly hours run recording of all pumping station pumps should continue and monitored for unexpected variations. New cut in and cut out set points for the Mason St pumping station should be determined and the pump volume contained between the set points determined. The pumping and refill periods should be measured to determine pump discharge rates - allowing annual flows to the treatment plant be determined from measured pump hours</p>		

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<p>Treatment plant – weeds on embankment walls should be poisoned regularly. Shrubs and trees on the embankment should be removed and the surfaces restored.</p> <p>The Shire should seek the approval of Department of Water and Environmental Regulation to continue discharge of treated effluent to the salt affected hollow on the adjacent property.</p> <p>Treatment plant – while water levels are low the Shire should install a new overflow at IL 234.34 metres AHD in the northern end of the west wall of Pond No.2, together with a protective layer of say, 75mm stone placed against the now vertical internal face of the northern wall of pond No.2. If the procedure does not arrest bank erosion or seepage from Pond No.2, the Shire should empty and re-line the pond as (or similar to) the procedure described above.</p> <p>Treatment plant – the AMP should contain a sequence and description of procedures for the general operation and de-sludging of the Imhoff Tank;</p> <p>Operations and Maintenance.- the Shire should verify that the planned maintenance schedule corresponds with maintenance tasks undertaken by the plumber and agree to and document changes where necessary. The Shire should negotiate a contract for operations, planned and unplanned maintenance services currently provided by the plumber. Operations and maintenance procedures should be initiated by the Shire - preferably by the Senior Technical Officer.</p>		

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
<p>6 - Asset Maintenance</p>	<p>The AMP contains a concise schedule of maintenance tasks over a twelve-month period. The document is clearly out of date as it contains separate annual schedules for 2015/16 and 2016/17. The document should be corrected for at least 2019/20 and preferably 2020/21 in addition.</p> <ul style="list-style-type: none"> The schedule contains columns for entering costs for labour, materials and total costs for each task to be undertaken in each month. There is no column for recording that maintenance tasks have been completed. As the schedules are out of date, there is no cost information for the current year or estimates for the subsequent year. The comments column is too small to accommodate useful information regarding work required. The names and contact details of Shire staff and trades contractors are incorrect and out of date by some five years <p>Recommendation 3/2019:</p> <p>The planned maintenance schedules should be edited and updated to include:</p> <ul style="list-style-type: none"> Maintenance tasks for 2019/20 and 2020/21 Provision for confirming and recording that maintenance has occurred and the date. Actual and estimated costing information for current and subsequent years Provision for providing comments on condition, work required etc for each asset or asset group. Edit and correct details of Shire staff and contractors associated with maintenance activities. Operations and Maintenance.- the Shire should verify that the planned maintenance schedule corresponds with maintenance tasks undertaken by the plumber and agree to and document changes where necessary. The Shire should negotiate a contract for operations, planned and unplanned maintenance services currently provided by 	<p style="text-align: center;">C</p>	<p style="text-align: center;">3</p>

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	the plumber. Operations and maintenance procedures should be initiated by the Shire - preferably by the Senior Technical Officer.		
7 - Asset Management Information System	<p>The Shire's Asset Management system is manually operated and based on the standard set of interlinked Excel spread sheets commonly used by local authorities. The software is supplemented by the Synergy local authority package for finance, budgeting; and specific Word and Excel documents developed by the Shire for correspondence, data recording . The system is adequate for the Shire's sewerage system management;</p> <ul style="list-style-type: none"> The spread sheets of the standard set as follows: <p>Asset Register contains sub-menus for Access Chambers, Pipes, WWTP and Pumping Stations. Menus contain details of asset creation date, GPS coordinates, dimensions, materials and replacement cost estimates based on 2017 assessments. Condition assessments are also included - with the exception of access chambers and pipes.</p> <ul style="list-style-type: none"> Financial Planning. This spreadsheet considers the future (whole of life) cost of all asset replacements over a fifty years period. Based on a nett present worth approach, the system provides an assessment of the annual amounts (annuity) needed to be contributed to the reserve to cover the whole of life cost of the assets. The annuity is assessed as \$102,843 made up of \$94,003 for capital works and \$68,840 for maintenance. Other spreadsheets include Inventory Control - essentially unused, Condition and Performance - now used to record weekly pumping hours and Risk Analysis - discussed later <p>Storage and Backup of Sewerage Scheme Documents:</p>	B	2

