



National Lifestyle Villages
ERA Asset Management System Review
Moama Lifestyle Village Final Report

March 2014

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Executive summary

The Economic Regulatory Authority of WA has issued a Water Services Operating Licence to Moama Lifestyle Villages Pty Ltd (Moama) for the provision of sewerage and non-potable water services. The Licence was granted to Moama on the 7th day of September 2010. The ERA has subsequently amended this Licence and it has been reissued as WL 40, version 2, 18th November 2013.

Not less than every 24 months, Moama is required to provide the Authority with an operational audit and a report on the effectiveness of its asset management system under section 37 and 36 respectively of the Water Services Licencing Act 1995.

This report covers the findings and recommendations of the Asset Management System Review (AMS) that was undertaken by GHD in December 2013 and covered the period from 1 October 2012 to 30 September 2013, and is due to be provided to the Authority by 31 December 2013. It was conducted in accordance with the detail set down in the approved AMS Review plan. This was the second asset management systems review for this asset.

Reviewer's Comment

It is the professional opinion of the Reviewer that control of the asset's operation was less than satisfactory for the period reviewed. Moama Lifestyle Village's Asset Management System, was not implemented to a level that the Reviewer can be confident of the facility being managed and operated appropriately. Several overflows and deliberate discharges of partly treated waste water occurred during the review period. Moama also failed in its reporting obligations to the Department of Health.

Significant improvements were observed during the physical site inspection and subsequent desk top review, however many of these improvements occurred after the review period. They are referenced due to their significant nature but for the purpose of this report are regarded as outliers to the review period.

A total of 22 principal actions have been recommended by the reviewer with one of the actions containing a number of O&M Contractor recommendations;

- Asset Planning 2
- Asset Creation & Acquisition 1
- Asset Disposal 1
- Environmental Analysis 1
- Asset Operations & Maintenance 8
- Asset Management Information Systems 2
- Risk Management 4
- Contingency Planning 1
- Capital Expenditure Planning 1
- AMS Review 1

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1. Introduction

1.1 Background

The regulation of water service industry in Western Australia is governed by the Water Services Licensing Act 1995 (the “Act”). The Act has established a regulatory framework surrounding the provision of water services primarily by way of a licensing scheme administered by the Economic Regulation Authority (the “Authority”).

Under the Act, providers of water supply, sewerage, irrigation and drainage services within controlled areas must be licensed. The licence sets a range of conditions, including minimum service standards and regular reporting.

The Authority has issued a Water Services Operating Licence to Moama Lifestyle Villages Pty Ltd (Moama) for the provision of sewerage and non-potable water services, (Water Licence, WL40 Version 2: 7/09/2010). The ERA has subsequently amended this Licence and it has been reissued as WL 40, version 2, 18th November 2013.

Not less than every 24 months, Moama is required to provide the Authority with an operational audit and a report on the effectiveness of its asset management system under section 37 and 36 respectively of the Act. However, in this case the Regulator has mandated that this asset management system review be undertaken for the 12 month period 1st Oct 2012 to 30th Sept 2013.

Moama Lifestyle Villages Pty Ltd is marketed as Tuart Lakes Lifestyle Village, under the parent organisation of National Lifestyle Villages (NLV) and is a lifestyle village for over 45's with development approval for 470 park homes, a club house and other recreational facilities. The Lifestyle Village model allows residents to purchase a Park Home and enter a long term land arrangement, typically 60 years.

Whilst the village is connected to scheme water for potable water it did not have an adequate quantity of water for other uses or access to wastewater discharge services. Connection to the the Water Corporation (Corporation) sewer network was considered prohibitive. This presented an opportunity to construct a decentralised water management system using a Water Recycling Scheme utilising a service provider other than the Corporation.

The Water Recycling Scheme includes the operation of a Wastewater Treatment Plant (WWTP) and associated infrastructure to collect sewage from village residents. Moama Lifestyle Village currently has 126 connections and approximately 1 kilometre of connecting sewer to the wastewater treatment plant. The plant has a capacity of 180 connections. The treated water is used for underground irrigation purposes around the village.

The key assets for Moama include the wastewater treatment plant, pipelines and service points.

For the review period, Moama had engaged Aquasol as operations and maintenance (O&M) contractor who was charged with operating and maintaining the asset. Coinciding with the end of the review period Aquasol's contract was not renewed and TriStar was appointed as O&M contractor.

The Asset Management System Review, to assess the effectiveness of the asset management system, has been conducted in accordance with Audit Guidelines: Electricity, Gas and Water issued by the Authority (August 2010).

The facility is located at Lots 102 and 1 (previously Lots 1, 3, and 703), Mandurah Road, Baldivis, City of Rockingham.

The review was undertaken in December 2013 and covered the period from 1 October 2012 to 30 September 2013, and is due to be provided to the Authority by 31 December 2013. It was conducted in accordance with the detail set down in the approved AMS Review plan. This was the second asset management systems review for this asset.

Where issues of non-compliance were identified, recommendations and a suitable methodology to rectify the non-compliance have been provided. The methodology and timeframe for compliance were to be decided by Moama and an action register has been established and forms part of this report. This register is also provided as a separate document for convenience of use.

A full set of field notes, including review findings along with individual recommendations are included later in this report.

It is the responsibility of the Licensee to determine if the recommendations are appropriate and/or alternative means of addressing non-compliance are available. Ultimately the Licensee will be responsible for advising the Economic Regulation Authority of actions taken in rectification of the non-compliance issues. Also the Licensee will be responsible for submitting a copy of the final report to the Economic Regulation Authority.

Whilst the licensee's post review implementation plans are contained in this report they do not formally form part of the review. They are provided as demonstration of the licensee's plans to close the gaps in compliance.

2. Summary of Asset Management Review Findings

The following timeline of events provides a clear demonstration, that during the review period, despite numerous attempts to rectify overflow issues, Moama were unable to prevent loss of containment events. They relied on their O & M contractor to provide technical advice and maintenance and on an external third party engineering company to provide engineering solutions.

It is apparent that the O & M contractor failed to report several overflows to Moama and failed in providing the required reporting to the Department of Health. This does not however diminish the responsibility of the Licensee to manage their O & M contractor and ensure that proper reporting structures exist and are used appropriately.

The large volume of correspondence between Moama, ERA, Department of Health (DOH) and City of Rockingham demonstrates the various Authorities concern with the ongoing situation and their efforts in consulting with Moama to bring about control of the WWTP.

The principal issues appeared to be that some components were inadequate for their application, incorrect filtration media was used, insufficient buffering volume was available and sludge build-ups caused overflows. These have now all been addressed, albeit during and after the review period.

It should be noted that releases of partly treated sewage to unauthorised areas were a result of deliberate action of the O & M contractor. The secondary containment is sized to capture overflows and prevent them from flowing outside the plant's authorised area. This secondary containment is to mitigate the release hazard and is not a substitute for preventing asset failures leading to overflows.

2.1 Timeline of Events

30th August 2012

A high concentration of suspended solids was identified in the treated water tank and may have entered the irrigation system. The resultant action by the operator was to discharge partially treated waste water to land adjacent to the treatment plant footprint. Discharge onto this area was not authorised and is a breach of Section 98 of the Health Act 1911.

4th September 2012

A repeat of the August 30th event occurred resulting in the operator discharging partially treated water to land adjacent to the treatment plant footprint. The irrigation tank, MBR and Polish tanks were drained and cleaned out. The incident report states that the laterals were upgraded to prevent this problem recurring.

19th/20th September 2012

The treated water tank again had a high concentration of suspended solids which blocked the irrigation filters causing an overflow which was captured in the facility secondary containment system. The Licensee identified the cause as a failure of the filtration system's lower laterals allowing a high concentration of suspended solids entering the irrigation tank and subsequently blocking the irrigation filters. Please note that the reason provided in the report for the failure is the same as the one previously stated after the 30th August and September 4th events.

It is assumed that when these 4 events were a result of the laterals failure and by the time both Schedule A compliance reports were submitted the laterals and the filtration media were upgraded. An independent engineering report had also been commissioned to identify failures and provide engineering solutions to rectify the problems and prevent recurrence.

3rd October 2012

A letter was sent from the ERA informing Moama that the Environmental Health Officer from the City of Rockingham (EHO) informing them of the “escape” of untreated sewage on the site as well as deliberate pumping of sewage onto adjacent vacant land. The Secretariat requested Moama to provide a written report to address the matters raised by EHO.

10th October 2012

Moama provided a written response to the Secretariat's request to address matters outlined in the ERA letter of 3rd September 2012. A water compliance report was submitted to the Secretariat (Schedule A) outlining the nature and the extent of the breach, its impact, reasons for the breach. Actions undertaken by the licensee to prevent a recurrence of the breach and the timing of regaining control were also stated.

The Licensee identified the cause as a failure of the filtration system's lower laterals allowing a high concentration of suspended solids to enter the irrigation tank and subsequently block the irrigation filters. As stated above the Licensee undertook measures to rectify the issue and prevent it from occurring again.

23rd October 2012

A letter from the Department of Health regarding the poor operation of the WWTP and failure to submit an annual report within 60 days after the financial year was received by the Licensee. The Department outlined to Moama that they had breached Section 98 of the Health Act 1911 in pumping sewage onto land not authorised for the purpose.

The letter requested the submission of the 2012 annual report and a third party engineering report outlining the reasons for the plant malfunctions and the remedial action that is to be undertaken to prevent further failures.

A letter from the City of Rockingham was also received on this date, again raising their concerns as to the poor operation of the WWTP and challenging the answers to operational failures of the plant provided by the O & M contractor, Aquasol.

24th October 2012

The Secretariat issued a letter to Moama requesting further information in relation to the letter issued on the 3rd October

26th October 2012

Moama responded to the City of Rockingham with a copy forwarded to the ERA on the 02/11/2012 outlining the Licensee's action plan to remediate the contaminated area and to improve management practices in the control of their O & M contractor.

12th November 2012

Moama forwarded a further response to the City of Rockingham's letter of 22/10/2012 and provided more detailed information around the pump outs of partially treated waste water in September 2012.

30th November 2012

Moama had commissioned Emerson Stewart to investigate the incidents of partially treated sewage release at the Tuart Lakes Lifestyle Village (Moama) waste water treatment plant. 5 recommendations for improvement were provided by the Emerson and Stewart Engineering Review report which was released on 30th November and forwarded to the Department of Health.

The reviewer was informed that all these recommendations have been implemented with the exception that not all telemetry had been installed.

13th December 2012

An email was received from the Department of Health regarding a complaint from a resident and a health officer inspected the site. Loss of containment and odour issues on the 3/12/2012 and 12/12/2012 were reported.

Aquasol provided a response stating that a lightning strike had caused an electronic component to fail and the system backed up due to this malfunction of the irrigation system.

A Schedule A compliance report was provided and amongst the rectification plans was to install an extra buffer tank to provide time for technicians to attend future similar failures before the system backed up and overflowed. The overflow was captured within the secondary containment system.

21st December 2012

Moama provided a final response to the Department of Health's email of 13/12/2012 closing out the issues.

4th January 2013

Department of Health responded to Moama's letter of the 21st December stating they were not satisfied with the remediation as further overflows had occurred since the implementation of the Emerson Stewart recommendations.

The department also were concerned with the lack of notification of sewage spills. They issued amended conditions of approval for the Tuart Lakes (Moama) National Lifestyle Village Recycled Water Scheme.

31st January 2013

Moama replied to the Department of Health.

6th February 2013

Moama made application to the Department of Environment for permission to install an extra raw sewage collection (buffer) tank.

28th August 2013

Moama received a letter from ERA regarding information of 2 further overflow incidents they had received from the City of Rockingham. The Secretariat further cited their high concern that evidence presented by the City of Rockingham appeared to show that actions previously undertaken by Moama and its contractors to prevent sewage escapes from the WWTP had not been successful.

An urgent meeting was called with the appropriate personnel from Moama and the Secretariat to address matters of the serious deficiencies in the standard of asset management.

2nd September 2013

Moama management met with the Secretariat.

13th September 2013

Moama provided a letter in response to their meeting on the 2/9/2013. Several reasons were cited for the poor asset management and an extended description of events, root causes and remedial actions was provided.

It also noted that its O & M contractor, Aquasol, advised Moama that they intended to terminate their contract effective 30th September 2013 and that Moama had commenced enquiries to find a suitable, competent O & M contractor for the ongoing operation of the WWTP. .

23^d September 2013

Moama received a letter from the Secretariat stating that they were satisfied that Moama had taken reasonable measures to address the causes of the overflows as Moama had advised the Secretariat that they had not had an overflow since 21 August 2013.

The Secretariat also requested that they be notified of the appointment of the new O & M contractor.

24th September 2013

Moama received a letter from the Department of Health stating they had received correspondence from the City of Rockingham dated 23 August 2013 citing ongoing poor performance of the WWTP. They cited that Moama was still in breach of Approval Conditions in that the Department had not received the monthly recycled water quality results as per conditions 9, 19, 11 & 12 of Approval C8/00000.

To satisfy the Department of Health that Moama had identified the causes of WWTP failures (plant operator or system design) and taken steps to implement adequate controls. The Department required Moama to submit another third party engineering verification by 31st December 2013.

30th September 2013

Moama terminated their contract with their O&M Contractor Aquasol Water Treatment Solutions effective on the 30th September 2013. TriStar Water Solutions were awarded the new contract to provide operation and maintenance services of the waste water treatment plant.

Moama awarded the contract to TriStar Water Solutions as they demonstrated previous solid experience, technical ability and the availability of suitably qualified personnel.

Although outside the review period the auditor felt it pertinent to include the following statement.

TriStar provided an inspection report with a comprehensive list of recommendations for improvement. A process is currently in place to review and implement these recommendations (where applicable) with the more urgent control improvements and remedial actions to be initiated immediately.

2.2 Summary of Opinion on the Control Environment

The control environment for asset management is assessed to be poor with significant improvements recommended. The deficiencies, ranged from serious to minor and the Licensee has now prioritised remediation efforts to address these deficiencies.

A number of improvements have been implemented after the review period and these actions have been captured in the post review action plan.

In summary with the introduction of a new maintenance contractor, Tristar, along with improved management of that contractor, development of written operational procedures, the implementation of more robust emergency contingencies and risk assessment have provided for better asset management process definition and stronger performance giving greater control of the asset by Moama.

Tristar Water Solutions (the new O&M contractor) has prepared a report for Moama summarising their inspection of the facility and have proposed a number of recommendations to improve the facility efficiency and control environment. These are currently being reviewed for applicability, prioritised and a plan of implementation is being developed.

2.3 Overall assessment

In the Reviewer's professional view, Moama has not effectively implemented their asset management system and the overall asset management process and policy definition is rated as "B" requiring some improvement.

Moama's asset management performance is rated as "3", corrective action required.

The areas of recommended improvement are as follows;

- Prioritise, by risk assessment, and implement the recommendations from the Tristar Water Solutions Report – as appropriate (document number M2051-IR-001, dated 13th November 2013). The following initiatives from the report have been implemented so far.
 - An inlet screen has been ordered.
 - A process flow change in the use of an anoxic tank.
 - Baffles installed in the clarifier.
 - Sludge and suspended solids have been removed from throughout the system.
- The Licensee should provide a transition plan for Stage 2 of the WWTP as a matter of urgency as the plant's capacity could well be reached by early 2015.
- The Licensee should prepare a clear written procedure setting out the requirements to decontaminate any part of the plant that might be de-commissioned.
- The Licensee should restrict local staff inspections of the WWTP to external to the compound only, unless cleared for entry and focus on the monitoring of compound security, alarms, odour emissions and overflows.
- The Licensee should exclude local staff from entering the compound without adequate technical and safety supervision.
- The Licensee should review their Risk Register to incorporate any new issues highlighted by TriStar.

- The Licensee should interrogate the effectiveness of hazard treatments at least annually or when changes to the WWTP environment changes and incorporate in the Risk Register.
- The Licensee should develop special hazard management plans for any high residual risk rated hazards.
- The Licensee should include principal alternative contacts in the Emergency Response Plan.
- The Licensee should continue close monitoring of sludge levels in the system and continue the regular removal of sludge by a suitably licensed waste disposal company.

2.4 Principal Asset Improvements

The following summarise the principal improvements to the asset implemented by the Licensee.

- A second balance tank has been installed to provide increased buffer storage.
- Balance tank - flow control valve installed to throttle down flow;
- Balance tank – Float levels re-set with the aim of increasing pump cycle efficiency.
- Clarifier cleaned out and an additional clarifier added to increase anoxic zone capacity;
- Pressure gauges added upstream and downstream of membrane filtration unit to aid visual monitoring;

2.5 Other Significant Performance Improvements

- A new maintenance contractor has been engaged under strengthened contractual arrangements around operational service performance responsibilities and other KPIs;
- The system is cleaned of sludge build up and removed by certified waste contractor (Western Resources) on a 2 monthly basis as a minimum with an increased frequency if required.
- Currently, daily inspections of the WWTP are conducted by TriStar with completed checklists and reports provided to Moama's site based responsible person after each inspection.
- A revised Risk Register has been developed;
- An Emergency Response Plan has been developed and documented;
- Other improved operational and management documents noted below in Section 2.7.

2.6 External Consultancy Support

During the review period and beyond, Moama have engaged the consulting engineering firm PDC Design Pty Ltd on an ongoing retainer to provide water engineering support and develop strategies to better manage the WWTP.

2.7 Operational Documents Sighted

AMS Emergency Management Plan

TLV WWTP Contacts List

TLV WWTP Asset Register

TLB015-20131204-Operations Service requirements

TLB023-20130529 Incident Report Template

TLV WWTP O&M Manual

TLV WWT Maintenance Log Sheet

TLB026-20090701 WWTP Infrastructure Assets & Valuations

3. Status of Previous Post-Audit Plan

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
Asset Planning	An ongoing maintenance schedule is in place to prevent asset failure, undertaken by the contracted operator however no prioritising of risks have been undertaken to date.	<p><i>1 A risk workshop should be conducted to identify foreseeable asset failure risks, measure likelihood and estimate consequence. The workshop outputs should also risk rate the severity of any identified failure and assign controls to reduce the risk and mitigation measures to manage and minimise any negative outcome should a control be defeated and a failure was to occur.</i></p> <p><i>2 The Licensee should develop a risk register from this workshop so as to prioritise the risk of the identified asset failure possibilities.</i></p>	Emerson Stewart report did not foresee any asset failure risks however NLV will conduct a risk workshop with a risk register that identifies hazard, impacts, controls and mitigation. .	General Manager May 2013	Workshop conducted
Asset Planning	Capital works are completed however no evidence of regular reviews or updates were found. Engineering consultancy,	<i>3 Maintenance plans require updating to include, the post sanitation process following an overflow spill contained within the</i>	Maintenance plans will be updated to include, the post sanitation process following an overflow spill contained within	General Manager	Plans updated

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	undertook an engineering report on the plant in November 2012.	<i>catchment tray below the tanks 4 Emerson Stewart engineering report undertaken in November 2012, maintenance plans require review to manage operation. This should be completed as a matter of priority by the Licensee.</i>	the catchment tray below the tanks. Emerson Stewart engineering report undertaken in November 2012, maintenance plans will be reviewed to manage operation.	March 2013	
Asset Planning (Section 1.9)	Currently the plant has a capacity of 180 homes with 70 connected so far. Once Stage 2 is completed – the plant will be upgraded for an end use of 470 homes. No clear plan was available to ensure a smooth transition for the introduction of the upgrade	<i>5 The Licensee should develop a transition plan for the initiation of the upgrade. Include a forecasted timeframe, triggers and early ordering of critical parts. Elements of this process should be included in a risk assessment workshop and a risk register be developed as an output. Consideration should include plant design, construction, commissioning, operation, maintenance and end of life disposal.</i>	A transition plan for Stage 2 of the WWTP to be developed as a matter of urgency. The plan should provide a timeline for required approvals, ordering of long lead time components, construction and commissioning activities.	General Manager May 2014	Open
Asset Disposal	Disposal alternatives have not been considered.	<i>6 The Licensee should revisit the “Whole of Asset Life” plan and determine strategies for disposal of plant including recycling of assets</i>	Disposal alternatives for redundant/replacement of major elements of the WWTP will be explored and	General Manager June 2013	Disposal options considered

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
		<i>such as plastics, following decontamination of materials, disposal costs of non-recyclable materials.</i>	considered.		
Asset Disposal	As reflected in the cash flow provided as part of application. Ongoing maintenance/preventative maintenance considers replacement times for aspects of the system, replacement of whole asset is considered in 2019, as per Appendix. E of the original ERA application.	<i>7 See Section 1.9 above in Asset Planning.</i>	Include in transition plan for Stage 2 for completeness of whole of life planning	General Manager June 2013	Open
Environmental Analysis	No past evidence except for the commissioning of the engineering report from Emerson Stewart. Some limited evidence of remedial action taken after untreated water discharge to ground.	<i>8 The Licensee should include environmental consideration in the proposed risk workshop recommended earlier in this checklist.</i>	Environmental risks are to be included in the risk register	General Manager May 2013	Included
Environmental Analysis	No formal measurement of contractor performance was identified. No clear written performance	<i>9 The Licensee should develop and implement clear, measurable Key Performance Indicators (KPIs) that are expected from the plant maintenance contractor. Provide</i>	KPIs will be implemented as noted below	General Manager March 2013	Implemented