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<ul style="list-style-type: none"> The AMP, Asset Management Information System, digitised copies of available design and construction drawings and associated documents, are stored on a shared drive on the office server. The server is located in a lockable room in the Shire's office - which also houses the Shire's printers and photocopying equipment and is therefore normally unlocked during business hours. The server is backed up daily to a second server, also located in the Shire's office. The Shire has recently engaged IT consultant <i>Market Creations</i> which is engaged in upgrading the Shire's hardware and software to allow backups to be made to the consultant's office hardware in Perth and hence to the cloud. The system will include verification of the completeness and validity of the back-up. Reviewer supports these proposals. However, the server should be housed in as separate lockable room away from the other office equipment. The key should be held by one or two senior staff, who can open the room on request. In the interim the second server currently storing backups should be re-located away from the office building to avoid loss of both systems in the event of a fire or similar emergency Access to sewerage system correspondence and data is limited to specific Shire staff via password. The Technical Officer has overall responsibility for the on-going upkeep and preservation of the Asset Management System. All available construction drawings have been digitised and are stored in the Shire's computer system. 		
8 - Risk Management	<ul style="list-style-type: none"> The Asset Management Information System ("AMIS") contains a comprehensive Risk Assessment spread sheet based on AS/NZS ISO 31000:2009. The AMP at sub-section 4.5 – "<i>Summary of Risks</i>" states in part, "<i>The risk assessment concluded that other than the rising main, all other assets were at low to moderate risk exposure, which could be managed with current process and procedures and no further actions were needed to manage or mitigate the other risks.</i>"; Reviewer noted the risk assessment controls refer to CCTV inspections of pipes, regular inspection of the network, annual inspection of access chambers, and monthly surveillance of the WWTP facilities. As the Shire 	C	3

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<p>has not implemented any of these inspection procedures the controls are therefore weak, or non-existent. The current assessment of risk is at least questionable.</p> <ul style="list-style-type: none"> • Similarly, pumping station failure controls are stated to include overflow capture, which in-correct, as none of the four pumping stations has an overflow basin. The Shire employs an Infrastructure Services Manager, not a Works Supervisor as stated at several locations in the AMP. This position is currently vacant. • The risk analysis does not include an assessment of the risks associated with a bushfire which could render the pumping station controls unserviceable, or an earthquake which could weaken the northern and western walls of Pond No. 2 at the WWTP. • Finally, loss of an embankment of a treatment pond No 2. could occur unless the Shire attends to the embankment erosion risk. In this event, the delay and cost could be far more significant than assessed. <p>Recommendation 4/2019:</p> <ul style="list-style-type: none"> • That the Risk Assessment be reviewed to examine the absence of controls claimed to exist and the consequent level of risk - or that the controls claimed be promptly implemented. • That reference to pumping station overflows be deleted from the assessment and that references to the “Manager Infrastructure Services” be substituted for references to “Works Manager” • The risk assessment table be extended to include risks associated with bushfire and earthquake 		

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
9 - Contingency Planning	<p>The previous review recommended that the section on Contingency Planning be carefully be reviewed and re-written in response to Reviewers comments. However, the AMP document presented for this review still contains the former Contingency Plan unchanged.</p> <p>The former document should be replaced in the AMP with a new contingency plan recently prepared. The following comments refer to the new contingency plan document.</p> <p>The new contingency plan contains a set of basic contingency procedures and is considered adequate for its purpose.</p> <ul style="list-style-type: none"> • The list of contacts contains the names and contact details of several relevant employees of the Shire, together with the local plumber and electrician, pump supplier. Contact details for other authorities / relevant businesses should also be listed be in case their input is required. These include the Water Corporation, Police, Ambulance Service, Waste Removal and Earthworks contractors. Vanessa Crispe - Manager Infrastructure Services has recently left the Shire. Her name and contact details should be replaced with those of her successor • The plan should include the use of a waste removal contractor to tanker wastes upstream from a blockage to a downstream pumping station, the Shire’s WWTP, or that of another sewerage services provider. • There is no requirement for the plans to be tested or reviewed. An in-house workshop should therefore be held annually, at which two separate emergency scenarios are “work shopped” by the relevant Shire staff. The workshop should assess and develop staff knowledge of the system and the approach to emergency control and service restoration. The workshop scenarios should be prepared by the Manager Infrastructure Services - who will facilitate, but not lead discussion. Minutes should be kept and issued to participants. Any changes considered necessary should be incorporate in the contingency plans <p>Recommendation 5/2019:</p> <p>That the new AMP section on contingency planning should:</p>	C	2