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	standards were available. New Emergency response plans have recently been implemented.	<p><i>feedback to the contractor in-line with the KPIs.</i></p> <p><i>10 Create clear written performance standards around the following;</i></p> <ul style="list-style-type: none"> • <i>availability of service,</i> • <i>capacity to provide service 24/7,</i> • <i>continuity of service provision and,</i> • <i>emergency response.</i> <p><i>10 b. Adjust the current Emergency Response plan by removing Water Corporation as sewerage emergency contact and replace with correct reference.</i></p>	<p>Create clear written performance standards around;</p> <ul style="list-style-type: none"> • availability of service, • capacity to provide service 24/7, • continuity of service provision and, emergency response. <p>Adjust the current Emergency Response plan by removing Water Corporation as sewerage emergency contact and replace with correct reference.</p>	General Manager Resolved	Implemented
Environmental Analysis	The Licensee has continued to provide uninterrupted service to its clients however. Recent contained overflows at the plant	<i>11 The Licensee should ensure that any contained spills from overflows are pumped back into the system or removed from site by a</i>	Ensure that any contained spills from overflows are pumped back into the system or removed from site by a	General Manager March 2013	Included in operational procedures

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	were the cause of odorous smells and presented a possible serious public health risk to customers.	<i>licenced sanitary waste operator and the plant containment sumps are sanitised to eliminate odours and possible public health risk from an overflow incident.</i>	licenced sanitary waste operator and the plant containment sumps are sanitised to eliminate odours and possible public health risk from an overflow incident (Will be included in written instruction)		
Asset Operations	There is a contract in place for the operations and maintenance of the plant, the contract reflects the service levels required by the approval authorities. Operational procedures are not currently documented by the contracted operator.	<i>12 The Licensee should review the services contract to ensure that it adequately addresses an acceptable service level.</i>	Review the services contract to ensure that it adequately addresses an acceptable service level.	General Manager April 2013	Included in new service contract
Asset Operations	A new risk register was implemented in December 2012. A risk register was not found for the audit reporting period .Incident reports and Monthly reports are provided by the contracted operator along with any non-compliance issues and resolution actions.	<i>13 The Licensee should ensure that the risk register is populated to manage the foreseeable risks of the plant operation.</i>	Ensure that the risk register is populated to manage the foreseeable risks of the plant operation.	General Manager April 2013	Risk Register updated to include foreseeable risks

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
Asset Operations	Asset register and accounting data records are kept for Tuart Lakes Lifestyle Villages. Details of all components are with the contracted operator.	<i>14 The Licensee should ensure that a detailed register of plant and equipment relating to the WWTP is kept on file at the licensee's office</i>	A detailed register of plant and equipment relating to the WWTP will be kept on file at the licensee's office	General Manager Resolved	Detailed register produced
Asset Operations	Tuart Lakes Lifestyle Village staff undertakes a daily visual checklist. Weekly and monthly checks are via the contracted operator.(No consistent document evidence was provided)	<i>15 The Licensee should document a written work instruction for the daily visual inspection to be carried out by the Licensee's staff and maintain a record of their training to perform this duty.</i> <i>16 Copies of completed visual checklist should be kept on site.</i> <i>17 The Licensee should ensure that reports are forthcoming from the maintenance provider and are kept at the Licensee's office.</i>	Document a written work instruction for the daily visual inspection to be carried out by the Licensee's staff and maintain a record of their training to perform this duty. Copies of completed visual checklist will be kept on site. Ensure that reports are forthcoming from the maintenance provider and are kept at the Licensee's office.	General Manager March 2013	Written work instructions and checklists have been developed
Asset Operations	The contracted operator is managed through regular communications and meetings, including the requirement for monthly reporting in line with service level requirements set out during the approvals phase. The contracted operator provides	<i>18 The Licensee should establish clear KPIs (See section 4.2 of this checklist)</i> <i>19 The Licensee should develop stronger controls and more effective contractor management.</i>	Establish clear KPIs Develop stronger controls and more effective contractor management	General Manager March 2013 General Manager	Performance criteria included in new contract

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	incident reporting/sample monitoring. Reports by exception i.e. any rectification works undertaken.	<i>i.e. contractual arrangements re: risk assessment to prioritise higher risks</i>		March 2013	
Asset Operations	The contracted operator Maintenance Contractor places too much reliance on the technical knowledge of one person, this need to be addressed by training more people in Maintenance Contractor to prevent a knowledge gap when key personnel are away.	<i>20 Licensee should ensure that Maintenance Contractor can meet the KPIs as required or alternatively a better resourced provider be engaged that can meet expectations.</i>	<i>Licensee should ensure that Maintenance Contractor can meet the KPI's as required, including an escalation of site inspection frequencies when conditions require or alternatively a better resourced provider be engaged that can meet expectations.</i>	General Manager Resolved	Regular reviews of O&M contractor's performance are to be undertaken
Asset Maintenance	The contracted operator has a Maintenance and Operations Contract which is based on required service levels as stipulated by the approval authorities.	<i>21 In conjunction with the maintenance provider the Licensee should develop a written maintenance policy that reflects service levels required</i>	A written maintenance policy will be developed in conjunction with the maintenance provider that reflects service levels required	General Manager March 2013	Written maintenance policy developed
Asset Maintenance	The Contractor provides monthly water quality reports. Daily, weekly and monthly checks are undertaken but written reports appear to be sporadic. Limited work performed notices	<i>22 The Licensee should ensure that all completed check lists are signed off by local village management and are readily available for inspection.</i> <i>23 The Licensee should devise a</i>	Ensure that all completed check lists are signed off by local village management and are readily available for inspection. Devise a daily inspection	General Manager Resolved	Instruction issued to local management to sign off on completed checklists

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	<p>were available to provide evidence of contractor attendance.</p> <p>Local staff undertakes daily visual checks but these have recently been halted due to OHS concerns around the overflow incidents.</p> <p>The local staffs do not perform checks of a more technical nature as they do not have the appropriate level of training.</p>	<p><i>daily inspection regime for site staff so they are not at health risk.</i></p> <p><i>24 The Licensee should ensure technical plant inspection regime is adequate.</i></p>	<p>regime for site staff so they are not at health risk.</p> <p>Ensure technical plant inspection regime is adequate. monitored during daily checks by TLLV staff.</p>	<p>General Manager</p> <p>Resolved</p>	<p>Local staff have been trained in hazard awareness in and around the WWTP</p>
Asset Maintenance	<p>Planned maintenance is undertaken by the contracted operator. If there is an issue an incidental report is provided, along with details of corrective actions. Time taken to restore the plant to normal compliant operations is documented.</p> <p>This process is more reactive than planned and little evidence of documented maintenance plans was found.</p> <p>Emerson Stewart has undertaken a third party engineering report on</p>	<p><i>25 The Licensee should develop a clear preventative maintenance schedule and keep up to date .Any failure to adhere to the plan should be reported to Licensee's operational manager.</i></p>	<p>Develop a clear preventative maintenance schedule and keep up to date .Any failure to adhere to the plan will be reported to Licensee's operational manager.</p>	<p>General Manager</p> <p>March 2013</p>	<p>Preventative maintenance schedule has been developed</p>

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	the plant. National Lifestyle Villages will implement any recommendations				
Asset Maintenance	No evidence of a risk management approach to prioritise maintenance tasks was found.	<i>26 The Licensee should ensure that higher risk elements of the plant are risk assessed and take high priority in the maintenance schedule.</i>	Higher risk elements of the plant will be risk assessed and take high priority in the maintenance schedule.	General Manager April 2013	A review of the Risk Register has been undertaken and all High residual risk issues have been dealt with.
Asset Maintenance	The contracted operator allocates staff for maintenance and operations. There is a knowledge gap when Maintenance Contractor's key experienced personnel are unavailable, resulting in inconsistent maintenance quality.	<i>27 (See section 5.8 Asset Operations)</i>		General Manager April 2013	Local staff have been trained in hazard awareness in and around the WWTP
Asset Maintenance		<i>27B (AQUASOL report received by the auditor during draft document review and recommendations added). see Appendix1 for full report. The Licensee may wish to consider implementing Aquasol's</i>			

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
		<p><i>recommendations to further improve the WWTP operation.</i></p> <p><i>Aquasol are in the process of obtaining quotes for the addition of a turbidity monitor to be installed in the polishing loop to continuously monitor the discharge from the media filters. This will provide an excellent indicator of media filter performance that can be easily monitored during daily checks by TLLV staff.</i></p> <p><i>Aquasol are also pricing differential pressure monitoring across the ultra-filtration membranes. This will indicate blockages within the membranes and can be utilized to initiate a membrane backwash cycle</i></p> <p><i>An additional 32kL tank has been ordered and will be installed to provide temporary storage of wastewater for routine maintenance or breakdown contingency. The operating level of the polish, collection and irrigation</i></p>	<p>Install the proposed polishing loop and include outputs in daily checks.</p> <p>Install the proposed differential pressure monitoring system across the ultra-filtration membranes.</p> <p>Install the additional 32kL buffer tank</p>	<p>General Manager April 2013</p> <p>General Manager May 2013</p> <p>General Manager March 2013</p>	<p>Polishing loop installed and output measurements to be captured in daily checks</p> <p>Differential pressure monitoring system installed</p> <p>Tank installed</p>

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
		<i>tanks has also been lowered to provide greater capacity in times of breakdowns or maintenance.</i>			
Asset Management Information System	The asset is fenced and the gate is locked at all times, unless personnel are on site	<i>28 The Licensee may wish to consider the key lock be replaced by a key pad to provide a more suitable security control as a padlock key can lead to uncontrolled access.</i>	Consider the replacement of the key lock	General Manager Resolved	Extra key kept at local manager office
Risk Management	The Licensee states that risk management is part of all projects and is reported on. The asset management plan contains the risk assessment from the contracted operator, Appendix N page 14 of the original approval. No recent updates were found	<i>29 The Licensee should review the asset management plan and associated risk register at least annually or as changes occur.</i>	Review the asset management plan and associated risk register at least annually or as changes occur.	General Manager	Open
Risk Management	A risk register has been recently initiated, and is not complete.	<i>30 The Licensee should develop the risk register to show how treatment plans are actioned and monitored.</i>	Develop the risk register to show how treatment plans are actioned and monitored.	General Manager April 2013	Risk register reviewed and updated
Risk Management	Asset failure can have catastrophic consequences to the operations of Tuart Lakes Lifestyle Village. There is no	<i>31 The Licensee should explore all foreseeable issues, and develop a risk based approach to managing</i>	Explore all foreseeable issues, and develop a risk based approach to managing those	General Manager April 2013	Included in Risk Register

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
	formally documented and completed register/plan and the site relies on the capability of the contracted operator.	<i>those risks.</i>	risks.		
Contingency Planning	<p>Contingencies are part of the design of the plant, such as the inclusion of a sump to capture overflow and prevent unwanted discharge to ground, addition of in line filters upstream of the plant, etc.</p> <p>No documented contingency plans were found.</p>	<p><i>32 The Licensee should implement and test the recommendations from the recent Emerson Stewart report.</i></p> <p><i>33 The Licensee should develop documented contingency plans and ensure that site and other operational personnel are fully educated in what must be done in the event of a plant failure or incident. Any system devised should be tested for adequacy and effectiveness by drills and mock incidents.</i></p> <p><i>34 The licensee should source a sanitary waste contractor as standby to address emergency sewerage and waste removal</i></p>	<p>Implement and test the recommendations from the recent Emerson Stewart report.</p> <p>Develop documented contingency plans and ensure that site and other operational personnel are fully educated in what must be done in the event of a plant failure or incident.</p> <p>Test any system devised for adequacy and effectiveness by drills and mock incidents.</p> <p>Set up and emergency response agreement with Western Resource recovery</p>	<p>General Manager May 2013</p> <p>General Manager April 2013</p> <p>General Manager April 2013</p>	<p>All installed except some telemetry that was considered to be of low priority</p> <p>Documented plans established</p> <p>Plan and agreement established</p>

Key Processes	Issue	Recommendation	Post-Audit Action Plan	Person Responsible/ Date of Implementation	STATUS at 30/09/2013
Contingency Planning	Senior operational NLV staff are backed up by the contracted operator Alternative operators have been considered should the contracted operator be unavailable.	<i>35 The Licensee should identify alternative competent contractor as a back-up.</i>	Work in process to identify an alternative maintenance provider	General Manager April 2013	Alternative provided engaged 30/09/2013
Review of AMS	No asset management reviews have been previously undertaken. No documented process for the review was found.	<i>36 The Licensee should ensure that an internal review/audit is conducted of the Asset Management System prior to the external review. This should be a documented procedure.</i>	an internal review/audit is completed annually for the DoH	General Manager Resolved	Closed

4. Post Review Action Plan

Key Process	Issue	Recommendations	Post Review Action Plan	Person Responsible/ Intended Date of implementation
Asset Planning Section 1.2	Service levels were not well defined in Aquasol's contract	<i>1. The Licensee should ensure that clear and well defined service levels are set out in any future operation and maintenance contracts.</i>	Clear and well defined service levels are to be set out in TriStar's contract	General Manager Included in TriStar contact implemented at 1/10/2013
Asset Planning Section 1.9	Currently the WWTP has 120 connections and a maximum capacity of 180. The reviewer was advised the current projected new connection rate is approximately 50/60 per year. The WWTP could reach capacity within 12 months and given the issues of the year past the WWTP may not be effective at its rated capacity.	<i>2 A written plan should be developed to incorporate early planning and approvals applications for the WWTP expansion should the ability to connect to Water Corporation's sewer not be available when current capacity is met.</i>	Develop a written plan to incorporate early planning and approvals applications for the WWTP Stage 2 expansion. This transition plan for Stage 2 of the WWTP to be developed as a matter of urgency. The plan should provide a timeline for required approvals, ordering of long lead time components, construction and commissioning activities. This will provide a contingency plan should	General Manager 30/03/2014

			Water Corp's sewer network not be available when current capacity is met.	
Asset Creation Section 2.1	It should be noted that the facility is expected to reach full capacity in 12 to 18 months. A transition plan was not provided	<i>3 As a matter of urgency the Licensee should, develop a solid transition plan for Stage two development of WWTP incorporating approvals, long lead component ordering, construction and commissioning activities</i>	<i>A solid transition plan for Stage two development of WWTP incorporating approvals, long lead component ordering, construction and commissioning activities will be established</i>	General Manager 30/06/2014
Asset Disposal Section 3.3	Documentary evidence of review was not sighted however the interviewee indicated that this would be considered as the plant aged and upgrades were needed	<i>4. The Licensee should prepare a written procedure setting out the requirements to decontaminate any part of the plant that might be de-commissioned.</i>	Prepare a written decontamination procedure for redundant WWTP components	General Manager 30/06/2014
Environmental Analysis Section 4.3	The Licensee is required to submit monthly clean water analysis reports to DOH. Only 8 were provided to DoH	<i>5 The Licensee must insist and monitor that appropriate clean water testing is undertaken and that the 12 subsequent reports are submitted to DoH</i>	The Licensee will insist and monitor that appropriate clean water testing is undertaken and that the 12 subsequent reports are submitted to DoH	General Manager Ongoing monthly
Asset Operations Section 5.5	The reviewer was informed that a local staff member conducts a daily visual inspection of the WWTP. No documented evidence of these inspections was sighted	<i>6 The new O&M contractor provides regular inspection of the WWTP. However it is recommended that local Tuart Lakes (Moama) staff could perform daily</i>	Local Tuart Lakes (Moama) staff inspections of WWTP to be undertaken daily in addition to O&M contractor inspections and will be focussed on compound	General Manager 01/02/2014

	and when interviewed the staff member indicated that no formal training was provided.	<i>inspections such as the monitoring of compound security, alarms, odour emissions and overflows. This procedure should be included in the operational procedures of both the WWTP and the site general responsibilities. Staff training should be provided and documented.</i>	security, alarms, odour emissions and overflows.	
Asset Operations Section 5.5	The reviewer was informed that a local staff member conducts a daily visual inspection of the WWTP. No documented evidence of these inspections was sighted and when interviewed the staff member indicated that no formal training was provided.	<i>7. It is further recommended that selected Tuart Lakes (Moama) site staff should be appropriately trained, including health and safety aspects, to enter the compound to provide a more detailed daily plant inspection and frontline operation monitoring activities.</i>	Selected Tuart Lakes (Moama) site staff will be appropriately trained, including health and safety aspects, to enter the compound to provide a more detailed daily plant inspection and frontline operation monitoring activities.	General Manager 01/02/2014
Asset Operations Section 5.6	Significant facility operational issues have been identified by TriStar Water Solutions	<i>8 Prioritise the recommendations set out in the TriStar Report M2051-IR-001 (dated 13th Nov 2013) Determine a plan for their implementation commensurate with urgency, risk and practicability</i>	Moama will prioritise the recommendations from the TriStar report and implement them in order of urgency, risk and practicability	General Manager 30/06/2014

<p>Asset Operations Section 5.8</p>	<p>In the opinion of the reviewer it is apparent that Aquasol's staffing arrangements and responsibilities were not adequate for effective asset operations</p>	<p><i>9 It is recommended that the Licensee closely monitor the new contractor's performance and provide corrective direction when required.</i></p>	<p><i>The Licensee will closely monitor the newly contracted operator Maintenance Contractor TriStar's ability to provide technicians with adequate operational knowledge of the WWTP and to measure their performance in general..</i></p>	<p>General Manager On going</p>
<p>Asset Maintenance Section 6.2</p>	<p>There is some doubt whether the previous contracted operator maintained regular inspections however the new contractor, operating under the document Operational Service Requirements (TLB015-20131204-WWTP) sets out the inspection requirements to be performed by the contractor. It refers directly to the following actionable compliance requirements;</p> <ul style="list-style-type: none"> • Emergency Notification • Normal Operations Compliance • Treated Water Quality <p>Reporting</p>	<p><i>10 The Licensee should monitor the regularity of TriStar's performance in providing daily inspections. Once asset control is demonstrated this frequency could be reduced, however Moama should ensure daily monitoring of the WWTP by its own staff to offset the daily inspection regime by TriStar. Site personnel must be trained to observe alarms and act as required.</i></p>	<p><i>Moama will monitor the regularity of TriStar's performance in providing daily inspections. Once asset control is demonstrated this frequency will be reduced, however Moama will ensure daily monitoring of the WWTP by its own staff to offset the reduced daily inspection regime by TriStar. Site personnel will be trained to observe alarms and act as required.</i></p> <p><i>A dedicated responsible person is to be appointed to perform these monitoring duties in association with Tristar</i></p>	<p>General Manager 01/02/2014</p>
<p>Asset Maintenance</p>	<p><i>The system is subject to sludge build up and high</i></p>	<p><i>11 The licensee is to monitor sludge levels and ensure the</i></p>	<p><i>Moama will take particular attention to the TriSatar's</i></p>	<p>General Manager</p>

<p>Section 6.2</p>	<p><i>levels of suspended solids which is leading to blockages causing backup of flow and subsequent overflows.</i></p>	<p><i>periodic removal and appropriate disposal is managing sludge at levels that do not impede flow through the system</i></p>	<p><i>monitoring of sludge build up within the system and will ensure that appropriate action is taken to keep high levels of suspended solids and sludge are removed from the system.</i></p>	<p>On going</p>
<p>Asset Maintenance Section 6.3</p>	<p>Aquasol managed and undertook the planned maintenance. If there was an issue an incident report should have been raised and provided to the Licensee, along with details of corrective actions. Time taken to restore the plant to normal compliant operations was to be documented as well. The Licensee has stated that in some cases an incident had occurred and the contractor had failed to notify them.</p> <p>The required schedule is set down in the Operational Service requirements document.</p>	<p><i>12 The Licensee is to develop stronger policing of site incidents to ensure notification is provided immediately to site management who in turn will follow internal procedures to notify the operations manager.</i></p>	<p><i>Stronger policing of site incidents will be undertaken by Tuart Lakes site staff to ensure notification is provided immediately to site management who in turn will follow internal procedures to notify the operations manager.</i></p>	<p>General Manager 01/02/2014</p>
<p>Asset Maintenance Section 6.7</p>	<p>The contractor for the review period, Aquasol, did not appear to be adequately staffed and was not controlling the asset's effective operation</p>	<p><i>13 It is recommended that the Licensee closely monitor the new contractor's performance and provide corrective direction when required.</i></p>	<p><i>Moama will closely monitor the new contractor's performance and provide corrective direction when required.</i></p>	<p>General Manager On going</p>

Asset Management Information Systems Section 7.1	System documentation for users and IT operators is not adequate	14 It is recommended that hard copy files of principal operating documents such as inspection reports completed maintenance reports, water quality test reports be scanned and stored electronically for backup.	Moama's hard copy files of principal operating documents such as inspection reports completed maintenance reports, water quality test reports will be scanned and stored electronically for backup.	General Manager On going
Asset Management Information Systems Section 7.7	Monthly reports are planned to be provided against statutory requirements in relation to service levels but not all deadlines were met.	15 The Licensee should ensure that reviews of monthly reports are undertaken by due date	Moama will ensure that reviews of monthly reports are undertaken by due date. A procedure will be developed to identify critical reports deadlines	General Manager On going
Risk Management Section 8.1	Risk management policies and procedures are not regularly reviewed	16. The Licensee should review the AMP and Risk Register at least annually or as changes occur.	Moama will establish a review plan for the AMP and Risk Register	General Manager 01/06/2014
Risk Management Section 8.2	Contingency plans are not tested except during emergencies	17. The Licensee should test the adequacy of contingency plans on a regular basis to ensure they are indeed meeting expectations.	Moama will test contingency plans effectiveness to ensure they will meet expectations	General Manager 01/05/2014
Risk Management Section 8.3	A risk based approach to the operation of the WWTP is reflected in the risk register but the register is not revisited on a regular basis	18 The Licensee should review the risk register and interrogate the effectiveness treatment of each hazard to ensure the hazard is	Review risk register and interrogate treatments for adequacy Develop management control	General Manager 01/03/2014 General Manager