Table 6: Review Observations and Recommendations

Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<ul style="list-style-type: none"> • Replace the plans currently contained in the AMP • Include contact details for Western Power, Police, Emergency Services, NBN, Ambulance and Liquid Waste Removal contractor. • Include details of the new Manager Infrastructure Services, when appointed. • Include the use of a waste tankering service when applicable. • Include the implementation of an in-house workshop held annually, at which two separate emergency scenarios are “work shopped” by the relevant Shire staff. 		
10 - Financial Planning	<p>The financial plan submitted for the 2016 review has been re-submitted unchanged for this 2019 review. An updated financial plan for the sewerage services could not be provided. Therefore, the comments and recommendations of the 2016 review are repeated for this 2019 review as follows</p> <ul style="list-style-type: none"> • Section 7 – Financial Summary of the AMP provides a breakdown of income and costs for the five-year period 2016/17 to 2020/21. For a consistent five years period from the end of the review date, the estimate range should be 2017/18 to 2021/22 and is therefore two years out of date; • Reviewer noted that the whole of life capital replacement spread sheet indicates a net present value of \$2,966,359 and a corresponding annuity of \$94,003. Deducting an amount of \$900,000 (held in the sewerage reserve at 30th June 2017) from the net present value, reduces the annuity to \$ 65,820. The AMP states the capital replacement annuity as being \$67,973 - which is essentially in agreement with the above. However, the source calculations are not provided; • The whole of life annuity spread sheet determines an annuity of \$94,003 for maintenance. The estimated total annual annuity cost (capital plus maintenance) is therefore in the order of \$65,820 + \$94,003 = \$159,823 - which exceeds the required annuity of \$126,146 quoted in sub-section 7.5 of the AMP; 	C	3

Table 6: Review Observations and Recommendations			
Asset Management System	Systems, Processes and Controls in Place at SHIRE OF LAKE GRACE for Asset Management	Asset Management Process and Policy Definition Adequacy Rating	Asset Management Performance Rating
	Including Recommendations		
	<ul style="list-style-type: none"> An income of \$135,069 is listed in the AMP for 2015/16 - which indicates an on-going income shortfall in the order of (capital plus maintenance annuity minus income) \$159,823 - \$135,069 = \$ \$24,754 annually – unless rates are significantly increased; Reviewer spent a significant amount of time attempting to understand the difference between annuities stated in the AMP and those of the whole of life financial spread sheet. Reviewer was also unable to understand the overall set of figures and tables in Section 7 of the AMP; and Reviewer acknowledges that Section 7 of the AMP is intended to provide a rolling five-year forecast of income and expenditure and to indicate that financial planning is sound. However, review, clarification and editing of the document is required to provide the intended outcome. <p>Recommendation 6/2019:</p> <ul style="list-style-type: none"> Section 7 of the AMP should be reviewed, clarified and edited so that cost estimates in the whole of life spread sheets and the AMP are in agreement – or any differences explained. The document should be extended annually to provide a rolling five years prediction of the financial viability of the sewerage system. Similarly, the source and relationship between amounts in the various tables of Section 7 of the AMP should be made clearer. 		
11 - Capital Expenditure Planning	<p>The Capital Expenditure information submitted for the 2016 review has been re-submitted unchanged for this 2019 review. An updated Capital Expenditure plan for the sewerage services could not be provided. Therefore, the comments and recommendations of the 2016 review are repeated for this 2019 review as follows.</p>	C	3