		<i>controlled to ALARP (as low as reasonably practicable). A high residual risk should not be tolerated without explicit written and supervised processes. Once any high residual risks are managed to ALARP it is recommended that medium residual risks are further interrogated.</i>	plan for High residual risk hazards	01/03/2014
Risk Management Section 8.3	The reviewer noted that several new hazards have been identified by the new maintenance contractor which are not included in the site's risk register	<i>19 The Licensee should conduct a workshop to update the facility risk register to incorporate the newly identified hazards</i>	<i>Moama will conduct a workshop to update the facility risk register to incorporate the newly identified hazards from the Tristar Report. An appropriate representative from TriStar should be in attendance</i>	General Manager 01/03/2014
Contingency Planning Section 9.2	The Emergency Response Plan sets out clear lines of authority and responsibility for both the Licensee and the maintenance contractor. Backup to cover for during an emergency was not clearly stated although a priority the escalating mobile phone notification system	<i>20. The Licensee should update the Emergency Response Plan to identify alternative contacts in the case of an emergency should the person of primary responsibility not be contactable.</i>	Moama will include backup personnel list in order of responsibility in ERP	General Manager 01/02/2014

<p>Capital Expenditure Planning Section 11.1</p>	<p>A transition plan has not been developed beyond that an upgrade of asset will be required when the trigger point of an expansion is reach. A part of operational budget for Tuart Lakes Lifestyle Village has been ear marked for the expansion. No particular date is recorded for the expansion</p>	<p><i>21 As the facility's capacity is approaching maximum it is recommended that the expansion plan is revisited and developed in detail including timing, permits, design, budget allocations, etc.</i></p>	<p>CAPEX planning will be included in the transition planning for Stage 2.</p>	<p>General Manager 30/03/2014</p>
<p>AMS Review Section 12.1</p>	<p>Minimal internal AMS reviews are undertaken.</p> <p>The reviewer has noted that some difficulty occurred in obtaining the full picture of the operation for the review period</p>	<p><i>22 The Licensee should implement an annual regime of an independent review of their entire AMS both in preparation for the ERA AMS review and to provide feedback internally should the ERA AMS review period is extended beyond 12 months.</i></p> <p><i>(It would be helpful that the Licensee should provide sample relevant documents so it can be either accepted or discarded by the reviewer)</i></p>	<p>Moama will implement an increased frequency of AMS internal reviews</p> <p>(Files containing all relevant official correspondence be kept for the review period and presented at the review.)</p> <p>(A register is to be kept referencing all relevant occurrences to provide a clear chronological record to aid the reviewer to reduce the likelihood of omissions which cause further follow up in report completing).</p>	<p>General Manager 30/06/2014</p> <p>General Manager on going</p> <p>General Manager on going</p>

5. Asset Management Review

Table 1 Asset Management Process and Policy Definition Adequacy Ratings

Rating	Description	Criteria
A	Adequately defined	<ul style="list-style-type: none"> Processes and policies are documented. Processes and policies adequately document the required performance of the assets. Processes and policies are subject to regular reviews, and updated where necessary. The asset management information system(s) are adequate in relation to the assets that are being managed.
B	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	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	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).

Table 2 Asset Management Performance Ratings

Rating	Description	Criteria
1	Performing effectively	<ul style="list-style-type: none"> The performance of the process meets or exceeds the required levels of performance. Process effectiveness is regularly assessed and corrective action taken where necessary.
2	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	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	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.

Table 3 Asset Management Effectiveness Summary

ASSET MANAGEMENT SYSTEM	Asset Management process and policy definition adequacy rating	Asset Management performance rating
Asset planning	B	2
Asset creation/ acquisition	A	1
Asset disposal	B	2
Environmental analysis	C	3
Asset operations	C	3
Asset maintenance	B	3
Asset Management Information System	A	1
Risk Management	B	2
Contingency planning	B	2
Financial planning	A	1
Capital expenditure planning	A	1
Review of AMS	B	1

5.1 Observations and Recommendations – Field Notes

These field notes were compiled by Les Wilson (AMS Reviewer).

Table 4 Asset Planning

1. Asset Planning			
<p>Key process: Asset planning strategies are focussed on meeting customer needs in the most effective and efficient manner (delivering the right service at the right price).</p> <p>Outcome: Integration of asset strategies into operational or business plans will establish a framework for existing and new assets to be effectively utilised and their service potential optimised</p>			
<p>Review approach</p> <ul style="list-style-type: none"> Assess the adequacy of the asset planning process. Assess the adequacy of the asset management plan. Assess whether the asset management plan is up to date and implemented in practice. <p>Assess whether the plan clearly assigns responsibilities and whether these have been applied in practice.</p>			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
1.1 Does the planning process and objectives reflect the need of all stakeholders and is it integrated with business planning?	Yes	<p>It is the view of the reviewer that Moama has one client in Tuart Lakes Lifestyle Village Pty Ltd but in effect should be seen as having 126 clients (all of Tuart Lakes Lifestyle Village resident connections) as it accepts revenue on behalf of Moama for service provision to those residents.</p> <p>Planning is around approval requirements and reporting needs to the Statutory Authorities, allowed for as part of TLLV yearly plan. The compliant operational plant meets the needs of</p>	

		Tuart Lakes Lifestyle Village and its residents, including future growth.	
1.2 Have service levels been defined?	No	Service levels to customers are well defined in company agreements and literature. Service levels were not well defined in Aquasol's contract	1. The Licensee should ensure that clear and well defined service levels are set out in any future operation and maintenance contracts.
1.3 Have non-asset options (e.g. demand management) been considered.	Yes	Demand is linked solely to the occupancy level of the village which is capped at a maximum of 470 homes when the village is complete. Current WWTP has a capacity to serve 180 homes under phase 1 and will be extended / upgraded as the village occupancy grows under phase 2 At the time of the review approximately 70 homes were connected.	
1.4 Have the lifecycle costs of owning and operating assets been assessed?	Yes	Lifecycle costs were included as part of the original ERA Approval	
1.5 Have funding options been evaluated?	Yes	Funded by parent company National Lifestyle Villages who own Tuart Lakes Lifestyle Village and Moama Lifestyle Village.	
1.6 Are the costings justified and have the cost drivers been identified?	Yes	Capital cost – applied during the project phase of Tuart Lakes Lifestyle Village and funded by National Lifestyle Villages. Maintenance is operated through Tuart Lakes Lifestyle Village.	
1.7 Have the likelihood and consequences of asset failure been predicted?	Yes	A risk workshop was held on the 24/6/2013 which was facilitated by an independent 3 rd party. Risk scenarios were identified, treatments indicated and residual risk ratings applied. A risk register was developed from the assessment minutes. An ongoing maintenance	

		schedule is in place to reduce the likelihood of asset failure, undertaken by a new contracted operator who has implemented several new control measures.	
1.8 Are the plans being regularly reviewed and updated?	Yes	Regular monitoring of the number of connections of new homes is undertaken in business planning meetings. Once timeline predictions near the current maximum connections "Phase 2" will be triggered to upgrade the WWTP capacity to meet the growing need.	
1.9 Is the capability of the plant adequate to meet future demand?	No	<p>Currently the plant has a capacity of 180 homes with 120 connected so far. Once Stage 2 is completed – the plant will be upgraded for an end use of 470 homes.</p> <p>Currently the WWTP has 120 connections and a maximum capacity of 180. The reviewer was advised the current projected new connection rate is approximately 50/60 per year. The WWTP could reach capacity within 12 months and given the issues of the year past the WWTP may not be effective at its rated capacity.</p>	2 A written plan should be developed to incorporate early planning and approvals applications for the WWTP expansion should the ability to connect to Water Corporation's sewer network are unavailable when current capacity is met.

Table 5 - Asset Creation and Acquisition

<h2>2. Asset Creation and Acquisition</h2> <p>Key process: Asset creation/acquisition means the provision or improvement of an asset where the outlay can be expected to provide benefits beyond the year of outlay.</p> <p>Outcome: A more economic, efficient and cost effective asset acquisition framework which will reduce demand for new assets, lower service costs and improve service delivery.</p>

Review approach			
<ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering the creation and acquisition of assets. Select a sample of creations/acquisitions over the review period and confirm that adequate procedures have been followed and actual costs are as predicted. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
2.1 Are full project evaluations being undertaken for new assets, including comparative assessment of non-asset solutions?	No	It should be noted that the facility is expected to reach full capacity in 12 to 18 months. A transition plan was not provided	3 As a matter of urgency the Licensee should, develop a solid transition plan for Stage 2 development incorporating approvals, long lead component ordering, construction and commissioning activities.
2.2 Do evaluations include all life-cycle costs?	Yes	They do for asset replacement: the original plans did consider whole of life costs.	
2.3 Do projects reflect sound engineering and business decisions?	Yes	Ultimate design and operational efficacy is achieved with the assistance of consulting engineers and the contracted operator.	
2.4 Are the commissioning tests documented and completed?	Yes	As part of the application and approvals process: DEC, DOH & ERA validation was a priority.	
2.5 Have the ongoing legal/environmental/safety obligations of the asset owner been assigned and understood?	Yes	Moama Lifestyle Villages Pty Ltd holds the license. The operations and maintenance are contracted out and consultants assist in ensuring conditions are met. The reviewer is of the opinion that Moama understands its environmental, legal and safety obligations based on environmental,	

		legal and safety statements that have been released by Moama	
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Table 6 - Asset Disposal

3. Asset Disposal			
<p>Key process: Effective asset disposal frameworks incorporate consideration of alternatives for the disposal of surplus, obsolete, underperforming or unserviceable assets. Alternatives are evaluated in cost benefit terms.</p> <p>Outcome: Effective management of the disposal process will minimise holdings of surplus and underperforming assets and will lower service costs.</p>			
<p>Review approach</p> <ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering the identification of underperforming assets, disposal of assets and replacement strategy. Determine whether a regular review of the usefulness of assets is performed. Select a sample of disposals over the review period and confirm that adequate procedures have been followed. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
3.1 Are under-utilised and under-performing assets identified as part of a regular systematic review process?	No	<p>Poor performance.</p> <p>This asset has had a string of failures resulting in overflows</p> <p><i>According to the independent engineers previous failures caused by laterals failures has been addressed and improved equipment should prevent further failures of this component.</i></p> <p><i>The latest failures were due to sludge build-up this is now monitored and provision has been made to remove sludge and suspended solids as required.</i></p>	
3.2 Are the reasons for under-utilisation or poor performance	No	The licensee has relied upon its O&M contractor to operate the plant and an independent 3 rd party to provide	

<i>critically examined and corrective action or disposal undertaken?</i>		engineering support however despite several efforts to rectify a problem another has developed and caused a failure <i>Failures caused by poor O & M performance should be overcome as the new contractor experience and better staffing levels should provide appropriate asset O & M.</i>	
3.3 Are disposal alternatives evaluated?	No	Documentary evidence of review was not sighted however the interviewee indicated that this would be considered as the plant aged and upgrades were needed.	4 The Licensee should prepare a written procedure setting out the requirements to decontaminate any part of the plant that might be de-commissioned.
3.4 Is there a replacement strategy for assets	Yes	As reflected in the cash flow predictions provided as part of the original application. Ongoing maintenance and preventative maintenance schedule considers replacement times for aspects of the system, (such as filters etc). Replacement of the whole asset is considered in 2019 as per Appendix E of the original ERA application.	

Table 7 - Environmental Analysis

4. Environmental Analysis
Key process: Environmental analysis examines the asset system environment and assesses all external factors affecting the asset system.
Outcome: The asset management system regularly assesses external opportunities and threats and takes corrective action to maintain performance requirements.
Review approach

- Review achievement of performance and service standards over the audit period.
- Investigate any breaches and assess corrective action taken.
- Review the adequacy of reporting and monitoring tools.

Effectiveness Criteria	Effectiveness	Comments	Recommendations
4.1 Are opportunities and threats in the system environment assessed?	Yes	A risk workshop was held on the 24/6/2013 which was facilitated by an independent 3 rd party. Environmental risk scenarios were identified, treatments indicated and residual risk ratings applied. A risk register was developed from the assessment minutes. An ongoing maintenance schedule is in place to reduce the likelihood of asset failure, undertaken by a new contracted operator who has implemented several new control measures.	
4.2 Are Performance Standards (availability of service, capacity, continuity, emergency response etc.) measured and achieved?	No	<p>It appears that no formal plan or procedure was in place for the review period to monitor the contractor's performance.(Aquasol terminated their O & M agreement on the 30th September 2013)</p> <p><i>The new contractor (TriStar) engaged on the 1st October 2013, has a service performance agreement and KPIs included in their contract which is planned to be monitored by the Licensee.</i></p> <p>A written Emergency Response Plan is established and is included in an internal documents register.</p>	
4.3 Is there compliance with statutory and	No	Moama has not met all mandatory reporting requirements eg late reporting of Schedule A Compliance Reports, in some	5 The Licensee must insist and monitor that appropriate clean water testing is undertaken and that the 12 subsequent reports are submitted to DoH in a timely manner.

<p><i>regulatory requirements?</i></p>		<p>cases they were not made aware by their O&M contractor that overflows has occurred and hence did not meet reporting requirements.</p> <p>Moama has failed to meet reporting requirements for the Dept of Health for the audit period. (8 of 12 monthly water quality analysis reports were forwarded to DoH)</p> <p><i>The Licensee has identified reporting obligations to the new contractor and has included them in their performance criteria of the contractor.</i></p>	
<p>4.4 Have customer service levels been achieved?</p>	<p>Yes</p>	<p>The Licensee has continued to provide uninterrupted service to its clients although complaints for the period were noted and several asset failures occurred. <i>It should be noted that whilst asset failures occurred provision of customer service was not interrupted due to actions taken after the asset failure. This included illegal discharge, successful secondary containment and asset upgrades to enhance buffer storage.</i></p> <p><i>An emergency contingency plan was available and the waste could be removed from site by a licensed contractor and untreated sewage disposed of appropriately</i></p> <p><i>The capacity of the clarifier has been increased along with the resetting of pump float levels in the balance tank has reduced odour emissions and lessened the risk of overflows.</i></p>	

Table 8 - Asset Operations

5. Asset Operations			
<p>Key process: Operations functions relate to the day-to-day running of assets and directly affect service levels and costs.</p> <p>Outcome: Operations plans adequately document the processes and knowledge of staff in the operation of assets so that service levels can be consistently achieved.</p>			
<p>Review approach</p> <ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering operations functions Assess the adequacy of staff resourcing and training Confirm the policies and procedures have been followed during the review period by testing of asset register, observation of operational procedures, analysis of costs, etc. Assess the significance of exceptions identified and whether adequate corrective action has been taken. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
5.1 Are the operational policies and procedures documented and do the link to the required service levels?	Yes	<p>There is a contract in place for the operations and maintenance of the plant, the contract reflects the service levels required by the approval authorities. Operational procedures are documented by the contracted operator.</p> <p><i>The following documents are included on the NLV document register:</i></p> <ul style="list-style-type: none"> <i>TLV WWTP Contacts List</i> <i>TLV WWTP Asset Register</i> <i>Operations Service requirements</i> <i>Incident Report Template</i> <i>TLV WWTP O&M Manual</i> 	

		<ul style="list-style-type: none"> • TLV WWTP Maintenance Log Sheet • AMS Emergency Response Plan 	
5.2 Is risk management applied to prioritise operations tasks?	Yes	A new risk register was implemented in June 2013. Tasks are prioritised by the contractor and reflect higher risk areas. Incident reports and Monthly reports are provided by the contracted operator <i>along with</i> any non-compliance issues and resolution actions.	
5.3 Are assets documented in an Asset Register including asset type, location, material, plans of components, an assessment assets' physical/structural condition and accounting data?	Yes	Asset register (indicating asset component value) and accounting data records are kept for Tuart Lakes Lifestyle Villages. Details of all components are maintained by the Licensee with a components list provided to the contracted operator.	
5.4 Are operational costs measured and monitored?	Yes	Maintenance and operational costs are run through Tuart Lakes Lifestyle Village — Capital spend is through the parent National Lifestyle Villages, with the asset then being recorded against the Tuart Lakes Lifestyle Village entity.	
5.5 Are staff receiving training commensurate with their responsibilities?	No – Local Staff Yes – Contracting Staff	The reviewer was informed that a local staff member conducts a daily visual inspection of the WWTP. No documented evidence of these inspections was sighted and when interviewed the staff member indicated that	6. Since the new contractor provides regular daily inspection of the WWTP it is recommended that local staff inspections are restricted to external to the WWTP compound and the monitoring of compound security, alarms, odour emissions and overflows. This procedure should be included in the

		<p>no formal training was provided.</p> <p>Weekly and monthly checks are via the contracted operator. The reviewer is aware that the contractor's staff did not regularly provide completed checklists to the Licensee nor was any evidence sighted to confirm that checks were indeed done. No evidence of appropriate training of Aquasol technicians was sighted.</p>	<p>operational procedures of both the WWTP and the site general responsibilities. Staff training should be provided and documented.</p> <p>7. It is further recommended that local staff should be excluded from entering the compound without adequate technical and safety supervision which would lessen their exposure to hazards that might exist within the compound.</p>
<p>5.6 Are the WWTP operations able to provide a reliable service to customers?</p>	<p>No</p>	<p>The asset did not provide continuously reliable service during the review period but each failure was addressed in some form to maintain service to customers.</p> <p>A number of overflows have occurred during the review period that is regarded as asset failures and cannot be dismissed and as such the asset operation cannot be regarded as reliable.</p>	<p>8 Review, prioritise or reject and implement the balance of the recommendations set out in the TriStar Report M2051-IR-001 (dated 13th Nov 2013)</p>
<p>5.7 Where the Licensee contracts a third party to manage the WWTP assets, does the Licensee effectively monitor the performance of the third party?</p>	<p>No</p>	<p>The contracted operator is managed through regular communications and meetings, including the requirement for monthly reporting in line with service level requirements set out during the approvals phase. The contracted operator provides incident reporting/sample monitoring. Reports by exception i.e. any rectification works undertaken. Given the noted asset failures, lack of notification from the contractor, lack of completed maintenance checklists and water quality reporting failures in the opinion of the reviewer, the Licensee did not effectively manage their O & M contractor</p> <p><i>It should be noted that several incidents</i></p>	

		<p>were not reported immediately by the maintenance contractor. This lack of following procedures has led, in part, to the appointment of a new maintenance contractor.</p> <p>The Licensee has engaged a new O & M Contractor and has included measurable performance KPIs.</p> <p>The Licensee has taken to overview operating protocols and reviewing contractor performance.</p>	
<p>5.8 Is the current staffing arrangements and responsibilities adequate for effective asset operations?</p>	<p>No</p>	<p>In the opinion of the reviewer it is apparent that Aquasol's staffing arrangements and responsibilities were not adequate for effective asset operations</p> <p>The newly contracted operator Maintenance Contractor has demonstrated the ability to provide technicians with adequate operational knowledge of the WWTP. The operational efficiency of the WWTP has increased due to engineering improvements, suggested and installed by the contractor.</p> <p>At the time of the review please note that only 3 months have expired since the appointment of the new contractor and a longer time period should be expended before reliable performance can be determined.</p>	<p>9 It is recommended that the Licensee closely monitor the new contractor's performance and provide corrective direction when required.</p>

Table 9 - Asset Maintenance

6. Asset Maintenance			
Key process: Maintenance functions relate to the upkeep of assets and directly affect service levels and costs.			
Outcome: Maintenance plans cover the scheduling and resourcing of the maintenance tasks so that work can be done on time and on cost.			
Review approach			
<ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering maintenance functions Confirm the policies and procedures have been followed during the review period by testing of maintenance schedules, analyses of cost etc. Assess the significance of exceptions identified and whether adequate corrective action has been taken. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
6.1 <i>Have the maintenance policies and procedures been documented and linked to service levels required.</i>	Yes	Both the previous and the current contracted operator has a Maintenance and Operations Contract which is based on required service levels as stipulated by the approval authorities.	
6.2 <i>Are regular inspections undertaken of asset performance and condition?</i>	No	<p><i>There is some doubt whether the previous contracted operator maintained regular inspections however the new contractor, operating under the document Operational Service Requirements (TLB015-20131204-WWTP) sets out the inspection requirements to be performed by the contractor. It refers directly to the following actionable compliance requirements;</i></p> <ul style="list-style-type: none"> <i>Emergency Notification</i> <i>Normal Operations</i> 	<p>10 The Licensee should monitor the regularity of TriStar’s performance in providing daily inspections. Once asset control is demonstrated this frequency could be reduced, however Moama should ensure daily monitoring of the WWTP by its own staff to offset the reduced daily inspection regime by TriStar. Site personnel must be trained to observe alarms and act as required.</p> <p>11 The licensee is to monitor sludge levels and ensure the periodic removal and appropriate disposal is managing sludge at levels that do not impede flow through the system</p>