<p>12 - Review of Asset Management System</p>	<ul style="list-style-type: none"> The following tabulation shows the 2018 to 2022 capex expenditure projections of the (a) - Financial mode of the AMIS, (b) - AMP and (c) - Shire's (then 2017/18) current budget: <table border="1"> <thead> <tr> <th></th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> </tr> </thead> <tbody> <tr> <td>(a) - Financial Module of Excel based AMIS</td> <td>\$ 271,666</td> <td>\$ 5206</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> </tr> <tr> <td>(b) - AMP</td> <td>\$ 233,720</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> </tr> <tr> <td>(c) - Shires 2017/2018 Budget</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> <td>Nil</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Reviewer noted the discrepancy between the Finance model and the AMP in the years 2018 and 2019 - which is not explained or corrected. Although both the Finance model and the AMP estimate 2018 expenditure in excess of \$230,000, the Shire's budget contains a nil provision for 2018 and subsequent years to 2022; Whilst the AMP indicates the general areas in which Capex expenditure is intended, a more detailed breakdown of the estimates should be provided in the AMP. As noted for Item 10 - Financial Planning, the Capex Plan should be extended annually to provide a rolling five years prediction of capital expenditure from the current financial year; and As noted, elsewhere in this document the AMP is out of date and should be reviewed and updated. There appears to be little or no interaction between the Shire's officers responsible for the sewerage asset management system and those preparing the annual budget. <p>Recommendation 7/2019:</p> <ul style="list-style-type: none"> That the AMP and Financial model be reviewed, amended as necessary and updated annually to ensure consistency of Capex expenditure forecasting and input to financial budgets; Ensure that sewerage asset management officers provide input to sewerage system budget preparation and that associated AMP documentation is amended as necessary to agree with budget provisions; and The document should be extended annually to provide a rolling five years prediction of capital expenditure requirements. <ul style="list-style-type: none"> Independent reviews of the asset management system have been undertaken by approved Auditors since the issue of - and in accordance with, the requirements of the Shire's Water Services Licence; Dated December 2016, the AMP is unchanged since originally submitted for the 2016 review. Only two recommendation from the 2016 review have been implemented i.e the appointment of the Senior Technical 		2018	2019	2020	2021	2022	(a) - Financial Module of Excel based AMIS	\$ 271,666	\$ 5206	Nil	Nil	Nil	(b) - AMP	\$ 233,720	Nil	Nil	Nil	Nil	(c) - Shires 2017/2018 Budget	Nil	Nil	Nil	Nil	Nil	<p>C</p>	<p>3</p>
		2018	2019	2020	2021	2022																					
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(c) - Shires 2017/2018 Budget	Nil	Nil	Nil	Nil	Nil																						

	<p>Officer (now the acting Manager Infrastructure Services) and re-writing of the Contingency Plan. Although prices were received for CCTV inspection of the reticulation sewers, a contract has not been awarded.</p> <ul style="list-style-type: none"> • The 2016 AMP was prepared following Quantum Assurance 2014 Review and was being revised during the ERA Inspector’s September 2016 visit. Although initial work on the September 2016 AMP appeared promising, during the 2016 review. This 2019 review concludes that an adequate revision or review of the Asset Management System has not been undertaken in accordance with recommendations of the 2016 review • The AMP remains incomplete, out of date in terms of its financial and capital expenditure planning and contains staff and contact errors. The control sheet at the rear of the document has no revision details, dates, or signatures. • This review states (in Section 7 - Asset Management Information System), that “<i>The system is adequate for the Shire’s sewerage system management</i>”. However, it appears from the issues listed within this report, that the system itself is not adequately managed by the Shire. Management of the system - including the overall managerial responsibility and duties of support staff, should be reviewed as soon as possible. The review should be conducted by a suitably qualified independent person; and the resulting recommendations implemented. <p>Recommendation 8/2019:</p> <ul style="list-style-type: none"> • The practises and staffing of managing the assets of the Shire’s sewerage system should be reviewed and revised; • The AMP should be thoroughly reviewed, corrected and edited in accordance with any changes resulting from the above revision and the recommendations of this Report. • In addition to five yearly revisions of the AMP, (as required by the current AMP document) a desk-top review of the document should be undertaken annually – including up-dating of the financial and capital expenditure plans. The reviewer’s name, review date and details of amendments should be included in the revision sheet. • Management of the Asset Management System - including overall managerial responsibility and duties of support staff, should be reviewed as soon as possible. The review should be undertaken by suitably qualified independent person; and resulting recommendations implemented. 		
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3.4 Current Review: Deficiencies and Recommendations

Recommendation No.1/2019 - Asset Planning

That the AMP be thoroughly reviewed and updated as recommended elsewhere in this report including the following obvious items: The AMP is dated 2017 and is clearly out of date - as are many of its component sections.; and

o Appendix A (Contingency Plan) and Appendix B (Personnel Contact Information) contain the names of Shire contacts no longer employed by the Shire - and should be replaced by the current Shire staff.

Recommendation No.2/2019 - Asset Operations

It is recommended that:

Collection System - the Shire conduct and record a condition inspection of access chambers in its Asset Register. The Shire should also arrange for a CCTV inspection of the condition of all sewers. The results of the condition inspections should be recorded in the asset register. Items requiring repair or maintenance should also be recorded, prioritised and actioned. The Shire should flush the sewer collection system with clean water on an annual basis;

The cover to the septage discharge point should be fitted with a padlock - and a Shire office appointed to unlock the cover and to verify the waste material and oversee its discharged to the sewerage system

Signage – a sign for the main pumping station should be removed from the switchboard cabinet and be re-mounted mounted on the enclosure fencing;

Weekly hours run recording of all pumping station pumps should continue and monitored for unexpected variations. New cut in and cut out set points for the Mason St pumping station should be determined and the pump volume contained between the set points determined. The pumping and refill periods should be measured to determine pump discharge rates - allowing annual flows to the treatment plant be determined from measured pump hours

Treatment plant – weeds on embankment walls should be poisoned regularly. Shrubs and trees on the embankment should be removed and the surfaces restored.