		<p><i>Compliance</i></p> <ul style="list-style-type: none"> • <i>Treated Water Quality</i> • <i>Reporting</i> <p><i>The system is subject to sludge build up and high levels of suspended solids which is leading to blockages causing backup of flow and subsequent overflows.</i></p>	
<p>6.3 Have the maintenance plans (emergency, corrective and preventative) been documented and completed on schedule.</p>	<p>No</p>	<p>Aquasol managed and undertook the planned maintenance. If there was an issue an incident report should have been raised and provided to the Licensee, along with details of corrective actions. Time taken to restore the plant to normal compliant operations was to be documented as well. The Licensee has stated that in some cases an incident had occurred and the contractor had failed to notify them.</p> <p>The required schedule is set down in the Operational Service requirements document.</p>	<p>12 The Licensee is to develop stronger policing of site incidents to ensure notification is provided immediately to site management who in turn will follow internal procedures to notify the operations manager.</p>
<p>6.4 Are the failures analysed and operational/maintenance plans adjusted where necessary?</p>	<p>Yes</p>	<p>Failures are investigated and corrective action is taken, with assistance from consultants as required.</p>	
<p>6.5 Has risk management been applied to prioritise maintenance tasks?</p>	<p>Yes</p>	<p>A risk management approach to prioritise maintenance tasks is evidenced in the risk register and the new contractor has daily checklists which address higher risk issues.</p>	

6.6 Are the maintenance costs measured and monitored?	Yes	Yes the capital spend on the plant is recorded against National lifestyle Villages, with ongoing operational cost recorded against Tuart Lakes Lifestyle Villages.	
6.7 Is the current staffing arrangements and responsibilities adequate for effective asset maintenance?	No	<p>The contractor for the review period, Aquasol, did not appear to be adequately staffed and was not controlling the asset's effective operation.</p> <p>A new contractor, Tristar, has been appointed and they have demonstrated a commensurate knowledge in on-site waste water treatment.</p>	<p>13 It is recommended that the Licensee closely monitor the new contractor's performance and provide corrective direction when required.</p>

Table 10 - Asset Management Information Systems

<h2>7. Asset Management Information System</h2>			
<p>Key process: An asset management information system is a combination of processes, data and software that support the asset management functions.</p>			
<p>Outcome: The asset management information system provides authorised, complete and accurate information for the day to date running of the asset management system. The focus of the review is the accuracy of performance information used by the licensee to monitor and report on service standards.</p>			
<p>Review approach</p> <ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering the general control and security of the computer systems used to provide management information on service standards/licence obligations. Confirm that management reports on service standards/licence obligations are being reviewed and significant exceptions to service standards are promptly up and action. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations

<p>7.1 Is there adequate system documentation for users and IT operators?</p>	<p>No</p>	<p>The Programmable Logic Control (PLC) system of the plant is managed by the contracted operator, which will alert staff of any issues with an SMS. Operators' manuals are available.</p> <p>It is noted that Aquasol reported to the ERA on the 22/1/2013 that the SMS alert system was not reliable. Subsequent testing demonstrated that the system worked adequately.</p> <p>The Licensee does not maintain an IT based AMS. There is an internal file containing license information and management processes including hardcopies of inspection reports, maintenance schedule/reports asset register, water quality test results, etc.</p> <p>Various operational procedural documents were document controlled and maintained on file.</p> <p>It was noted that during the review period much of the operational documentation was left to the O&M Contractor and copies of inspection reports etc were not regularly forwarded to the Licensee. This poor practice has been addressed and the new O&M Contractor, TriStar has developed several new operating procedural documents and reporting structures have been introduced to ensure an accurate flow of information from the O&M Contractor to the Licensee.</p>	<p>14 It is recommended that hard copy files of principal operating documents such as inspection reports completed maintenance reports, water quality test reports be scanned and stored electronically for backup.</p>
<p>7.2 Do the input controls include appropriate verification and validation of date entered into the system?</p>	<p>Yes</p>	<p>A register of results of water tests was viewed and found to have been entered on the system in date order with hard copy documents kept on file for reference if required</p>	

7.3 Is there a logical security access control which is adequate, such as passwords?	Yes	Internal company documents are only available to National Lifestyle Villages' staff via hard copy files and secure servers.	
7.4 Does the physical security access control appear adequate?	Yes	The asset is fenced and the gate is locked at all times, unless personnel are on site. At the time of the reviewer's site visit and asset inspection, technicians were on site and consequently the gate was open. A padlock and chain were sighted.	
7.5 Does the data backup procedure appear adequate?	Yes	(Moama) National Lifestyle Villages' server is password protected and backed up, it includes documents and correspondence relating to the asset.	
7.6 Are the key computations related to licensee performance reporting materially accurate?	Yes	All reports and outputs are linked to compliant operations and approval authorities required service levels.	
7.7 Do the management reports appear adequate for the licensee to monitor licensee obligations?	No	Monthly reports are planned to be provided against statutory requirements in relation to service levels but not all deadlines were met.	15 The Licensee should ensure that reviews of monthly reports are undertaken by due date

Table 11 - Risk Management

8. Risk Management
Key process: Risk management involve the identification of risks and their management within an acceptable level of risk.
Outcome: An effective risk management framework is applied to manage risks related to the maintenance of service standards.
Review approach
<ul style="list-style-type: none"> Assess the adequacy of policies and procedures covering risk management and contingency planning. Assess whether the risk management policies and procedures have been applied in practice

- Assess the adequacy of staff understanding and training on risk management.

Effectiveness Criteria	Effectiveness	Comments	Recommendations
8.1 Do risk management policies and procedures exist and are they being applied to minimise internal and external risks associated with the asset management system?	Yes	<p>The Licensee states that risk management is part of all projects and is reported on. A risk workshop (held in June 2013) and subsequent updated operational risk register developed.</p> <p>Project viability risk is managed as part of business risk by the Licensee.</p>	<p>16. The Licensee should review the AMP and Risk Register at least annually or as changes occur.</p>
8.2 Are risks documented in a risk register and are treatment plans actioned and monitored?	Yes	<p>A current risk register was sighted. It recorded foreseeable hazards and contained a written demonstration of hazard controls along with a residual risk rating. There was no evidence of the adequacy testing of controls but relied upon qualified technical engineering and operational input to determine the control of hazards.</p>	<p>17. The Licensee should test the adequacy of contingency plans on a regular basis to ensure they are indeed meeting expectations. .</p>
8.3 Is the probability and consequences of asset failure being regularly monitored?	No	<p>A risk based approach to the operation of the WWTP is reflected in the risk register which has interrogated each hazard identified assigned treatment and measured consequence and likelihood to establish residual risk ratings.</p>	<p>18 The Licensee should review the risk register and interrogate the effectiveness treatment of each hazard to ensure the hazard is controlled to ALARP (as low as reasonably practicable). A high residual risk should not be tolerated without explicit written and supervised processes. Once any high residual risks are managed to ALARP it is recommended that medium residual risks are further interrogated.</p> <p>19 A Tristar representative will be included in the update of the risk register to ensure any new hazards and/or treatments are captured and managed in the risk register</p>

Table 12 - Contingency Planning

9. Contingency Planning			
Key process: Contingency plans document the steps to deal with unexpected failure of an asset.			
Outcome: Contingency plans have been developed and tested to minimise any significant disruption to service standards.			
Review approach			
<ul style="list-style-type: none"> Determine whether contingency plans have been developed and are current Determine whether contingency plans have been tested. If so, review the results to confirm that any improvements identified have been actioned.			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
9.1 Are contingency plans documented, understood and tested to confirm their operability and to cover higher risks?	Yes	<p>Contingencies are part of the design of the plant, such as the inclusion of a sump to capture overflow and prevent unwanted discharge to ground, addition of in line filters upstream of the plant, etc.</p> <p>The Licensee has installed improved efficiencies to reduce the likelihood of mishap as well as developing written procedures in the case of an unplanned event leading to an emergency.</p>	
9.2 Is there a contingency plan for the unavailability or loss of key operational staff (including third party contract staff)?	Yes	<p>The Emergency Response Plan sets out clear lines of authority and responsibility for both the Licensee and the maintenance contractor.</p> <p>Backup to cover for unavailable personnel during an emergency was not clearly stated although a priority escalating mobile phone notification system is employed but not stated.</p>	20. The Licensee should update the Emergency Response Plan to identify alternative contacts in the case of an emergency should the person of primary responsibility not be contactable.

Table 13 - Financial Planning

10. Financial Planning			
<p>Key process: The financial planning component of the asset management plan brings together the financial elements of the service delivery to ensure its financial viability over the long term.</p> <p>Outcome: A financial plan that is reliable and provides for the long-term financial viability of the services.</p>			
<p>Review approach</p> <ul style="list-style-type: none"> Obtain an understanding of the financial planning, budgeting and reporting process and assess its effectiveness. Obtain a copy of the current financial plan (including budget/actual) and assess whether the process is being followed. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
10.1 Does the financial plan state the financial objectives and strategies and actions to achieve the objectives?	Yes	This is a standalone operation- Capex costs are against National Lifestyle Villages. Opex costs form part of Tuart Lakes Lifestyle Village annual budget and cash flow. (Expansion is capex).	
10.2 Does the financial plan identify the source of funds for capital expenditure and recurrent costs?	Yes	Source is Tuart Lakes Lifestyle Village and National Lifestyle Villages dependent on the works undertaken.	
10.3 Does the financial plan provide projections of operating statements (profit and loss) and statement of financial position (balance sheets)?	Yes	Not consolidated, all works are through the Special Purpose Vehicle- Tuart Lakes Lifestyle Village which has accounts audited as part of the parent group.	
10.4 Does the financial plan provide firm predictions on	Yes	Regarding income Tuart Lakes Lifestyle Village are the owner and client for the	

<i>income for the next five years and reasonable indicative predictions beyond this period?</i>		wastewater treatment plant, underwritten by the parent group. Costs associated with the asset are treated as operational costs of the entity. Income of the asset is not a consideration from a group accounting perspective.	
<i>10.5 Does the financial plan provide for the operations and maintenance, administration and capital expenditure requirements of the services?</i>	Yes	Through the Tuart Lakes Lifestyle Village entity.	
<i>10.6 Are significant variances in actual/budget income and expenses identified and corrective action taken where necessary?</i>	Yes	Variations associated with the operation and maintenance of the plant are examined and reported on.	