The Shire should seek the approval of the Department of Water and Environmental Regulation to continue discharge of treated effluent to the salt affected hollow on the adjacent property.

Treatment plant – while water levels are low the Shire should install a new overflow at IL 234.34 metres AHD in the northern end of the west wall of Pond No.2, together with a protective layer of say, 75mm stone placed against the now vertical internal face of the northern wall of pond No.2. If the procedure does not arrest bank erosion or seepage from Pond No.2, the Shire should empty and re-line the pond as (or similar to) the procedure described above.

Treatment Plant – the AMP should contain a sequence and description of procedures for the general operation and de-sludging of the Imhoff Tank;

Operations and Maintenance.- the Shire should verify that the planned maintenance schedule corresponds with maintenance tasks undertaken by the plumber and agree to and document changes where necessary. The Shire

should negotiate a contract for operations, planned and unplanned maintenance services currently provided by the plumber. Operations and maintenance procedures should be initiated by the Shire - preferably by the Senior Technical Officer.

Recommendation No.3/2019 - Asset Maintenance

The planned maintenance schedules should be edited and updated to include:

- Maintenance tasks for 2019/20 and 2020/21
- Provision for confirming and recording that maintenance has occurred and the date.
- Actual and estimated costing information for current and subsequent years
- Provision for providing comments on condition, work required etc for each asset or asset group.
- Edit and correct details of Shire staff and contractors associated with maintenance activities.
- Operations and Maintenance.- the Shire should verify that the planned maintenance schedule corresponds with maintenance tasks undertaken by the plumber and agree to and document changes where necessary. The Shire should negotiate a contract for operations, planned and unplanned maintenance services currently provided by the plumber. Operations and maintenance procedures should be initiated by the Shire - preferably by the Senior Technical Officer.

Recommendation No.4/2019 - Risk Assessment

- That the Risk Assessment be reviewed to examine the absence of controls claimed to exist and the consequent level of risk - or that the controls claimed be promptly implemented.
- That reference to pumping station overflows be deleted from the assessment and that references to the “Manager Infrastructure Services” be substituted for references to “Works Manager”
- The risk assessment table be extended to include risks associated with bushfire and earthquake.

Recommendation No.5/2019 - Contingency Planning

That the new AMP section on contingency planning should:

- Replace the plans currently contained in the AMP
- Include contact details for Western Power, Police, Emergency Services, NBN, Ambulance and Liquid Waste Removal contractor.
- Include details of the new Manager Infrastructure Services, when appointed.
- Include the use of a waste tankering service when applicable.
- Include the implementation of an in-house workshop held annually, at which two separate emergency scenarios are “work shopped” by the relevant Shire staff.

Recommendation No.6/2019 - Financial Planning

- Section 7 of the AMP should be reviewed, clarified and edited so that cost estimates in the whole of life spread sheets and the AMP are in agreement – or any differences explained. The document should be extended annually to provide a rolling five years prediction of the financial viability of the sewerage system. Similarly, the source and relationship between amounts in the various tables of Section 7 of the AMP should be made clearer.

Recommendation No.7/2019 - Capital Expenditure Planning

- That the AMP and Financial model be reviewed, amended as necessary and updated annually to ensure consistency of Capex expenditure forecasting and input to financial budgets;
- Ensure that sewerage asset management officers provide input to sewerage system budget preparation and that associated AMP documentation is amended as necessary to agree with budget provisions; and
- The document should be extended annually to provide a rolling five years prediction of capital expenditure requirements.

Recommendation No. 8/2019 - Review of Asset Management System

- The practises and staffing of managing the assets of the Shire’s sewerage system should be reviewed and revised;
- The AMP should be thoroughly reviewed, corrected and edited in accordance with any changes resulting from the above revision and the recommendations of this Report.
- In addition to five yearly revisions of the AMP, (as required by the current AMP document), a desk-top review of the document should be undertaken annually – including up-dating of the financial and capital expenditure plans. The reviewer’s name, review date and date.
- Management of the Asset Management System - including overall managerial responsibility and duties of support staff, should be reviewed as soon as possible. The review should be undertaken by suitably qualified independent person; and resulting recommendations implemented.