Table 14 - Capital Expenditure Planning

11. Capital Expenditure Planning			
<p>Key process: The capital expenditure plan provides a schedule of new works, rehabilitation and replacement works, together with estimated annual expenditure on each over the next five or more years. Since capital investments tend to be large and lumpy, projections would normally be expected to cover at least 10 years, preferably longer. Projections over the next five years would usually be based on firm estimates.</p> <p>Outcome: A capital expenditure plan that provides reliable forward estimates of capital expenditure and asset disposal income, supported by documentation of the reasons for decisions and evaluation of alternatives and options.</p>			
<p>Review approach</p> <ul style="list-style-type: none"> • Obtain an understanding of the capital expenditure planning process and assess its effectiveness. • Obtain a copy of the capital expenditure plan for the current year and assess whether the process is being followed. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations

<p>11.1 Is there a capital expenditure plan that covers issues to be addressed, actions proposed, responsibilities and dates?</p>	<p>No</p>	<p>A capital expenditure plan for Stage 2 was sighted.</p> <p>A transition plan has not been developed beyond that an upgrade of asset will be required when the trigger point of an expansion is reach. A part of operational budget for Tuart Lakes Lifestyle Village has been ear marked for the expansion. No particular date is recorded for the expansion.</p>	<p>21 As the facility's capacity is approaching maximum it is recommended that the expansion plan is revisited and developed in detail including timing, permits, design, budget allocations, etc.</p>
<p>11.2 Does the plan provide reasons for capital expenditure and timing of expenditure?</p>	<p>Yes</p>	<p>Yes, it is Included in Tuart Lakes Lifestyle Village cash flow for the coming 12 months</p>	
<p>11.3 Is the capital expenditure plan consistent with the asset life and condition identified in the asset management plan?</p>	<p>Yes</p>	<p>The capital expenditure plan includes provision for operational costs with asset upgrades noted but is to be developed in more detail with input from the contracted operator and consultants over the coming months</p> <p>The expansion to 470 homes is based on the number of homes that have been occupied in the village, in line with the current approvals.</p>	
<p>11.4 Is there adequate process to ensure that the capital expenditure plan is regularly updated and actioned?</p>	<p>Yes</p>	<p>Tuart Lakes Lifestyle Village financial controls provide yearly budgeting commensurate with both existing connections and projected new customers as the park expands.</p>	

Table 15 - Review of Asset Management System

12. Review of AMS			
Key process: The asset management system is regularly reviewed and updated.			
Outcome: Review of the Asset Management System to ensure the effectiveness of the integration of its components and their currency.			
Review approach			
<ul style="list-style-type: none"> • Determine when the asset management plan was last updated and assess whether any significant changes have occurred. • Determine whether any independent reviews have been performed. If so, review results and actions taken. • Consider the need to update the asset management plan based on the results of this review. • Determine when the AMS has last reviewed. 			
Effectiveness Criteria	Effectiveness	Comments	Recommendations
12.1 Is there a review process in place to ensure that the asset management plan and the asset management system described therein are kept?	No	<p><i>ERA currently requires the Licensee to formally review their Asset management System annually.</i></p> <p><i>External independent review was noted but only for the asset's engineering and operation</i></p>	22 The Licensee should implement an annual regime of an independent review of their entire AMS both in preparation for the ERA AMS review and to provide feedback internally should the ERA AMS review period is extended beyond 12 months.
12.2 Are independent reviews (e.g. internal audit) of the asset management system performed?	Yes	<p><i>The engineering support consultant does perform asset operation reviews. The Licensee has stated that the AMS has only been reviewed and updated with recommendations arising from previous ERA and DoH audits</i></p> <p><i>Financial reviews and budget development are dealt with internally as normal business practice.</i></p>	

Appendices

Appendix A – Site Risk Register

RISK ASSESSMENT WORKSHEET

MOAMA LIFESTYLE VILLAGES PTY LTD
TUART LAKES VILLAGE WWTP
Monday, 24 June 2013
NLV Conference Room

Rev 2 27/6/2013

Attendees: Ian Nichol NLV
Natalie Wild NLV
Simon Wilson NLV
Andrew Edwards NLV
Pili Lydiate Aquasol
Blair Shackleton PDC Design Facilitator



ID	Risk Event	Risk Identification		Unmitigated Risk			Mitigation	Residual Risk		
		Causes	Impacts	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
1	Sewer dug up causing discharge	Contractor - insufficient information, insufficient supervision	Discharge of sewage to environment	A Rare	2 Minor	Insignificant	Use only competent contractors; planning; supervision	A Rare	2 Minor	Insignificant
2	Sewer dug-up causing contamination down stream	Contractor - insufficient information, insufficient supervision	Soil/stones/rocks into WWTP	A Rare	2 Minor	Insignificant	Use only competent contractors; planning; supervision	A Rare	2 Minor	Insignificant
3	Sewage pump station failure	Electrical supply failure; pump mechanical failure; blockage	Back-up in sewers; potential ultimately sewer overflow/discharge	B Unlikely	3 Moderate	Medium	Duty / standby pumps; backup generator; routine checks & maintenance; possible sewage removal by truck	A Rare	3 Moderate	Low
4	Strainer blockage	Higher than expected coarse material load	Back-up in sewers; potential ultimately sewer overflow/discharge	C Possible	3 Moderate	Medium	Routine checks and maintenance; set of rotational spare screens on-site	A Rare	3 Moderate	Low
5	Strainer failure	Corrosion of or mechanical damage to screen material	Larger solids entering plant	B Unlikely	1 Insignificant	Insignificant	Routine checks and maintenance; set of rotational spare screens on-site	A Rare	1 Insignificant	Insignificant
6	Tank rupture	Material or fabrication fault; mechanical damage; aging	Discharge or partly treated wastewater into sump area	A Rare	1 Insignificant	Insignificant	Quality of equipment; standby tank;	A Rare	1 Insignificant	Insignificant
7	Inadequate de-sludging of anaerobic tank	Operator lack of attention; faster rate of sludge accumulation; poor plant performance	Sludge passing on to rest of system; poor treated water quality	C Possible	4 Major	High		C Possible	4 Major	High
8	Aeration system failure	Electrical supply failure; blower mechanical failure; blockage of pipes &/or aeration nozzles	Insufficient air into aerobic tanks; poor treated water quality	C Possible	4 Major	High	Duty / standbyblowers; backup generator; multiple aeration nozzles; routine checks & maintenance	A Rare	4 Major	Low
9	Vent system failure releasing odours to atmosphere	Pipe break; joint / seal leak	Odour release causing customer complaints	C Possible	2 Minor	Medium	Routine checks and maintenance;	B Unlikely	2 Minor	Low
10	Return activated sludge system failure	Electrical supply failure; pump mechanical failure; blockage	Poor efficiency of treatment; poor treated water quality	C Possible	4 Major	High	3 RAS pumps; backup generator; routine checks & maintenance	A Rare	4 Major	Low
11	Chemical dosing system 1 (caustic, polymer, molasses)	Electrical supply; pump failure; chemical runs out	Poor efficiency of treatment; poor treated water quality	C Possible	4 Major	High	Spare pump; chemicals stored on site; routine plant inspection	A Rare	4 Major	Low
12	Chemical dosing system 2 (flocculent)	Electrical supply; pump failure; chemical runs out	Poor efficiency of treatment; poor treated water quality	C Possible	4 Major	High	Spare pump; chemicals stored on site; routine plant inspection	A Rare	4 Major	Low
13	Piping failure or blockage	Mechanical damage; seal failure; joint failure; blockage	Leakage to sump	C Possible	1 Insignificant	Low	Routine checks & maintenance; leakage captured and automatically returned to system	B Unlikely	1 Insignificant	Insignificant
14	Media filter blockage	Inadequate backwashing; media age	Reduced plant flow capacity	C Possible	4 Major	High	Differential pressure transmitter; view tubes on backwash;	B Unlikely	4 Major	Medium
15	Ozone system failure	Electrical supply; ozone generator failure; dosing failure	Reduced quality treated water; possible additional odour	C Possible	3 Moderate	Medium	Two ozone units; local source and repair capability	B Unlikely	2 Minor	Low
16	Membrane filtration system failure	Electrical supply; membrane failure; valve failure; etc	Reduced quality treated water	C Possible	2 Minor	Medium		C Possible	2 Minor	Medium
17	Nitrate removal system failure	Exhausted resin; blocked resin	Reduced quality treated water	C Possible	2 Minor	Medium		C Possible	2 Minor	Medium
18	Chlorination system failure	Electrical supply; pump failure; chemical runs out; analyser failure	Poor treated water quality (licence condition = 0.2-2mg/L)	C Possible	4 Major	High	Spare pump; chemicals stored on site; routine plant inspection	B Unlikely	4 Major	Medium
19	Sump area floods	Leach drain blocks + rain event / overflow event + sump pump failure	Overflow to environment	A Rare	5 Catastrophic	Medium	Duty / standby pumps; backup generator; routine cleaning of leach drain; routine checks & maintenance; possible pump out to avoid wastewater discharge to environment	A Rare	3 Moderate	Low

RISK ASSESSMENT WORKSHEET

MOAMA LIFESTYLE VILLAGES PTY LTD
 TUART LAKES VILLAGE WWTP
 Monday, 24 June 2013
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 Blair Shackleton PDC Design Facilitator



ID	Risk Identification			Unmitigated Risk			Mitigation	Residual Risk		
	Risk Event	Causes	Impacts	Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
20	Instrumentation - tank level sensors	Instrument failure; instrument contamination	Tanks overflows to sump	A Rare	4 Major	Low	Quality instruments; PLC error indication; tank sight glasses; multiple instruments providing back-up indication; sump pumps recover overflows	A Rare	3 Moderate	Low
21	Instrumentation - tank level sensors	Instrument failure; instrument contamination	Tank runs dry; pump runs dry	A Rare	3 Moderate	Low	Quality instruments; PLC error indication; tank sight glasses; multiple instruments providing back-up indication; sump pumps recover overflows	A Rare	2 Minor	Insignificant
22	Instrumentation - flow	Instrument failure; instrument contamination	Plant not operating at proper flows; reduced quality of treated water	A Rare	3 Moderate	Low	Quality instruments; PLC error indication; flow switches; flow meters	A Rare	3 Moderate	Low
23	Instrumentation - turbidity	Instrument failure; instrument contamination	No indication of poor treated water quality	A Rare	2 Minor	Insignificant	Quality instruments; PLC error indication; plant normal operation; 2 turbidity monitors; routine operator checks	A Rare	2 Minor	Insignificant
24	Instrumentation - pH	Instrument failure; instrument contamination	No indication of treated water quality (licence condition pH 6.5-8.5)	C Possible	4 Major	High	Quality instruments; PLC error indication; routine operator checks	B Unlikely	4 Major	Medium
25	Instrumentation - chlorine	Instrument failure; instrument contamination	Poor treated water quality (licence condition = 0.2-2mg/L)	C Possible	4 Major	High	Quality instruments; PLC error indication; routine operator checks	B Unlikely	4 Major	Medium

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